

Research Article

# Are Some Canadian Youth NEETer than Others? Examining North–South and Rural–Urban Inequalities in Education, Employment, and Training

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**Abstract:** A growing body of research studies youth not actively involved in education, employment, or training (NEET). Some recent estimates of NEET place Canadian youth at slightly below the OECD average. At the same time, however, researchers have identified a number of regional barriers that present unique challenges to labour market participation for Canadians residing in northern and rural areas. In this article, we investigate the extent to which regional differences contribute to the labour market inactivity of Canadian youth. Using multiple waves of Statistics Canada's Youth in Transition Survey (YITS-A), we find that indeed NEET rates differ for youth who reside in northern and southern Canada. Northern, rural youth show significantly higher probabilities of being NEET between ages 20 and 22. Moreover, these regional differences in NEET status continue to have a strong and independent effect, even when accounting for socio-demographic characteristics, parental socio-economic factors, educational experiences, and family structure. These inequalities in early workforce outcomes have important implications for policy-makers, as they seek new ways of bolstering the school to work transitions of northern and rural youth.

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## Introduction

The employment difficulties that accompany economic downturns can be especially detrimental to working-aged youth, and researchers have argued that employment instability and the absence of desirable employment opportunities may lead some to select themselves out of future labour market and educational pursuits (LaRochelle-Côté 2013; Marshall 2012). Even among those youth with high job-search efforts, persistent joblessness can lead to pessimistic perceptions of ability, particularly among those who lack “soft skills,” including problem solving, leadership, and time management (Goldman-Melor et al. 2016). Academics and policy-makers are therefore sensitive to the “career scarring” that youth may experience, which can be detrimental to maintaining a productive workforce (Krahn and Chow 2016).

Traditional definitions of labour market inactivity have primarily focused on rates of unemployment (e.g., Caspi et al. 1998; Aud et al. 2011). Sociologists have long understood the barriers to gainful and sustained employment by youth disadvantaged by their social class, race and ethnicity, gender, age, disability, and rurality. Yet, a newer body of literature has expanded the scope to encompass youth who are not actively involved in education, employment, or training (commonly referred to as “NEET” in the sociology of work). NEET youth are particularly at risk of being disengaged and socially excluded from formal education and the workforce and may be in need of professional interventions and programs to address their difficulties. The term originated in Europe (see Bynner and Parsons 2002), where researchers were primarily concerned with fixing the transition between school and work among disadvantaged youth populations. For instance, in the United Kingdom, entering NEET was shown to negatively impact adult identity formation. Moreover, low income, inner city youth were particularly at risk of entering NEET and encountering poor labour market outcomes and negative psychological consequences (see Bynner and Parsons 2002).<sup>2</sup> Since that time, NEET youth have been studied in many countries around the globe, including Australia and Japan (Wong 2016), Mexico (Benjet et al. 2012), the United States (Musu-Gillete et al. 2016; Aud et al. 2011), and Canada (Brunet 2020, 2019, 2018; Davidson and Arim 2019; LaRochelle-Côté 2013; Marshall 2012). Moreover, the increasing importance placed on reducing NEET rates internationally is evidenced by its inclusion in the United Nations Sustainable Development Goals (United Nations 2019).

Recent estimates (see OECD 2018) place the 12.2% NEET rate for Canadians aged 15 to 29 slightly below the average OECD rate of 13.4%. For those aged 25 to 29, the NEET rates in Canada and the OECD climb to about

16% and 18% respectively (Brunet 2018). While on the surface this might appear to be a positive national outcome, we know very little about whether or not NEET rates are consistent across Canadian regions, nor have we fully understood how NEET rates differ across rural and urban areas. In other words, are youth in some regions more likely to find themselves NEET than their counterparts in other regions? Recent research certainly points in this direction, suggesting that even within Canada, provincial rates of NEET are highly variable. For example, the province of Quebec typically shows lower rates of NEET (12%), while Nunavut and the Northwest Territories show considerably higher rates at 43% and 24% respectively (Brunet 2018). However, no existing research has sought to examine the difficulties youth face in the northernmost parts of the provinces (the Provincial North), nor have they sought to see how these north–south differences interact with rural–urban inequalities.

Our study contributes to this knowledge gap by zeroing in on the regional inequalities that underlie NEET estimates in Canada. Our approach offers a rural sociological approach to an issue that has received comparatively greater attention from economists and policy-makers, but has been primarily couched at a provincial or national level and has paid little attention to the structural inequalities that may influence a young person's likelihood of being NEET. By contrast, this study builds on a new strand of studies that are cross-cutting the sociology of education, rural sociology, and out-migration literatures by empirically examining the extent to which northern and rural youth may be more prone to find themselves in NEET during their early twenties. For instance, new research on northern and rural inequalities certainly makes higher NEET rates in those areas plausible as northern and rural youth are less likely to attend higher levels of education (Zarifa et al. 2018); less likely to attend more lucrative fields of study such as the STEMs (Science, Technology, Engineering, Mathematics) (Hango et al. 2019); and those from higher socio-economic backgrounds, with presumably greater connections to the workforce, are significantly more likely to migrate to larger urban centres (Hillier et al., 2020). Moreover, despite not making the connection to NEET youth explicitly, some researchers have identified a number of regional barriers that present unique challenges to labour market participation for some Canadians (Southcott 2003; LaRochelle-Côté 2013). For example, Southcott (2003) noted, using 2001 census data, that the employment rates among northern Ontario youth between the ages of 15 and 24 were markedly lower than the employment rate of youth in all of Ontario. At the same time, northern youth had an unemployment rate that was roughly 32% higher than the rest of Ontario youth (a rate of 19% versus 12.9%) (Southcott 2003: 10). Despite this evidence, however, researchers have yet to empirically compare NEET youth among either north–south or rural–urban divisions.

Given that the great majority of Canadian youth are concentrated in southern and urban locales, the existing literature reporting NEET youths as a single cohort may disproportionately represent the experiences of youth from urban and southern areas of Canada. Specifically, less is known about the working experiences of northern and rural youth, who may lack access to many of the resources and opportunities that are available to their urban counterparts. Given there are fewer desirable employment opportunities in Canada's northern regions, it is possible that their NEET rates may be significantly higher (see Southcott 2003).

We begin by reviewing the existing sociological and economic research on the factors that have been shown to influence higher instances of NEET—both socio-demographic characteristics as well as structural issues that have been linked to inactivity. Second, we draw upon several existing studies that underscore the importance of examining the situation in northern and rural Canada. Finally, we employ Statistics Canada's Youth in Transition Survey (YITS) Cohort A, to examine the extent to which NEET rates vary across locations of residence and key factors that might account for those differences.

## **Research on Factors Influencing NEET**

### *Socio-Demographic Characteristics*

NEET rates can vary considerably depending on the factors considered (i.e., the age cohort being reported on, or the length of unemployment) (Brunet 2018; Marshall 2012; LaRochelle-Côté 2013; Henderson et al. 2017). Our review of the existing sociological, economic, and policy-oriented literature points to several key determinants below. Yet, the strength and direction of relationships does vary across investigations. While there is variation on the correlates of NEET in the existing literature, empirical investigations on the key determinants are highly warranted not only from a scholarly standpoint but also from a social policy perspective, as disagreement regarding the causes of NEET can complicate policy recommendations, development, and implementation. Some correlates with NEET may be stronger in some countries, and may vary within countries. As such, our empirical investigation within regions of Canada seeks to explore these possibilities in the Canadian context and sets the stage for similar investigations in other countries around the globe.

Several existing studies point to age as having a significant effect on employment, education, and training inactivity (Marshall 2012; Henderson et al. 2017; Galarneau et al. 2013; Benjet et al. 2012; Musu-Gillette et al. 2016; LaRochelle-Côté 2013). Using Statistics Canada's Labour Force Survey, for example, Galarneau and colleagues (2013) found that the unemployment rate of youth between the ages of 15 and 24 has remained statistically greater than that

of Canadians between 25 and 34 since 1981. LaRoche-Côté (2013) similarly noted that age had a significant effect on employment instability in much the same way. While there were small differences among the age cohorts in his study, he found that younger workers (ages 16 to 21) were far more likely to experience instability than their older counterparts (those aged 28 to 29). On the other hand, however, studies in Mexico (Benjet et al. 2012) and the United States (Musu-Gillette et al. 2016), and also Canada (Davidson and Arim 2019; Marshall 2012), have found that older cohorts are more likely to be NEET.

With respect to gender, there is a similar mixture of findings regarding its association with NEET rates. In studies that have primarily focused on Canada, some researchers have found that women have a higher likelihood of becoming NEET than men (Marshall 2012; Uppal 2017; Davidson and Arim 2019). Davidson and Arim's study (2019) found the gender disparities could largely be explained by the type of NEET status. The authors defined three categories of NEET: 1) looking for paid work; 2) caring for children; and other. Much of the higher rate of NEET for women was attributable to the great majority of NEET women doing so for child-care reasons (Davidson and Arim 2019: 10). Among OECD countries more broadly, it would also appear that women are more likely to become inactive than men (Lundetræ, Gabrielsen, and Mykletun 2010; Carcillo et al. 2015; OECD 2016; Wong 2016; Raffe 2003; Yates et al. 2011). Complicating the story for young Canadians, however, Henderson and colleagues (2017) found that Canadian men were more likely to select themselves out of employment and educational pursuits (Henderson et al. 2017). Moreover, while LaRoche-Côté (2013) initially found evidence that Canadian women were more likely to be NEET than men, the relationship was not statistically significant once wider factors were accounted for, suggesting that there may be no difference between male and female youth in their propensity for becoming NEET. It is also possible that the effect of gender on the likelihood of becoming NEET is highly susceptible to background effects, as at least three studies have attempted to account for interactions that significantly influenced the effect of gender (Yates et al. 2011; Berloff et al. 2016; Schoon 2014).<sup>3</sup> Further research is therefore necessary in order to fully understand the effect of gender among Canadian NEET youth.<sup>4</sup>

Meanwhile, there has been some consensus among researchers that socio-economic status (SES) is a key predictor of youth propensity towards NEET. While Goldman-Mellor and colleagues (2016) concede that NEET can also occur among youth who are not from disadvantaged homes, the researchers found convincing evidence that familial factors had a significant effect on the likelihood of becoming NEET. Higher rates of inactivity have been documented among youth whose parents have a lower level of education (Carcillo et al. 2015; Alfieri

et al. 2015; Benjet et al. 2012; Caspi et al. 1998; Furlong 2006), and researchers in Europe have also documented an association between familial poverty and NEET youth (Bynner and Parsons 2002; Berloff, Matteazzi, and Villa 2016; Raffe 2003). Lundetræ and colleagues (2010) noted, for example, that the low skill levels of parents significantly predicted the unemployment of youths from a number of OECD countries. Similarly, in their study of Mexico, Benjet and colleagues (2012) found that both lower levels of family income, as well as lower parental education were associated with higher levels of NEET.

It may also be that household composition plays an important role in the propensity towards becoming NEET, as Carcillo and colleagues (2015) found that the effect of SES on Canadian NEET rates only held for youth who still lived with their parents. Similar assertions have been documented outside of Canada, chiefly studies from Austria (Tamesberger and Bacher 2014) and countries in the European Union (Berloff et al. 2016), which found that living with parents significantly increased the likelihood of being NEET.<sup>5</sup>

There does appear to be modest disagreement on this point, however, as at least one study conducted in Mexico has found contradictory evidence that suggests youth who did not live with both parents were more likely to be NEET (Benjet et al. 2012). Alternatively, Berloff and colleagues (2016) found that the working characteristics of parents in a two-parent home had a strong effect on the NEET status of children, suggesting that the presence of parents alone was not the only factor to be considered. The authors asserted that the likelihood of NEET was lowest when two working parents contributed to the household's income during the youth's adolescence. Lastly, in the United States, Musu-Gillette and colleagues (2016) argue that the effect of SES is highly dependent upon the racial background of the family—with higher percentages of NEET youth from poor Black and American Indian/Alaskan Native families than poor youth from White, Hispanic, Asian, or Pacific Island families.<sup>6</sup>

### *Structural Contributors*

In addition to socio-demographic indicators, researchers have also identified a number of structural factors that have been shown to influence the likelihood of NEET. Specifically, researchers have found that prior education, the health of the job market, and skill proficiency are all associated with NEET.

In terms of education, several researchers have argued that the reported number of NEET youth has been decreasing over time in part due to the historically greater numbers of Canadians continuing their education (Uppal 2017; Galarneau, Morissette, and Usalcas 2013). The central assertion is that youth are remaining full-time students longer than any generation prior and are significantly more likely to obtain a high school diploma, reducing the likelihood

of becoming NEET (Uppal 2017; Galarneau, Morissette, and Usalcas 2013). On the one hand, increased time in formal education will mechanically reduce the NEET rates. On the other hand, higher levels of education may also impact the employment side of NEET rates. The positive effects of educational attainment on labour market participation have been similarly documented in the United States (Aud et al. 2011), and in the European Union (Berloff, Matteazzi, and Villa 2016), while in Australia, those aged 20 to 39 who failed to complete secondary school were more likely to become NEET (Wong 2016). Indeed, these claims are backed by wider Canadian research on NEET youth, which has indicated that higher levels of education are associated with lower levels of unemployment and a decrease in the likelihood of labour market inactivity (Brunet 2019; Marshall 2012; LaRochelle-Côté 2013).

Despite these findings, however, there has still been some debate among sociologists with respect to the educational backgrounds of Canadian NEET youth. That is, some sociologists have argued that NEET youths are more likely to come from older cohorts; as a result, these individuals are more likely to have obtained a high school diploma and have pursued post-secondary education to some extent (Henderson et al. 2017). These latter assertions therefore suggest that high school completion may not be a central determinant in the propensity toward becoming NEET. In Japan, for example, the largest percentages of NEET individuals had a secondary school education (Wong 2016). This is consistent with the findings of Carcillo and colleagues (2015) who found that while education is a large determinant of becoming NEET, greater percentages of more educated youth are also falling into NEET status.

A number of researchers have argued that rates of NEET are heavily influenced by economic downturns that disproportionately affect youth, who are often much more susceptible to poor employment climates (Carcillo et al. 2015; see also OECD 2016). LaRochelle-Côté (2013) has similarly drawn links between employment instability and years of experience, claiming that the ability to remain active in the labour market improves with prior employment tenure. The author also identified an association between firm size and employment instability, claiming that larger firms typically have lower instances of employment instability (LaRochelle-Côté 2013). Perhaps the greatest indicator of NEET, however, depends chiefly upon the ability to find full-time, full-year employment, as LaRochelle-Côté (2013: 11) concedes that the former effects disappeared once employment status was taken into account. Nevertheless, these findings suggest that NEET rates are intrinsically tied to specific labour market conditions that exist in addition to background socio-demographic effects.

Lastly, researchers have documented the association between NEET status and the skill proficiency of youth (OECD 2016; Lundetrae 2010; Caspi et al.

1998). According to a recent study conducted on behalf of the OECD (2016), the greatest proportion of NEET youth are those with lower levels of numeracy and literacy skills. This association held for the majority of OECD countries included in the study, with the exception of Japan, Korea, and the United States.<sup>7</sup> The importance of skills on labour market activity has been documented in previous literature; primarily Caspi et al.'s (1998) conclusions that reading ability at the age of 15 could significantly predict later labour market participation of New Zealand youth.<sup>8</sup>

*Northern and Rural Considerations: Canada's Understudied Provincial North*

Given the factors that influence whether youth become NEET, it is important to address a number of the possible barriers that may disproportionately affect youth living in northern and rural areas of Canada. Individuals growing up in Canada's Provincial North may be particularly prone to early labour market difficulties. Historically, research on northern inequalities typically focused on the socio-economic and cultural difficulties faced by youth who grow up in Canada's territories, and used the sixtieth parallel as Canada's north-south dividing line (Wilson and Poelzer 2005; Coates and Morrison 1992). In our study, we investigate the NEET situation of youth using an expanded definition of northern Canada—one that encompasses the provincial administrative regions defined by Statistics Canada, the Conference Board of Canada, and the Northern Development Ministers Forum (Statistics Canada 2018). We include Canada's Provincial North, which represents the northernmost portions of many of the provinces. With a few recent exceptions (Pizarro Milian et al. 2020; Hillier et al. 2020; Hango et al. 2019; Zarifa et al. 2018), these regions have largely been neglected in prior work, but youth residing in the northern parts of Canada's provinces face many of the same social and economic challenges as those from the territories (e.g., northern climates, smaller and less dense populations, larger rural populations, resource economies, and larger Indigenous populations (Allen and Perreault 2015; Coates and Poelzer 2014). About 3% of the population in southern Canada provincial South identifies as Indigenous, whereas about 19% of the population in the Provincial North identify as Indigenous.<sup>9</sup> With respect to NEET, results from Statistics Canada's 2011 National Household Survey show that the populations residing in the Provincial North (as well as the territories) are more likely to have lower employment rates and are more likely to be out of the labour force (Allen and Perreault 2015: 30–31). Prior work with the Youth in Transition Survey (YITS) data suggests that these northern youth may be particularly prone to NEET, as their post-secondary education rates tend to be comparatively lower than for counterparts in the southern parts of the country (Zarifa et al. 2018). Moreover, recent research using the Labour Force Survey



shows Indigenous youth (aged 20 to 24) are nearly twice as likely to become NEET (23% vs. 12 %) (see Brunet 2019: 3).

Although researchers have yet to study the likelihood of becoming NEET for youths in northern Canada specifically, the wider literature does offer some theoretical insights into a number of issues that may be unique to these individuals. The work of Caspi et al. (1998), for example, underscores the importance of considering the employment opportunities that are available to northern youths. The authors found that despite reading proficiency and employment differences among the New Zealand youths in their study, these youths had nearly identical labour force participation rates (Caspi et al. 1998). It is therefore possible that NEET rates may be significantly higher in northern areas of Canada if there are fewer opportunities available for desirable employment (see Southcott 2003). The influence of local area effects on NEET youth has been discussed by only one study in the available literature. Raffe's (2003) study using the Scottish School Leavers Survey (SSLS) found that the local unemployment rate did not have a significant effect on the NEET status of youth between the ages of 16 and 17 once other factors were taken into account.<sup>10</sup> Still, given the demographic differences between the two countries, further analysis is necessary to determine the effect of local employment opportunities on the NEET status of youths in northern Canada.

At the same time, rates of NEET may also be influenced by the employment diversity of the area, as LaRochelle-Côté (2013) has documented with respect to differences in employment instability among different occupations and employment sectors. Primarily, he found that “compared to the sales and service occupations, those in management, business, natural sciences, health, social sciences, trades, and those ‘unique to primary and processing’ were statistically less likely to face employment instability” (LaRochelle-Côté 2013: 11). The author does note that controlling for full-time and full-year employment remains the best indicator of whether or not individuals will experience inactivity; it is nevertheless possible that the lower occupation diversity that is characteristic of smaller northern populations (in comparison to the larger urban centres in the south) may have unique effects on the labour market participation rates of northern youth (see also Southcott 2003).

## Research Questions

In this article, we contribute by addressing the following key research questions: (1) to what extent do NEET rates for northern youth differ from those in the south? (2) are the rates of NEET youth dependent upon the interaction between northern/southern and rural/urban locality? In other words, does the probability of falling into a NEET pattern occur similarly depending on the population size of one's community?

## Methods

### *Statistics Canada's Youth in Transition (YITS) Cohort-A Data*

To address these questions, we use Cohort A of Statistics Canada's Youth in Transition Survey (YITS) (Statistics Canada 2007). The YITS-A data are drawn from a nationally representative, longitudinal survey that interviewed youth at two-year intervals from age 15 (in 2000) to age 25 (in 2010). The target population for the YITS-A are youth who were born in 1984 and were enrolled in schooling in the ten provinces of Canada. Recent studies have made good use of newer Statistics Canada's data such as the Labour Force Survey, which have provided snapshots of the social and demographic differences of NEET rates as recent as during the COVID-19 pandemic in 2020 (see Brunet 2020, 2019). Despite its age, however, the YITS data remain the most comprehensive longitudinal data source for tracking and analyzing education and early workforce transitions and outcomes in Canada. For our purposes, the YITS-A data provide the optimal data source to shed light on the regional patterns of youth NEET rates for four key reasons. First, the YITS contains more detailed geographic identifiers (i.e., Census Subdivisions) of youth than any other survey containing school-aged Canadians, allowing us to create northern and southern categories. Second, YITS data are recorded longitudinally, enabling us to capture the education and employment activities of the same youth followed over a ten-year window (ages 15 to 25). This data structure provides a more robust measure of NEET than cross-sectional data sources that would capture NEET status at one point in time.

Finally, the YITS data include rich measures of youth education and employment achievements and aspirations. Specifically, they have been linked to youth Program for International Student Assessment (PISA) scores at age 15, which allow us to examine regional differences all the while accounting for differences in ability by using an internationally recognized, standardized measure of aptitude or ability. Moreover, the YITS also include rich measures for parental education; parental aspirations for their child's education, school, and work aspirations; and grades that are not available in any other nationally representative survey in Canada. Taken together, these advantages set the stage for an innovative

analysis of the labour and education dynamics of northern and rural Canadian youth (for summary measures across all variables, see Appendix A).

#### *Dependent Variable: Defining NEET using the YITS-A Cohort*

An important component of this article is how we define a young adult as being NEET. Given the definitional differences across the literature, which vary across countries and also across data sources, the approach taken in this article is not to derive a similar NEET definition with the goal of comparing prevalence rates. Rather, the approach we take is to develop a definition of NEET that aligns with existing practices (e.g., Bynner and Parsons 2002), makes sense given the age of our respondents, and capitalizes on the longitudinal data structure of the YITS.

Specifically, we examine the prevalence of school and work absences over a 36-month period between 2005 and 2007, when these YITS youth are between the ages of 20 and 22. The reason for this period is twofold: first, attrition becomes more of an issue in later cycles of the YITS and so restricting analyses to earlier cycles helps alleviate this; and second, inactivity in school and work during this period could be especially significant, as it is a peak time when the great majority of young adults are enrolled in some type of post-secondary program.<sup>11</sup>

Some past work defined NEET between ages 16 and 17 as six months or more outside of education, training, or employment, or about a quarter of the time (see Bynner and Parsons 2002). During this period, being in education is much more prevalent and so a 25% cut-off is appropriate; however, for our purposes a more stringent cut-off is needed. We utilize a 50% cut-off for defining our NEET population: that is, young adults are defined as being NEET if they are not in full-time schooling and have not had any employment for at least 18 of the 36 months between January 2005 and December 2007 (ages 20 to 22).

#### *Independent Variables*

In step with prior studies (Hillier et al. 2020; Hango et al. 2019; Zarifa et al. 2018), to measure whether or not respondents in the YITS resided in northern and rural areas, we created a location of residence variable with four categories: 1) North, Rural 2) North, Urban, 3) South, Rural, and 4) South, Urban.<sup>12</sup> The boundaries for North and South were coded using the Census Subdivision Subcodes (CSD) available in the YITS for their residency at age 15. Our location of residence variable maps onto the Provincial North definition established by Statistics Canada, the Conference Board of Canada, and Northern Development Ministers Forum (see Statistics Canada 2018; Allen and Perreault 2015; Coates and Poelzer 2014; Conference Board of Canada 2014; McNiven and Puderer 2000).

Canada's Provincial North encompasses the northern regions of several provinces. These northern regions are comparable to the territories in their

resource-based economies, demographic compositions, and socio-economic struggles (Allen and Perrault 2015).<sup>13</sup> The size and distribution of the population in the North does vary across provinces; however, provinces (with the exception of Prince Edward Island, Nova Scotia and New Brunswick which are 100% southern) range from a northern population as low as 4% in Saskatchewan to a high of 10% in Alberta (Allen and Perreault 2015).

The urban and rural dimension of the variable is based on Statistics Canada's measure available in the YITS, where urban residents include all individuals who reside in both Census Metropolitan Areas (CMA) and Census Agglomerations (CA).<sup>14</sup> Overall, the distribution of our location of residence variable in the YITS sample reveals that approximately 4% of youth are from northern, rural regions; about 5% are from northern, urban; nearly 22% are from southern, rural regions; and about 70% are from southern, urban regions.

Our models also include a variety of socio-demographic variables that have been empirically shown to influence NEET rates in our review of the literature above (Davidson and Arim 2019; Brunet 2018, 2019 and 2020; Musu-Gillete et al. 2016; Wong 2016; Carcillo et al. 2015; LaRochelle-Cote 2013; Benjet et al. 2012; Marshall 2012; Aud et al. 2011; Bynner and Parsons 2002). Specifically, we include several dichotomous measures for gender, country of birth, visible minority status, disability status, and Indigenous status. Given the larger proportions of Indigenous populations in Canada's Provincial North, part of any regional differences that we do find might be explained when including Indigenous status in our analyses.<sup>15</sup> Indigenous youth are particularly disadvantaged in accessing formal education (Wilson and Macdonald 2010; Richards 2008; Carr-Stewart 2006), which in part leads to lower labour force participation rates and higher rates of unemployment (Mendelsen 2004).

To examine the effects of social origins on NEET status, we include measures of parents' education, parents' income, and parents' aspirations for their child's education. All were asked when the youth were age 15 in Cycle 1. Parents' education is measured by a three-category variable: 1) both have high school or less, 2) at least one has non-university post-secondary education (PSE), and 3) at least one has university. For parents' income, we include the log of combined parents' income. To capture the intensity of parental aspirations, we include a three-category variable: 1) at least one parent feels that higher education is not important or only slightly important, 2) at least one parent feels higher education is fairly important, and 3) at least one parent feels higher education is very important.

Recent studies also point to the importance of including educational characteristics, measures of academic achievement, skills proficiencies, and student aspirations in the mix (Uppal 2017; OECD 2016; Galarneau et al. 2013; Hillier et al. 2020; Pizarro Milian et al. 2020; Hango et al. 2019; Zarifa et al. 2018).

Student grades are based on a measure that asks respondents to state their overall marks across all subjects in their current academic year at age 15. This measure contains five categories: 1) less than 60%, 61% to 69%, 70% to 79%, 80% to 89%, and 90% to 100%. We also include a continuous measure of students' PISA Reading Scores, which, in our analysis sample, range from 120 to 887. To measure students' aspirations, we include measures for both educational aspirations as well as occupational aspirations. Educational aspirations are based on a question that asks students the highest level of schooling they would like to obtain, and contains four categories: 1) high school or less, 2) non-university, 3) university, and 4) do not know. Occupational aspirations are based on a question that asks youth what occupation they desire at age 30 (asked in Cycle 2 at age 17), and contains nine categories: 1) Management, Business, Finance, and Administration, 2) Natural/ Applied Sciences, 3) Health, 4) Social Sciences, Education, Government, Religion, 5) Sales and Service, 6) Art, Culture, Sport, and Leisure, 7) Trades, Transport, Primary Industry, Processing, Manufacturing, Utilities, 8) Unclassified, and 9) No career expected. Also, importantly, a measure is included that indicates the first PSE program and institution by age 21 if indeed the respondent had entered PSE by then. In turn, this measure isolates the importance of STEM (Science, Technology, Engineering, and Mathematics) programs. Specifically, the five categories in this variable are: (1) university-STEM, (2) non-university-STEM, (3) university-non-STEM, (4) non-university-non-STEM, and (5) no PSE started by age 21.

Finally, we include several family measures (Carcillo et al. 2015; Tamesberger and Bacher 2014; Berloffia et al. 2016). Students' family structure at age 15 contains three categories: 1) two biological parents, 2) two parent, other type, and 3) one parent family.<sup>16</sup> We also include a continuous measure indicating the number of siblings, as family size has long been used as a measure of social capital (Byun et al. 2012; Coleman 1988).

To answer the research questions, we first conducted preliminary descriptive analyses consisting of overall summaries as well as cross-tabulations with our dependent variable. Second, we conducted a series of logistic regression models to systematically investigate the relationship between northern and rural residency and likelihood of being in a NEET state between ages 20 and 22.

## Results

### *NEET Variations across North–South and Rural–Urban Intersections*

In table 1, the results from our bivariate analyses across each of our independent variables with NEET status are shown. Preliminary north–south comparisons (not shown here) revealed that youth from northern areas and southern areas are in this NEET state at more or less the same proportion (approximately 7% to 8%; difference not statistically significant). However, once we consider the population size (i.e., rural/urban) of one’s community in the mix, a more striking finding emerges. Our location of residence variable shows a strong and significant marginal relationship with NEET status ( $p < .01$ ). Specifically, youth from northern-rural areas show the greatest difficulties with the highest proportion in the NEET category at 13%, followed by youth from southern-rural areas at 8%. Both of these are significantly ( $p < .05$ ) higher than youth from southern-urban areas at 6%; the difference is not statistically significant, however, from the percentage of NEET youth from northern-urban areas. Interestingly, several other variables also show significant marginal effects on NEET status. Our results in table 1 reveal that foreign-born ( $p < .05$ ), Indigenous ( $p < .05$ ), those with disabilities ( $p < .001$ ), low parental education ( $p < .01$ ), low parental aspirations ( $p < .05$ ), lower grades ( $p < .001$ ), lower education aspirations ( $p < .01$ ), non-PSE (post-secondary education) graduates ( $p < .001$ ), and youth from two-parent, non-biological parents ( $p < .05$ ), all show significantly higher rates of NEET.

### *Factors Explaining North–South, Rural–Urban Inequalities*

To examine the factors that might explain our location of residence differences above, we estimated a series of logistic regression models (see table 2). In Model 1, we examine the marginal relationship between northern and rural status and the likelihood of being NEET between ages 20 and 22. In subsequent models, we add key variables to investigate how other demographic, parental socio-economic, student academic ability and aspirations, as well as family structure factors may account for inequalities across northern and rural youth NEET rates. Our final model includes all factors together with our northern and rural status variable.

Results from Model 1 suggest that location of residence does have an impact on the probability of being NEET. For example, the multiple parameter Wald test indicates that location of residence does have a strong and significant impact on the likelihood of being NEET ( $p < .01$ ). Specifically, youth from southern, urban regions have a 6.4% lower probability than those from northern, rural regions to be out of school and work for half of their time between ages 20 and 22. Youth from northern, urban regions also had a significantly lower probability (at 7.8%) than northern, rural youth to be NEET ( $p < .05$ ).

In Model 2, a number of key socio-demographic variables are entered into the model. The inclusion of these measures does not remove the overall significance of the north by rural interaction. Country of birth, Indigenous status, and activity limitation show significant effects ( $p < .05$ ) on a youth's likelihood of being in a NEET state. That is, Indigenous youth, youth with an activity limitation, and youth with foreign-born parents are all more likely to be NEET between ages 20 and 22.

Model 3 includes measures of parents' education, parents' income, and parental aspirations for their children's education. As with Model 2, the inclusion of these measures does not remove the overall significance of the north by rural interaction: youth from southern, urban regions had a 5.5% lower probability than those from northern, rural regions to be out of school and work for half of the time between ages 20 and 22; while youth from northern, urban regions were also significantly less likely (8%) than northern, rural youth to be NEET ( $p < .05$ ).

Multiple parameter Wald tests indicate that parents' education and parents' aspirations for their child's education do not have significant effects on their child being NEET. In terms of parental income, however, youth from wealthier families were significantly less likely to be NEET between ages 20 and 22 ( $p < .01$ ).

In Model 4, we include a number of student academic and aspiration variables. Grades ( $p < .05$ ), PISA reading scores ( $p < .01$ ), youth occupation plans ( $p < .01$ ), and their first PSE institution and program type ( $p < .01$ ) show strong and significant effects on the probability of being NEET. When these additional factors are included in the models, the location of residence variable remains significant, suggesting that academic and aspiration differences do not likely account for any underlying regional differences in NEET rates.

Finally, in Model 5, we estimate the full model with all factors as well as an additional measure controlling for province. Once again, the location of residence variable continues to show a statistically significant and independent effect on NEET status ( $p < .05$ ).

To further grasp these differences, the predicted probabilities for northern and rural status from Model 1 (without controls) and Model 5 (with controls) are shown side-by-side in figure 1. In terms of Model 1 estimates, northern, rural youth markedly stand out from the other regions, and show the highest probability of being NEET at 12.6%, followed by southern, rural youth (7.9%), southern, urban youth (6.2%), and northern, urban youth (4.9%). For Model 5 estimates, the same pattern emerges across geographic locations as the one from the zero-order model without controls. That is, northern, rural youth show a significantly higher probability of being NEET (0.123), followed by southern, rural youth (0.077), and southern, urban (0.062), and northern, urban youth (0.054).

Table I. Proportion of NEET across youth characteristics in the YITS-A, Cycles 1 to 5 (Age 15 to 22)

	Proportion/Mean	
	Not in NEET	NEET
<b>Location of Residence</b>		**
North/Rural (ref)	0.87	0.13
North/Urban	0.95	0.05
South/Rural	0.92	0.08
South/Urban	0.94	0.06
<b>SocioDemographic</b>		
<b>Sex</b>		
Male (ref)	0.93	0.07
Female	0.93	0.07
<b>Country of Birth</b>		*
Others (ref)	0.92	0.08
Canadian born youth and parents	0.94	0.06
<b>Aboriginal Status</b>		*
Not (ref)	0.93	0.07
Aboriginal	0.88	0.12
<b>Visible Minority</b>		
No (ref)	0.94	0.06
Yes	0.91	0.09
<b>Youth has an Activity Limitation</b>		***
No (ref)	0.94	0.06
Yes	0.90	0.10
<b>Parental Variables</b>		
<b>Parental Education</b>		**
Both have high school or less	0.91	0.09
At least one has Non-University PSE (ref)	0.93	0.07
At least one has University	0.95	0.05
<b>Log of Parental Income, Age 15 (mean)</b>	11.0	10.8
<b>Parental Aspirations for Child's Education</b>		*
At least one parent feels that higher education is not important	0.89	0.11
At least one parent feels higher education is fairly important	0.93	0.08
At least one parent feels higher education is very important	0.94	0.06
<b>Student-Academic</b>		
<b>Grade at Age 15</b>		*
Grade 9 or less	0.91	0.09
Grade 10 or above (ref)	0.94	0.06
<b>Overall Mark at Age 15</b>		***
less than 60%	0.89	0.11
60% to 69%	0.90	0.10
70% to 79% (ref)	0.94	0.06
80% to 89%	0.95	0.06
90% to 100%	0.97	0.03
<b>PISA Reading Score (Warm Estimate) (26-909) (mean)</b>	546.2	513.6
<b>Educational Aspirations</b>		**
HS or less	0.88	0.12
Non-University	0.93	0.07
University (ref)	0.94	0.06
Don't Know	0.91	0.09

Table I continued next page...



Table 1 continued from previous page...

	Proportion/Mean	
	Not in NEET	NEET
<b>Occupation youth desires at age 30 (asked at age 17)</b>		
Management/Business/Finance/Administration	0.93	0.07
Natural/Applied Sciences	0.93	0.07
Health	0.94	0.06
Social Science/Education/Government/Religion (ref)	0.95	0.05
Art/Culture/Sport/Leisure	0.94	0.06
Sales/Service	0.93	0.07
Trades/Transport/Primary Industry/Processing/	0.95	0.05
Unclassified	0.89	0.11
No career expected	0.93	0.07
<b>First PSE Institution and Program by Age 21</b>		
		***
University - STEM	0.95	0.05
Nonuniversity - STEM	0.93	0.07
University - NonSTEM	0.95	0.05
Nonuniversity - NonSTEM	0.94	0.06
Had not entered PSE by Age 21	0.89	0.11
<b>Family variables</b>		
<b>Family Structure at age 15</b>		
		*
Two biological parents (ref)	0.94	0.06
Two parent, other type	0.90	0.10
One parent family	0.92	0.08
<b>Number of Siblings (0 to 4) (mean)</b>	1.8	1.8
<b>Province of Residence, Age 15</b>		
Newfoundland	0.88	0.12
Prince Edward Island	0.93	0.07
Nova Scotia	0.95	0.05
New Brunswick	0.92	0.08
Quebec	0.95	0.05
Ontario (ref)	0.93	0.07
Manitoba	0.91	0.09
Saskatchewan	0.92	0.08
Alberta	0.93	0.07
British Columbia	0.93	0.07
n	10195	698

Notes: Design-based F-tests are reported. All estimates are survey weighted using the YITS bootstrap weights.

\*  $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Table 2. Logistic regression of probability of respondent not working and not in school for half the time between age 20 and 22, YITS Cycles 1 to 5 (Age 15 to 22) Marginal effects reported

	Model 1	Model 2	Model 3	Model 4	Model 5
<b>Location of Residence</b>		**	**	*	*
North/Urban	-0.078**	-0.080*	-0.068*	-0.067*	-0.069*
South/Rural	-0.047	-0.045	-0.046	-0.039	-0.046
South/Urban	-0.064**	-0.071*	-0.055*	-0.052	-0.061*
<b>Sex</b>					
Female		0.003			0.015
<b>Country of Birth</b>			*		*
Canadian born youth and		-0.022*			-0.027*
<b>Aboriginal Status</b>			*		
Aboriginal		0.047*			0.022
<b>Visible Minority</b>					
Yes		0.017			0.010
<b>Youth has an Activity Limitation</b>			**		*
Yes		0.039**			0.024
<b>Parental Education</b>					
Both have high school or less			0.008		0.002
At least one has University			-0.008		-0.0001
<b>Log of Parental Income, Age 15</b>			-0.025**		-0.019*
<b>Overall Mark at Age 15</b>					*
less than 60%				0.022	0.014
60% to 69%				0.031*	0.032*
80% to 89%				0.005	0.004
90% to 100%				-0.015	-0.016
<b>PISA Reading Score (Warm Estimate) (26-909)</b>				-0.0002**	-0.0001
<b>Educational Aspirations</b>					
HS or less				0.009	0.006
Non-University				-0.009	-0.004
Don't Know				0.007	0.004
<b>Occupation youth desires at age 30 (asked at age 17)</b>					**
Management/Business/Finance/ Administration				0.008	0.010
Natural/Applied Sciences				0.004	0.008
Health				0.010	0.005
Art/Culture/Sport/Leisure				0.003	0.002
Sales/Service				-0.004	-0.003
Industry/Processing/ Unclassified				-0.033*	-0.029*
No career expected				0.055*	0.059**
				-0.003	-0.002
<b>First PSE Institution and Program by Age 21</b>					**
University - STEM				-0.024	-0.031
Nonuniversity - STEM				-0.014	-0.007
University - NonSTEM				-0.041**	-0.047***
Nonuniversity - NonSTEM				-0.035**	-0.035**
<b>Province of Residence, Age 15</b>					**
Newfoundland					0.037*
Prince Edward Island					0.003
Nova Scotia					-0.018
New Brunswick					-0.001
Quebec					-0.026*
Manitoba					0.006
Saskatchewan					0.011
Alberta					-0.012
British Columbia					-0.007
<b>Wald chi2</b>	23.19 (3)	59.68 (8)	82.48 (8)	202.44 (24)	292.54 (46)
<b>Log pseudolikelihood</b>	-2581.411	-2563.17	-2551.8	-2491.7861	-2446.7398
<b>Pseudo R2</b>	0.0045	0.0115	0.0159	0.039	0.0564
<b>n</b>	10,893	10,893	10,893	10,893	10,893

Notes: \* p<0.05; \*\* p<0.01; \*\*\* p<0.001; all estimates are survey weighted using the YITS bootstrap weights. Additional control variables for parental aspirations, grade, and family structure at age 15 are suppressed from this table. The

### Results for Models 1 and 5 - YITS-A Cycles 1 to 5

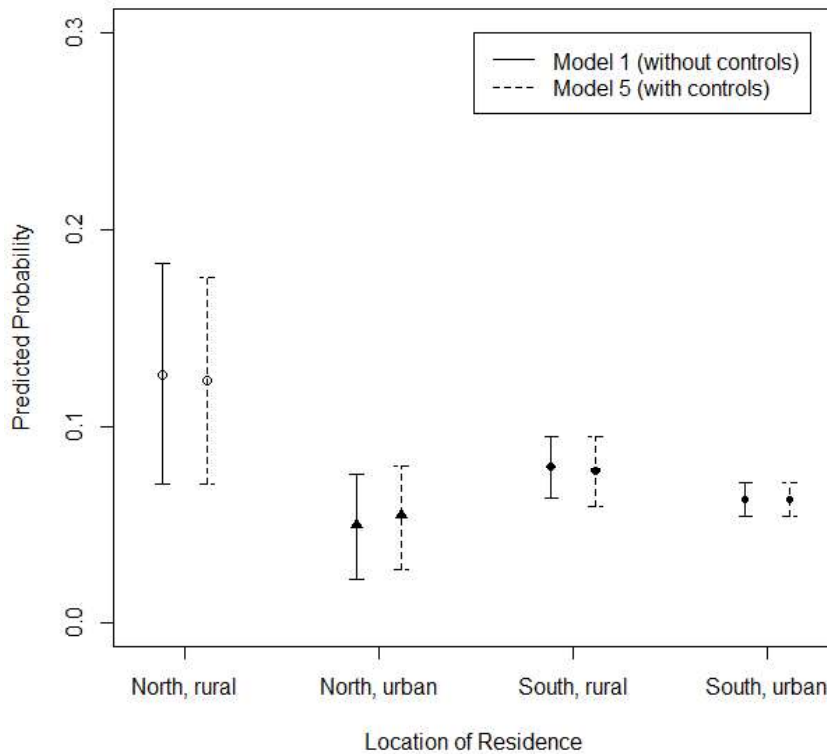


Figure 1. Predicted probabilities of NEET status by location of residence

### Discussion and Conclusions

Overall, our study contributes in two key ways to a growing number of studies around the world focusing on the problem of NEET among youth and young adults (Davidson and Arim 2019; Brunet 2018, 2019, and 2020; Musu-Gillete et al. 2016; Wong 2016; LaRochelle-Cote 2013; Benjet et al. 2012; Marshall 2012; Aud et al. 2011), as well as recent sociological research that is shedding light on Canada's northern and rural inequalities (Hillier et al. 2020; Pizarro Milian et al. 2020; Hango et al. 2019; Zarifa et al. 2018). First, our rural sociological approach to the issue of NEET examines regional inequalities and factors that might help explain such inequalities. Indeed, our models uncover significant disparities for youth from northern, rural regions of Canada, with respect to participation in the labour market and school attendance. Youth from southern, urban regions in Canada showed the lowest probabilities of entering into a situation of NEET, while youth from northern, rural regions stood out as the group most at risk of entering NEET. Put differently, youth from northern, rural regions are at least *twice* as likely as their urban counterparts from either the south or the north to be NEET in their early twenties.

Second, our results also reveal that these regional differences in NEET status cannot simply be explained away by the socio-demographic characteristics, educational experiences, parental socio-economic status, or family structures of youth from these regions. Rather, our northern/rural variable remained statistically significant across all models, suggesting that other factors related to those regions may account for these differences in NEET.

One possibility that may account for these differences is the disparate labour market opportunities for youth in northern and rural Canada (Southcott 2003). The northern and rural regions of Canada have comparatively fewer employment opportunities than those readily available in southern, urban areas of the country. Securing stable employment as well as employment that is commensurate with one's field or level of education has become ever more difficult in northern economies (Hillier et al. 2020; Andres and Licker 2005; Dupuy, Mayer, and Morrisette 2009). As such, encouraging new employment opportunities may be critical to reducing NEET among northern, rural youth in their early twenties.

A second, and related, explanation for higher northern, rural NEET rates might be attributable to comparatively fewer post-secondary education opportunities for youth in these northern and rural areas of Canada (see Hango et al. 2019; Zarifa et al. 2018). Youth who live in northern and rural Canada have fewer local PSE institutions as well as a smaller gamut of degree and diploma majors/fields of study that are offered by community colleges and universities compared to southern, urban youth. In fact, while some universities in the northernmost parts of Canada's provinces offer a handful of Master's and doctoral programs, very few universities offer medical programs, veterinary programs, law schools, and dentistry programs (AUCC 2015). Enhanced post-secondary options are also highly warranted.

Moreover, it is important that policy efforts directed toward enhanced local education opportunities coincide with enhanced local employment opportunities to avoid local human capital shortages. Research on Canada's northern and rural brain drain, and the skills composition of the workforce in northern, rural regions, suggests that if ample local employment opportunities are not present, highly-skilled individuals from remote regions in Canada will continue to migrate to urban areas to obtain jobs commensurate with their skills and credentials (Hillier et al. 2020; Pizarro Milian et al. 2020).

Our findings set the stage for policy development in two key ways. First, our study contributes to an apparent gap in this area and lays an empirical foundation for developing policies geared toward reducing NEET rates in northern, rural Canada. Our results above suggest that one-size-fits-all policies aimed at reducing provincial and/or national NEET rates are unlikely to be effective. More variation exists within these regions, and targeted interventions that would account for the

north–south and urban–rural intersections might be more effective in reducing regional as well as aggregated patterns of NEET.

Second, we have identified the characteristics of young adults who are more likely to be in NEET. For northern and rural municipalities, who are looking to enhance labour participation rates and skilled workforces, and to reduce youth out-migration (Moazzami 2015), accurately understanding the background factors that lead some youth to become inactive in employment and educational pursuits as we have done here is a critical first step to effective local policy development. That is, by better understanding who is more likely to become inactive, students, parents, policy makers, and stakeholders will be better equipped to implement and execute appropriate intervention strategies aimed at maintaining a productive workforce.

Finally, while our study establishes a much-needed empirical foundation for understanding the challenges facing northern and rural youth and their risks of entering NEET, research and policy development in this area (and many others related to the education and early workforce outcomes of Canadian youth in the social sciences) would greatly benefit from an ongoing collection of new Youth in Transition Study cohorts. Not only would this serve to renew our knowledge of the longitudinal processes and offer much-needed, timely evidence to support interventions, but it would also offer important opportunities to monitor changes to these processes over time.

### **Acknowledgements**

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### **Notes**

1. The opinions expressed in this article are solely those of the authors and should not be construed as those held by Statistics Canada.
2. It is important to note that in some circumstances, youth may choose to be in NEET, and it is not the result of social exclusion or disadvantage. There is heterogeneity among the circumstances of NEET youth. Some young people such as young parents may make a conscious and positive decision not to pursue education, employment, or training. At the same time, it is important for policy-makers to also understand that those not in NEET may be more in need of interventions and supports (see Yates and Payne 2006).

3. While Yates and colleagues (2011) noted that the NEET status of young men and women differed greatly by their aspirations and expectations in early education, Berloff, Matteazzi, and Villa (2016) and Schoon (2014) found the effect of gender on NEET status varied depending on the working characteristics of parents.
4. In addition, existing studies (e.g., Davidson and Arim 2019) suggest that an interaction between gender and children presence in the home would also help explain gender differences across NEET status. Unfortunately, our data do not have sufficient sample sizes that would allow us to estimate this relationship.
5. While these studies suggest that household composition has an impact on youth's likelihood of becoming NEET, the reverse might also be the case. Some youth may return to live with their parents after entering NEET.
6. Interestingly, it would appear that the consideration of race in discussions of NEET has occurred exclusively in US literature (see Musu-Gillette et al. 2016 and Aud et al. 2011). With the exception of the outcomes of Hispanics, the findings of Aud et al. (2011) mirror those of Musu-Gillette and colleagues (2016) (Hispanics in the former study were equally as disadvantaged as Blacks, American Indians, and Alaskan Natives). Racial/ethnic discussions are largely non-existent in the NEET literature from other countries. Still, the analyses presented in this article will consider racial/ethnic effects on the propensity of becoming NEET.
7. In the case of Japan, Korea, and the US, proficiency levels failed to predict the share of NEET youths.
8. The authors found that adolescents with lower levels of reading in their final year of compulsory education went on to have longer bouts of unemployment in comparison to those with higher skill levels (Caspi et al. 1998).
9. Further, the relative distribution of Indigenous to non-Indigenous population ranges across the provinces from as low as 13 percent in Northern Ontario to as high as 87 percent in Northern Saskatchewan (see Allen and Perrault 2015:30-31).
10. The author also concluded that "area deprivation," defined as the number of area-based interventions available to youth, did not directly influence the chances of NEET. The author concedes, however, that individual-level interventions aimed at improving educational attainment, or alleviating parental unemployment, may have an indirect effect on NEET status (Raffe 2003: 6).
11. Our NEET category includes those who were enrolled in part-time education. Unfortunately, the YITS data do not include monthly indicators for studying part-time to handle these individuals differently. However, our condition of full-time enrolment combined with being employed during the period mentioned above, does serve to sort out those youths who are not engaged fully in the education system nor working for a substantial period of time in their early 20s. Despite the inclusion of a minority of youth who may have been studying part-time during this period, it is important to remember that these part-time also exhibited weak labour force attachment, as they were not employed for 18 of 36 months between ages 20 and 22.

12. Unfortunately, small cell counts in the YITS prevented us from estimating interaction terms with our location of residence variable, nor were we able to estimate separate models to further understand how the relationships between background characteristics and NEET status might vary across regions.
13. In 2018, Statistics Canada approved the provincial North variant we use here as a recommended classification. It represents the northernmost parts of Newfoundland and Labrador, Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia. By contrast, the provinces of Prince Edward Island, Nova Scotia, and New Brunswick are classified to be 100% Southern. Additional details on the provincial North variant can be found in Statistics Canada (2018).
14. For further details, see <http://www.statcan.gc.ca/pub/92-195-x/2011001/geo/cma-rmr/def-eng.htm>.
15. Unfortunately, we did not have sufficient sample sizes to run models on only the Indigenous population to further explore the relationships among the Indigenous populations in northern regions. At the same time, the YITS data include only off-reserve Indigenous youth, so our analyses may underestimate the degree to which Indigenous education and employment inequalities in the north might help explain any northern and rural geographic differences in NEET status.
16. We coded the variable in this way so that the effect of biological parents (i.e., the absence of marital transitions) could be isolated, but also to separate the remaining respondents into two parent versus one parent situations, given the relative differences of resources and monitoring that differentiates two parent types from one parent types. Also, we did not want to have a dichotomy (i.e., combine Categories 1 and 2) as that would not be as accurate a representation of contemporary family structures such as blended families that are captured by Category 2. At the same time, Category 2 could not be differentiated further because of small sample sizes.

**Appendix A. Distributions of the Analysis Variables from the YITS-A Cohort, Cycles 1 to 5 (Age 15 to 22)**

	<b>Proportion/ Mean</b>	<b>Standard Error</b>
<b>NEET Status</b>		
NEET	0.068	0.004
Not in NEET	0.932	0.004
<b>Location of Residence</b>		
North/Rural (ref)	0.037	0.007
North/Urban	0.048	0.010
South/Rural	0.222	0.016
South/Urban	0.694	0.018
<b>Sex</b>		
Male (ref)	0.497	0.008
Female	0.503	0.008
<b>Country of Birth</b>		
Others (ref)	0.259	0.011
Canadian born youth and parents	0.741	0.011
<b>Aboriginal Status</b>		
Not (ref)	0.972	0.002
Aboriginal	0.028	0.002
<b>Visible Minority</b>		
No (ref)	0.881	0.009
Yes	0.119	0.009
<b>Youth has an Activity Limitation</b>		
No (ref)	0.877	0.005
Yes	0.123	0.005
<b>Parental Education</b>		
Both have high school or less	0.270	0.008
At least one has Non-University PSE (ref)	0.389	0.007
At least one has University	0.341	0.009
<b>Log of Parental Income, Age 15 (mean)</b>	10.996	0.010
<b>Parental Aspirations for Child's Education</b>		
At least one parent feels that higher education is not important or only	0.052	0.004
At least one parent feels higher education is fairly important	0.176	0.006
At least one parent feels higher education is very important	0.776	0.007
<b>Grade at Age 15</b>		
Grade 9 or less	0.139	0.006
Grade 10 or above (ref)	0.861	0.006
<b>Overall Mark at Age 15</b>		
less than 60%	0.077	0.004
60% to 69%	0.180	0.006
70% to 79% (ref)	0.338	0.007
80% to 89%	0.320	0.007
90% to 100%	0.085	0.004
<b>PISA Reading Score (Warm Estimate) (26-909) (mean)</b>	544.027	1.676
<b>Educational Aspirations</b>		
HS or less	0.057	0.004
Non-University	0.213	0.007
University (ref)	0.646	0.008
Don't Know	0.084	0.004

Appendix A continued next page...



	Proportion/ Mean	Standard Error
<b>Occupation youth desires at age 30 (asked at age 17)</b>		
Management/Business/Finance/Administration	0.074	0.004
Natural/Applied Sciences	0.133	0.005
Health	0.125	0.004
Social Science/Education/Government/Religion (ref)	0.171	0.005
Art/Culture/Sport/Leisure	0.096	0.004
Sales/Service	0.096	0.004
Trades/Transport/Primary Industry/Processing/ Manufacturing/Utilities	0.080	0.004
Unclassified	0.083	0.004
No career expected	0.144	0.005
<b>First PSE Institution and Program by Age 21</b>		
University - STEM	0.098	0.004
Nonuniversity - STEM	0.094	0.004
University - NonSTEM	0.269	0.007
Nonuniversity - NonSTEM	0.307	0.007
Had not entered PSE by Age 21	0.231	0.007
<b>Family Structure at age 15</b>		
Two biological parents (ref)	0.725	0.007
Two parent, other type	0.121	0.005
One parent family	0.155	0.005
<b>Number of Siblings (0 to 4) (mean)</b>	1.770	0.018
<b>Province of Residence, Age 15</b>		
Newfoundland	0.021	0.001
Prince Edward Island	0.006	0.000
Nova Scotia	0.034	0.001
New Brunswick	0.026	0.001
Quebec	0.219	0.005
Ontario (ref)	0.376	0.007
Manitoba	0.038	0.001
Saskatchewan	0.040	0.001
Alberta	0.111	0.003
British Columbia	0.130	0.004
n	10893	

Notes: All estimates are survey weighted using the YITS bootstrap weights.

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