

INCREASING THE PARTICIPATION OF RURAL
CANADIANS IN POST/SECONDARY EDUCATION

by

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Abstract

This study examines the rural-urban post-secondary education participation gap in Canada. Using data collected in the Access and Support for Education and Training Survey (ASETS) released in 2009, this research investigates the barriers to post-secondary education faced by rural students, and whether these barriers differ from those experienced by other Canadians. A literature review, crosstab analysis, and logistic regression are used to help assess four policy alternatives and the status quo. To increase rural participation in post-secondary education, this study recommends the creation of an early intervening, outreach counselling program for rural high school students.

Keywords: Canada-Post-Secondary Education; Rural Canadians; Aboriginal Peoples; Low-Income Households; First-Generation Learners; Canada-Student Financial Assistance; Canada-High School

Executive Summary

Despite its vast geographic size, Canada's population is increasingly concentrated in the country's largest urban areas. As the populations of Canadian cities swell, the divide between urban and rural residents becomes more visible. This study focuses upon the different rates that urban and rural Canadians participate in post-secondary education. The rural/urban post-secondary education gap is a long-persisting problem for education policy-makers, and its rectification is an important first step to the economic revitalization of Canada's rural regions.

This research attempts to explain why rural Canadians do not attend post-secondary education at the same rate as urban residents and to identify effective public policies to reduce this gap. Using data from the Access and Support to Education and Training Survey, released in 2009, I begin by identifying the antecedents and determinants to post-secondary education for rural students, and I then formulate potential policy actions to improve rural participation. The policy alternatives and the status quo are then evaluated using criteria of cost (initial and operating), effectiveness, political acceptability (federal and provincial/territorial), administrative ease, and equity. Ultimately, this study recommends that the federal government, in conjunction with non-government organizations, establish outreach programs in rural communities to help rural learners overcome barriers to education beyond the high school level.

Dedication

To my mom

... for supporting me throughout my life, despite my seemingly illogical choices at times.

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Table of Contents

| | |
|-------------------------------------------------------------------------------------------------|-----------|
| Approval..... | ii |
| Abstract | iii |
| Executive Summary | iv |
| Dedication | v |
| Acknowledgements | vi |
| Table of Contents | vii |
| List of Figures | ix |
| List of Tables..... | x |
| Glossary | xi |
| 1. Introduction..... | 1 |
| 2. Policy Problem and Background..... | 3 |
| 2.1. Importance of Education | 5 |
| 2.1.1.The Changing Face of Labour | 5 |
| 2.1.2.Earnings Premiums and Unemployment | 7 |
| 2.1.3.Public Benefits | 9 |
| 2.1.4.Education and Social Improvement | 9 |
| 2.2. Education and the Future of Canada’s Rural Communities | 11 |
| 2.2.1. Rural Migration | 11 |
| 2.2.2. Rural Returns on Education..... | 12 |
| 3. Methodology and Data | 14 |
| 3.1. Rural Defined | 14 |
| 3.2. Sample Selection | 15 |
| 3.3. Main Hypothesis and Literature Review | 16 |
| 3.3.1. Dependent Variable and Measure | 17 |
| 4. Results of the Statistical Analysis | 31 |
| 4.1. Crosstab Analysis | 31 |
| 4.1.1. Aboriginal Peoples and PSE education..... | 35 |
| 4.2. Results of the Logistic Regression Analysis | 37 |
| 4.2.1. Predictor Variable: Regional Unemployment | 41 |
| 4.2.2. Predictor Variable: Parents’ Education (PSE Experience)..... | 41 |
| 4.2.3. Predictor Variable: Relationship between Education and Success (Youth Responses)..... | 42 |
| 4.2.4. Predictor Variable: High School Average..... | 42 |
| 4.2.5. Predictor Variable: Gender | 43 |
| 4.2.6. Predictor Variable: Parental Expectations | 43 |
| 4.2.7. Predictor Variable: Combined Income of Parents..... | 44 |

| | |
|----------------------------------------------------------------------------------------------------|-----------|
| 4.2.8. Predictor Variable: Aboriginal Peoples | 44 |
| 4.3. Summary of Findings | 45 |
| 4.3.1. Policy Implications | 46 |
| 5. Policy Alternatives..... | 47 |
| 5.1. Option One: Status Quo..... | 48 |
| 5.2. Options Two and Three: Funding | 50 |
| 5.2.1. Repayable Assistance: Reassess the Assessment Process | 50 |
| 5.2.2. Non-Repayable Assistance: Direct Bursaries to Rural Learners | 52 |
| 5.3. Option Four: Strengthening the Base, Improving High School Performance and Retention | 52 |
| 5.4. Option Five: Outreach Programs | 54 |
| 6. Policy Option Assessment | 57 |
| 6.1. Status Quo | 58 |
| 6.2. Funding | 59 |
| 6.2.1. Repayable Assistance | 59 |
| 6.2.2. Non-Repayable Assistance | 60 |
| 6.3. Investment in High Schools..... | 61 |
| 6.4. Outreach Programs | 62 |
| 6.5. Summary | 63 |
| 7. Conclusion..... | 66 |
| 8. Appendices | 68 |
| A. Hypotheses and Variable Names | 68 |
| B. Access and Support to Education and Training Survey questions and Possible Responses..... | 69 |
| C. Data Problems and Limitations | 70 |
| D. ASETS Sample Weighting | 73 |
| E. Regression Results | 74 |
| F. Evaluation Criteria | 76 |
| G. Correlation Matrix | 77 |
| H. Variance Inflation Factor (VIF) Test | 77 |
| Bibliography | 78 |
| Works Cited | 78 |
| Works Consulted | 82 |
| Websites Consulted | 83 |

List of Figures

| | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Figure 2-1: Rural population as a % of Canada's total population | 6 |
| Figure 2-2: Median 2005 earning, full-time earners, by education, both sexes, ages 25 to 64, by province | 8 |
| Figure 3-1: Distribution of responses to the ASETS question "How far do you hope your child to go in school; urban and rural, by response category | 20 |
| Figure 3-2: Distribution of youth responses to the question, "There is a strong relationship between education and success in life"; by response category | 22 |
| Figure 3-3: Frequency distribution, high school average of youth in last year of high school, by grade category | 23 |
| Figure 3-4: Frequency distribution, combined parental income of youths aged 19-2, by income category | 24 |
| Figure 3-5: Regional Distribution of (1) urban ASETS respondents compared to actual urban population as % of total Canadian population; (2) rural ASETS respondents compared to actual rural population as % of total Canadian population..... | 27 |
| Figure 4-1: Urban and Rural PSE participation rates, by region, 19-24 year olds | 31 |
| Figure 4-2: Urban and rural PSE participation rates, by combined annual parental income categories | 32 |
| Figure 4-3: Urban and rural PSE participation rates, by youth respondents' grades in their final year of high school | 33 |
| Figure 4-4: PSE participation rates, urban and rural, by Aboriginal/non-Aboriginal identification and gender | 36 |
| Figure 4-5: PSE participation rates, both urban and rural respondents, by high school grade category | 37 |

List of Tables

| | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Table 2-1: Post-secondary participation by urban/rural status at age 21 | 4 |
| Table 2-2: Increase/decrease in employment, by industry, 1987 to 2007 | 6 |
| Table 2-3: Comparison of median % earnings premiums for full-year, full-time earners by education beyond the high school level, age group 25 to 64, selected large and small communities, 2006 | 13 |
| Table 3-1: Independent variables, by category | 19 |
| Table 3-2: Regional PSE participation rates, urban and rural | 25 |
| Table 3-3: Regional unemployment rates and classifications; mean average for the years 2003 to 2008..... | 26 |
| Table 4-1: PSE participation rates, by level of agreement to the statement “There is a strong link between education and success in life”, by response category..... | 34 |
| Table 4-2: PSE participation rates, by parental PSE experience, by response category | 35 |
| Table 4-3: Summary of Logistic Regression model, unstandardized predictor values, odds ratio, and probabilities, Urban and Rural samples | 39 |
| Table 5-1: Policy Options..... | 48 |
| Table 5-2: Average apartment monthly rental prices, select cities in Ontario..... | 51 |
| Table 6-1: Policy Option Assessment Matrix | 57 |
| Table 6-2: Potential non-repayable funding options | 60 |

Glossary

| | |
|-------|-------------------------------------------------------|
| ASETS | Access and Support to Education and Training Survey |
| CSLP | Canada Student Loans Program |
| GDP | Gross domestic product |
| K-12 | Kindergarten to Grade 12 |
| MoE | Ministry of Education (Ontario) |
| NGOs | Non-government organizations |
| OECD | Organisation of Economic Co-operation and Development |
| OSAP | Ontario Student Assistance Program |
| PSE | Post-secondary education |
| RST | Rural and small town |
| SFA | Student financial assistance |

1. Introduction

Education has been, and will increasingly be, an important determinant of the overall economic success of Canada. The need to maintain, and in some areas improve, Canadian education outcomes is further underscored when considering the changing demands of the labour market. Education beyond the high school level has never been as important as it is today, largely the result of globalized industries and the shift towards a knowledge-based labour market. Canada has broadly recognized this shift and has been successful in providing educational opportunities for its citizens.

In comparison to other western nations, Canada's educational performance is commendable. In 2007, Canada ranked first among OECD countries in having the highest share of 25-34 year olds with tertiary education (OECD 2009). More Canadians have completed post-secondary studies today than ever before. The federal government, in conjunction with the provinces and territories, has long-established student loan and grants programs that provide non-repayable and repayable financial aid packages to eligible Canadians. In addition, post-secondary institutions provide a number of financial benefits based on both merit and need. Yet, despite the relative success of Canada's overall post-secondary education (PSE) performance, significant gaps in post-secondary participation remain.

Students from low-income families are less likely to seek post-secondary education than students from high-income families. In 1999, just 25% of 19-year old students from households with income in the bottom quartile attended university, compared to 46% of those from the highest income quartile (Zeman 2008). Even greater discrepancies can be found in educational statistics for Canada's Aboriginal students. Compared with non-Aboriginal Canadians, Aboriginal peoples are twice as likely not to complete high school and are only one-third as likely as non-aboriginal people to have a university degree (Berger and Parkin 2009). These gaps in educational outcomes rightly command the attention of policy-makers, as these inequities have economic and social

consequences. This study will focus on another of Canada's sub-groups with comparatively low rates of PSE participation, those from Canada's rural communities.

2. Policy Problem and Background

Rural youth are much less likely than urban youth to seek post-secondary education, with only 65% pursuing PSE compared to 82% of their urban counterparts (Shaienks and Gluszynski 2007). This trend is particularly troubling when discussing the future of Canada's rural communities. As farming, manufacturing, and primary resources industries decline as a share of total employment, and urban migration intensifies, Canada's rural communities are struggling to maintain population and human capital. To enhance competitiveness and facilitate the development of new economic opportunities, Canada's rural communities need to encourage and support those with innovative ideas— people who commonly have post-secondary education. The low-skilled jobs that have long dominated Canada's rural employment sector are slowly fading away in favour of higher-skilled employment. A 2004 report produced by the Government of Canada shows that nearly two of every three jobs created between 2004 and 2008 would require some form of post-secondary education (Begergon et al. 2004). The survival of Canada's rural regions is reliant on the ability of small communities to develop idea-driven, knowledge-based industries that demand skilled workers. Accordingly, Canadian education policy-makers must strive to ensure that rural youth have the same opportunities to gain the skills and education to fulfil these labour demands and profit in the modern economy. The importance of PSE is growing, and the gap between rural and urban youth participation hinders future development of many rural Canadian communities.

Two major movements characterize the importance of this policy problem. First, the shift towards knowledge-based economies requires a higher-skilled workforce. Second, changing demographics, in both urban and rural areas, are going to strain Canada's economy over the upcoming years, and increasing economic productivity will be imperative to sustain the level of public services to which the country has grown accustomed.

The types of PSE chosen by rural and urban youths differ.

Table 2-1: Post-secondary participation by urban/rural status at age 21

| | <i>University</i> | <i>Non-University</i> |
|-------------|-------------------|-----------------------|
| Urban Youth | 58% | 18% |
| Rural Youth | 46% | 21% |

Source: Looker, 2009

Urban student are more likely to participate in university education, while rural youth are slightly more likely to participate in non-university education, which includes colleges, trade and vocational schools, and private PSE institutions. This is of particular concern as much of the new growth in jobs will be in fields such as health, natural and applied sciences, the social sciences, education, and government fields requiring a university degree. Additionally, two-thirds of the projected retirements will occur in existing jobs that require higher education, with the greatest number of vacancies requiring university degrees (Berger, Motte, and Parkin 2007). Sustaining these services will require a qualified pool of replacements given the attrition of baby-boomers in the workforce. If Canadian governments are going to be able to at least maintain the level of services provided now, the country will have to produce more (output) with less (labour).

Since 1984, productivity growth in Canada has declined to less than half of what it was in the previous twenty years (Harris 2010). Perhaps as important, productivity growth consistently trails behind that of the U.S., Canada's most important ally and benchmark standard. In comparison to the United States from 2000 to 2008, labour productivity in Canada's business sector increased at less than one-third of the US pace (Statistics Canada, 2009). Education and the development of highly skilled labour are an important foundation for Canada's ability to increase national productivity. Increasing human capital complements investments in physical capital (i.e. machinery and equipment, infrastructure, and buildings) and innovation (i.e. the ability to turn knowledge into new and improved goods and services). An important first step in fostering a labour environment that generates productivity gains is to increase national education outcomes. In addition to the development of physical capital and innovation, productivity growth will come through the ongoing development of skilled labour in Canada.

Comparative urban-rural college participation rates should not satisfy educational policy-makers in Canada. Although the future of Canada's rural communities is reliant

on a number of factors, most notably their ability to develop modern labour markets, improving rural PSE participation overall is a crucial objective of any revitalization strategy. The gap between university-bound students should draw the attention of those seeking to not only maintain Canada's rural communities, but also to encourage their growth.

This study begins by examining those factors that affect the decisions of rural and urban youth regarding PSE participation. Identifying what influences rural youth in this decision-making process is the first step to creating policy options that will help guide more students towards PSE. The study builds upon its empirical findings in formulating and evaluating alternative policy options to address the rural educational gap.

2.1. Importance of Education

In addition to the benefits relating specifically to the future of Canada's rural communities and national productivity, increased education carries broader benefits.

2.1.1. The Changing Face of Labour

The global workforce effectively engaged in international trade has nearly doubled since the fall of communism – due to China's move to capitalism, India's decision to enter the global trading system, and the progress of other developing nations in entering the manufacturing and resource sectors. Dubbed “The Great Doubling” by Harvard economist Richard Freeman, the increase in the global labour pool effectively engaged in international trade puts downward pressure on semi-skilled and low-skilled wages in all advanced countries (Freeman 2006). In response, advanced countries such as Canada have stressed the development of high-skilled knowledge- and technology-based economies in order to remain globally competitive. Consequently, less-skilled employment in advanced nations, particularly in manufacturing and resource industries, is decreasing relative to high-skilled employment.

Canada, like all other Western nations, has seen a steady shift away from primary, labour-intensive industries to high-skilled, idea-driven industries that require a knowledgeable and trained workforce.

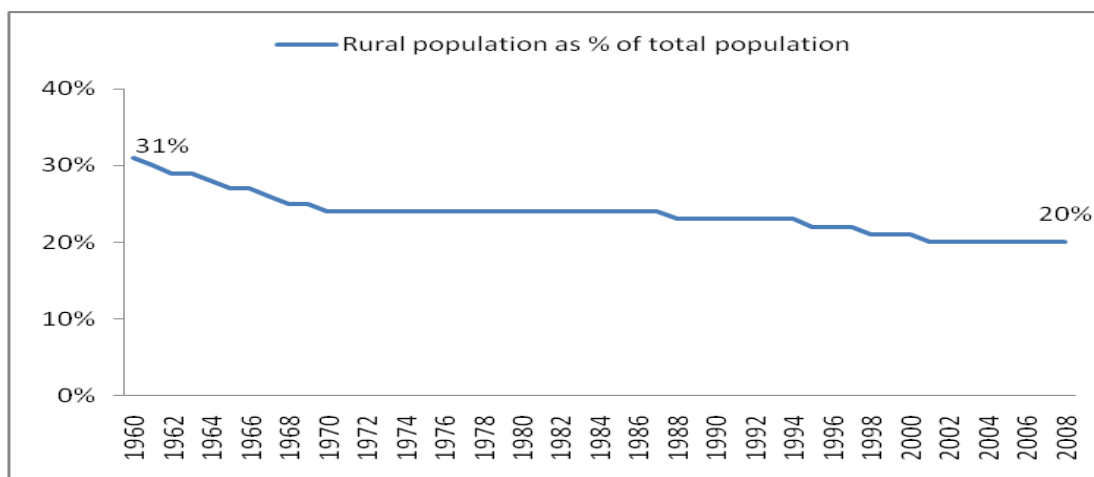
Table 2-2: Increase/decrease in employment, by industry, 1987 to 2007

| Increase | |
|-------------------------------------------------|--------|
| Business, building and other support services | 157.6% |
| Professional, scientific and technical services | 132.1% |
| Health and social assistance | 60.3% |
| Manufacturing | 0.2% |
| Agriculture | -27.4% |

Source: Statistics Canada, *Labour Force Survey 2009*

Employment in agriculture, certain manufacturing, and other primary industries that have historically dominated rural communities is stagnant or declining (see Table 2.1). Fewer people are working in these industries today than in the 1960s. Between 1961 and 2006, the number of workers in agriculture declined by over 20%, and employment in other primary sectors declined by 5% (CANSIM, Table 282-0008). Manufacturing employment has also become a less important sector in terms of employment. Manufacturing employment, as a share of total employment for all industries within Canada, fell to 13.7% in 2005, the lowest since 1976 (Kowaluk 2006). The industries that have long-provided rural employment are in decline. Conversely, those industries that experienced the largest increases over the twenty-year period 1987-2007 tend to demand higher-skilled workers. These changes in labour demand in turn drove population shifts. The population of rural communities in comparison to urban centres has steadily declined since 1960 – and before (see Figure 2.1).

Figure 2-1: Rural population as a % of Canada's total population



Source: World Development Indicators

Note: Rural communities are defined as those with under 1000 people

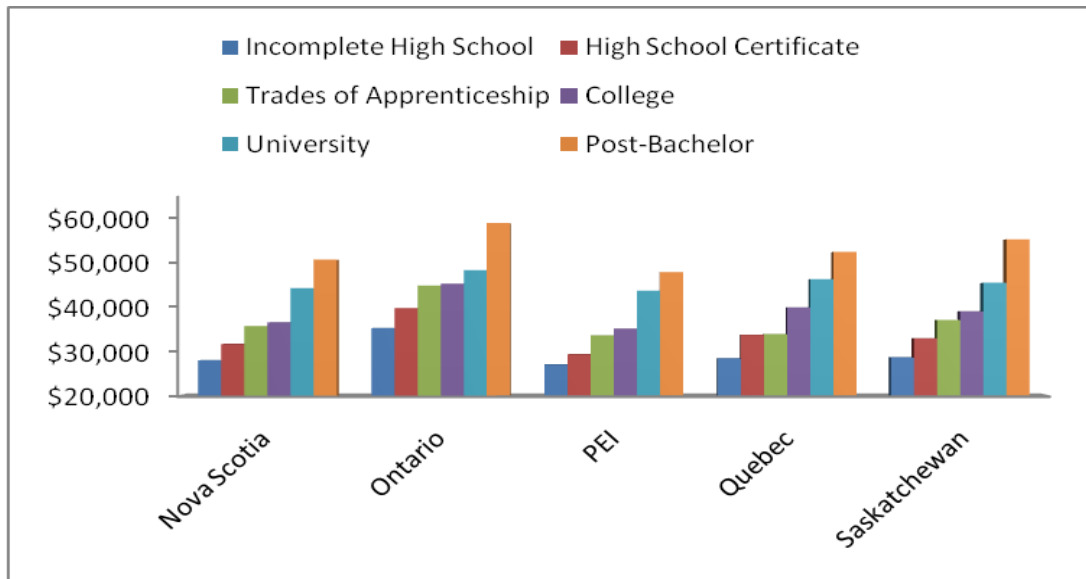
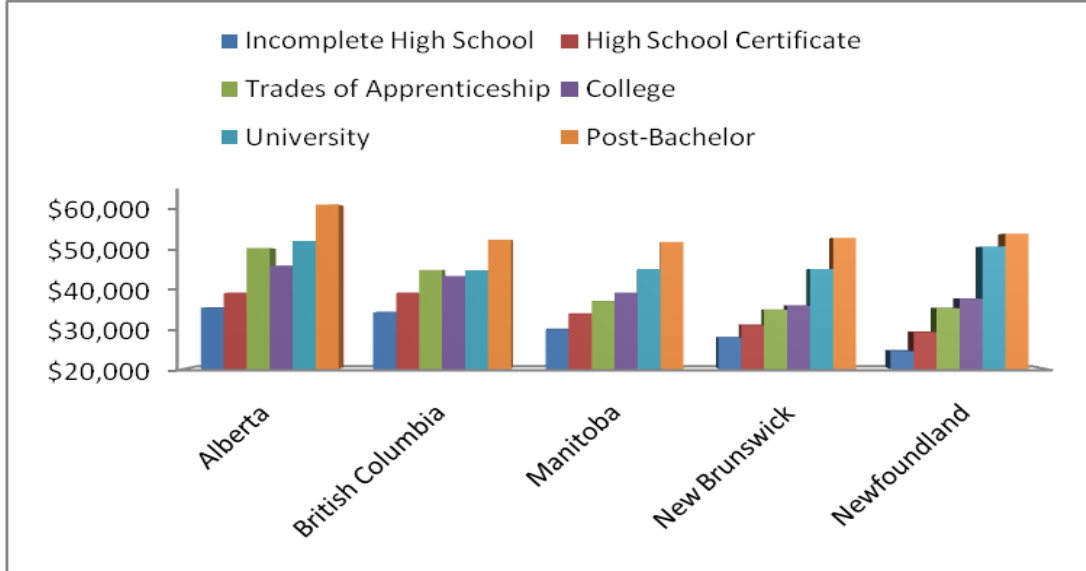
Yet, between 1981 and 2006, rural Canadian communities with a lower than average share of post-secondary graduates declined by 10%, while communities with a higher than average share of post-secondary graduates grew by 16% (Alasia 2010). Communities that have thrived are those that have been able to diversify their economies and establish a demand for talented, skilled labour. Creating local demand for skilled and educated labour further encourages rural youth to attend PSE and supply local markets with talented labour. Increasing the demand for skilled labour in rural areas stimulates increases in the supply of trained workers.

These new demands challenge Canada's post-secondary education infrastructure. The skills and knowledge needed to contribute effectively to the modern economy and society are predominately acquired by means of higher education. Given its importance, Canadian government leaders and policy-makers must ensure that post-secondary education is available to all willing and able Canadians.

2.1.2. Earnings Premiums and Unemployment

The benefits of education, in terms of increased earnings and higher rates of employment, are consistent across Canada and have been well documented. Additional levels of educational achievement result in higher earnings, both on a yearly basis as well as over a lifetime of employment. In Canada, those with college diplomas earn almost 15% more than workers with only a high school education; while those with university degrees earn almost 50% more than high school graduates (Berger and Parkin 2009). These education returns are steady across Canada. A pan-Canadian scan of income rates at the various levels of education shows comparable patterns across provinces. Figure 2-2 shows the annual median earnings by various education levels for those aged 25 to 64.

Figure 2-2: Median 2005 earning, full-time earners, by education, both sexes, ages 25 to 64, by province



Source: Statistics Canada, *Income Earnings and Highlight Tables* 2006

Although median income varies somewhat across provinces, the absolute earnings increases with each additional level of education are similar. It is also important to consider that these figures present annual earnings and do not reflect lifetime earning disparities between each level of education. Over the course of forty years, a college graduate will earn \$394,000 more than a high school graduate, while a bachelor's degree holder will earn approximately \$745,800 more than a high school graduate (Berger and

Parkin 2009). The lifetime returns to education highlight the potential personal financial benefits of post-secondary education.

The achievement of higher education also mitigates the likelihood of unemployment. Canadian workers without a high school diploma are two and half times more likely to be unemployed than are those with a bachelor's degree (Berger and Parkin 2009). Those who have higher levels of education are better trained and better able to learn new skills, or adapt their existing skills, in order to remain employed or find new employment. Additionally, the achievement of post-secondary credentials provides potential new employers better information on the qualifications and skills of applicants, and distinguishes candidates from those with lower levels of education. Education thus yields high returns on education in relation to income and employment security.

2.1.3. Public Benefits

In the United States, extensive research has been conducted into the so-called 'public' benefits of education. Public benefits are economic, fiscal, or labour market effects beyond those accruing to the individual (Institute for Higher Education Policy 1998). For example, individuals with higher levels of education generally contribute more to the tax base due to their higher income (Mortenson 1996). Additionally, in the U.S., increases in the education of the workforce have contributed to enhancing national productivity. Education contributes to the development of human capital and innovation, both of which are key determinants of national productivity growth. From the Second World War until the 1980s, the US had enjoyed a clear productivity advantage over nations ravaged by the war. However, by the 1990s, other countries had finally rebuilt their economies and built their productive and technological capabilities. Fortunately for the US economy, educational attainment offset what would have been a large relative decline in productivity for the period between the 1970s and 1990s (Decker et al. 1997).

2.1.4. Education and Social Improvement

Aside from the earning returns, post-secondary education drives a number of other social indicators. Post-secondary completion is one of the most important ways

that individuals can improve their circumstances, increase the quality of life for their families, and better contribute to their communities (Berger and Parkin 2009). In addition, the level of parental education has been identified as a key determinant of PSE success for the youth (Finnie et al. 2010). In this sense, PSE yields inter-generational benefits as parents with higher education levels are more likely to encourage and expect PSE participation of their children.

Individuals with higher education are also more mobile. The rate of out- and in-migration to Canada's rural areas are much higher for those with university-level and post-graduate education (Rothwell et al. 2002), suggesting that those with higher levels of education have more opportunity to relocate to where they want to live.

Canada's Aboriginal communities offer the most salient example of the benefits of education. Aboriginals in Canada, on average, perform very poorly in comparison with non-Aboriginal Canadians in many socioeconomic dimensions, including those related to health, income, and education. Among the many proposed explanations and solutions put forth to help close these Aboriginal/non-Aboriginal gaps, education figures prominently. Marginalized communities, such as Canada's Aboriginal peoples, can escape poverty only through an 'educational transformation' (Richards 2008).

The benefits of education can also be seen elsewhere. Increased levels of education have been documented to reduce crime and incarceration rates (Mauer 1994). Civic involvement and social cohesion have also been shown to increase with years of education (Putnam 1996; NCES 1996). Finally, improved health and life expectancy (Lleras-Muney 1995; Feldman et al. 1989) and lower rates of drug abuse (Lleras-Muney and Lichtenberg 2002) are positively correlated to higher rates of education.

In summary, important personal, public, and social benefits accrue when individuals go on to post-secondary education. Canadians have enjoyed these benefits as much as, if not more than, other developed nations. Yet despite the fact that more Canadians today have some form of PSE experience than ever before, large participation rate gaps persist among socioeconomic groups.

2.2. Education and the Future of Canada's Rural Communities

Despite their economic decline and slow population growth, Canada's rural areas remain a vital part of the country's future. Canada's agriculture industry will continue to play an important role in the future of the country, as it produces food for both domestic consumption and export, as well as national food security. In addition, resource-based industries, particularly those that produce energy such as oil and hydroelectricity, are the backbone of Canadian international exports. Like those associated with the 'modern' economy, these industries increasingly demand high-skilled labour to ensure their futures. For these reasons, in addition to the historical and cultural significance attached to many rural communities, Canada's rural communities are worth preserving.

The above-mentioned benefits provide a general perspective on the attributes of education. Yet many in rural areas are sceptical of the merits of education investment beyond high school. First, some rural groups are concerned that an increase of youths seeking PSE will lead to further deterioration of rural communities through accelerated out-migration of youth. The pursuit of PSE is often accused of being the leading 'pull' factor inducing out-migration from rural communities. Another argument pertains to the value of education. Critics of PSE posit that the financial returns of PSE are not the same in rural communities compared to Canada's urban areas. The following sections address these arguments.

2.2.1. Rural Migration

Education in Canada's rural communities has created a paradox for rural leaders. A positive correlation between educational credentials and the susceptibility for out-migration has been repeatedly demonstrated (Dupois et al. 2000; Corbett 2005; Rothwell et al 2002).¹ One suggested reason for this relationship is that youth must often migrate out of rural areas to pursue education opportunities (Rothwell et al. 2002). Another reason, explored more fully in the next section, suggests limited rural employment opportunities (Reimer and Bollman 2010; Dupois et al. 2000). This trend creates

¹ It should be noted that one analysis of rural migration from 1971 to 1996 showed that Canada's rural areas were competitive in attracting individuals with higher educational attainments, resulting in a 'brain gain' (Rothwell et al, 2002).

problems for rural leaders who are interested in retaining their population, particularly their youth, and developing their communities. The pursuit of education drives residents from rural communities; the attainment of education allows residents increased labour mobility through greater choice of employment.

However, education can also be a tool to attract residents, not a just a reason why people leave. Rural communities that have a higher share of employment in primary sectors and a poorly diversified economy experience a steadier population decline. Holding community type, socio-economic, and other demographic factors constant, communities that had more diversified economies at the beginning of the 1980s were more likely to expand their population base by 2006 (Alasia 2010). In other words, communities that developed labour market demand for those with PSE qualifications were better placed to attract migrants and/or prevent out-migration. In turn, communities with a high share of talented and skilled labour become more appealing to the business community. As human capital becomes more important, incentives are provided for firms to locate in regions where this input is abundant (Alasia and Magnusson 2005). Human skills, rather than natural resource base, is an important factor determining the ability of a region to attract footloose investment. As a result, the development of high-skilled industries works both to retain rural youth and attract skilled labour from other regions. Local development strategies must recognize the need to focus on more than human capital development to stimulate local economic development.

Consequently, rural youth out-migration is an issue of rural economic development. As expressed by Looker (2009), the ‘solution’ to the problem of rural youth under-representation in PSE is not simply to create policies that help rural students participate in education beyond high school. These policies must coincide with equally important policies undertaken at all levels of government to maintain existing rural industries, such as agriculture and energy, while developing new industries that cater to modern economic demands.

2.2.2. Rural Returns on Education

Because the distribution of labour skills found in rural areas generally differs from that in urban areas, the rate of earnings returns on education investment differs. The

aforementioned increase in earnings potential are thought not to apply to rural areas dominated by agriculture and forestry, fishing, mining, oil and gas industries. Given that the educational requirements for these industries are typically lower than for high-skilled, service-based industries more often found in urban areas, this could impact the financial returns on education. The following table illustrates, however, that average expected rural incomes increase with education, at rates similar to the average increases in large (over 100,000) urban centres.²

Table 2-3: Comparison of median % earnings premiums for full-year, full-time earners by education beyond the high school level, age group 25 to 64, selected large and small communities, 2006

| Town (pop. <12,000) | Trades/ Apprent'p | College | Bachelor | City (pop. >100,000) | Trades/ Apprent'p | College | Bachelor |
|---------------------|-------------------|---------|----------|----------------------|-------------------|---------|----------|
| Quesnel BC | 17.9% | 11.9% | 21.9% | Vancouver BC | 12.7% | 11.4% | 29.4% |
| Wetaskiwin AB | 8.9% | 9.0% | 51.5% | Calgary AB | 20.7% | 23.2% | 62.4% |
| Estevan SK | 42.2% | 38.6% | 6.3% | Saskatoon SK | 13.9% | 11.0% | 51.8% |
| Flin Flon MB | 13.0% | 6.7% | 21.2% | Winnipeg MB | 8.8% | 14.7% | 48.2% |
| Clearview ON | 14.5% | 1.4% | 45.7% | Toronto ON | 3.9% | 14.5% | 14.6% |
| Bromont QB | -18.1% | 13.7% | 110.0% | Montreal QB | -0.6% | 16.1% | 48.7% |
| Douglas NB | -0.5% | 10.5% | 76.4% | Saint John NB | 14.3% | 17.4% | 52.0% |
| Amherst NS | 17.9% | 26.0% | 49.8% | Halifax, NS | 12.3% | 13.4% | 49.3% |
| Gander NF | 1.7% | 49.3% | 78.8% | St. John's NF | 17.7% | 27.6% | 82.6% |
| <i>Average</i> | 10.8% | 18.3% | 51.3% | <i>Average</i> | 11.5% | 16.6% | 48.8% |

Source: Statistics Canada, *Income Earnings and Highlight Tables 2006*

Despite a few anomalies, earnings consistently increase for those who have completed some form of education beyond the high school level. In almost all rural towns and urban areas noted, the value of a university bachelor's degree is significantly higher than for other levels of education. Irrespective of the variations of earnings premium by education level, the value of continuing education beyond high school appears to be just as strong in rural communities as in urban centres.

² The chart shows median earnings for the population aged 25 to 64, disaggregated by education type. The figures do not control for any other differences within any other variable.

3. Methodology and Data

This section outlines the Access and Support to Education and Training Survey (ASETS) sample and model used in the regression analysis. Section 3.1 begins with a review of competing definitions of ‘rural,’ and a justification of the definition used in this study. The following section explains ASETS, the principal source of data used in this study. The subsequent section introduces the dependent and independent variables and their measures, accompanied by a brief summary of supporting literature.

3.1. Rural Defined

Competing definitions exist for what is considered ‘rural’ in Canada. Even ignoring social and cultural characterizations and focusing simply on geography, there are different methods of identifying rural Canada. ‘Rural’ is typically defined by some combination of population density, community population size, distance from an urban area, and distance to an essential service. Which and how these various measures are used depends on the purpose of the classification. The policy problem at the centre of this project requires a regional approach (du Plessis et al. 2001). Consequently, the literature review in this study uses the “rural and small town” (RST) definition, which refers to all individuals outside commuting zone centres with population of 10,000 or more. However, the ASETS sample uses a different definition of ‘rural’. For ASETS, rural areas include:

- Small towns, villages and other populated places with less than 1,000 population according to the 2006 census;
- Rural fringes of census metropolitan areas and census agglomerations that may contain estate lots, as well as agricultural, undeveloped and non-developable lands;
- Agricultural lands;
- Remote and wilderness areas.

Although the ASETS definition has a much narrower definition of ‘rural’, the implications of this research project can be applied to the broader classification of rural used in other parts of this study.

3.2. Sample Selection

This project is an analysis of post-secondary participation rates as a function of variables that have been suggested by various theories to be factors influencing PSE participation. Using ASETS, this study seeks to use both youth (19-24 years of age) and parent survey responses to test the relationship between a number of socioeconomic and opinion-based variables and PSE attendance. ASETS is an accumulation of three previously conducted surveys relating to the antecedents to and determinants of access to post-secondary education (PSE). The target population for the survey is all Canadian residents aged less than 65 years, excluding individuals residing in the three territories in the North and excluding individuals residing in institutions. However, the survey population under-covers persons living in households without telephones or with cellular phones only, as well as those households whose telephone number was missing from the 2006 Census of Population and administration files.

An important limitation of the ASETS data set is that it does not include information on Aboriginal peoples living on reserves and in the North (i.e., the Territories). The survey design did not include a sampling of these populations. This omission seriously impacts the Aboriginal results presented in the following sections. More on the other data limitations and problems can be found in Appendix C.

The total sample size was 72,000 telephone numbers, collected between June and October 2008. If the selected member of the household was between 0 and 17 years of age, the interview was conducted with the parent or guardian who was the most knowledgeable (PMK) of the child. If the selected household member was between 18 and 24 years of age, the interview was conducted with the selected youth, and a follow-up interview was conducted with the youth’s most knowledgeable parent or guardian. Finally, if the household member was aged between 25 and 64, the interview was conducted with the selected adult.

Consistent with other Statistics Canada household surveys, the ASETS results used in this research are based on sample designs that include stratification, multiple stages of selection, and unequal probabilities of selection. Weighting is used to serve a number of purposes:

- To bring the results from a sample to the level of the population
- To correct for sample bias arising from survey design
- To help protect the confidentiality of the respondent, as one case may no longer represent one respondent.

A more detailed description of the methodology of the weighting process used in ASETS is included in Appendix D.

3.3. Main Hypothesis and Literature Review

Distance to PSE institutions is perhaps the most observable barrier given that it is the defining characteristic of rural communities. Marc Frenette has explored distance as an explanation in Canada. Frenette notes that students who live beyond 80 km from a university are only 58% as likely to attend university as students living within 40 km from a university (Frenette 2003).³ However, Frenette also notes that students who live beyond the 80 km barrier are more likely than urban students to attend college, reflecting the large number and wide geographic distribution of college institutions in Canada.⁴ Students lacking access to a local university are far less likely to go on to university than students who grew up near a university. When distant students are faced with a local option, however, their probability of attendance substantially increased; the creation of a local-degree granting institution is associated with a 28.1% increase in university attendance among local youth (Frenette 2007a). Frenette thus finds that distance does have an important effect upon the decisions of rural youth. Additionally, the social costs inherent in moving away from one's community are important (Frenette 2003). Rural students face additional pressures when leaving their friends and family in order to live in

³ Differences in family income, parental educational attainment, sex, and province are accounted.

⁴ Rural students from lower- and middle- income families are the most likely to be drawn to college rather than universities, while those from high-income families show are just as likely to attend college as university (Frenette, 2003).

urban areas where they lack the same social supports. Frenette suggests that the answer to improving the accessibility gaps between rural and urban youth involves either reducing attendance costs (by having more rural institutions) or increasing rural students' resources (through increased loans and/or grants).

Accordingly, government initiatives have been directed towards overcoming rural financial and social barriers. Canadian student loans consider the travel distance to the applicant's desired PSE institution and provide additional funds for those who have to live outside of the family home during their study period. Despite these programs, a rural PSE participation gap persists. Costs linked to distance do not suffice to explain the gaps. Other potentially relevant factors warrant study. Financial and social costs, weak high school performance, parental lack of education, and a rural culture are some of the most likely PSE barriers for rural students. The goal of this study is to use the ASETS information to form a better understanding of PSE participation gaps. Information derived from this study may be used to re-evaluate public policies aimed at increasing rural participation in PSE and generate a basis for new policy initiatives.

3.3.1. Dependent Variable and Measure

Post-Secondary Participation

The dependent variable in this study is the PSE participation rate of 19-24 year olds in Canada. The frequency count for this variable indicates that the probability of urban youth to be in PSE were about 13 percentage points more than rural youth, at the time of the survey. The PSE participation rates found in the survey differ slightly from those found by Shaienks and Gluszynski in 2007.

| | Urban | Rural |
|---------------------------------------------------------------|------------|--------------|
| PSE Participation Rate (ASETS) | 77% | 64.4% |
| PSE Participation Rate (Shaienks and Gluszynski, 2007) | 82% | 65% |

This research project focuses exclusively on 19-24 year olds and does not account for those who go on to some form of PSE as adults (at 25 years of age or older).

The urban participation rates between the two sources differ by 5 percentage points, which could be the result of the different samples used to construct each figure.

However in both instances, only about 65% of rural students continue on to PSE. The results of the ASETS reinforce previous evidence that support that rural youth are less likely to continue their education beyond the high school level than urban youth.

3.3.2 Independent variables, measures, and hypothesized relationships

The following independent variables were included in this study based on existing theories to explain PSE participation. With the exception of the unemployment rate variable that is taken from Statistics Canada's Labour Force Survey, all of the statistics were drawn from the ASETS data set. Table 3-1 expresses the hypothesized relationships between the independent variables and the dependent variable. The variables are grouped into three categories.

Table 3-1: Independent variables, by category

| Variable Type | Independent Variable | Hypothesis |
|--------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Parental | Parental Expectations | + Youth and parents of youth who believe there is a strong connection between education and success will more likely to go to PSE. |
| | Education | + As the parent's level of highest education increases, the youth's PSE participation will also increase. |
| Youth | Youth Attitudes | + Youth who believe there is a strong connection between education and success will more likely go to PSE. |
| | High School Performance | + The higher the average, the more likely the youth would enter PSE. |
| Socio-demographic | Income | + Parents with highest incomes are more likely to have youth that continue on to PSE. |
| | Region | +/-, Unemployment can both positively and negatively affect PSE participation. |
| | Aboriginal | -, Those that identify as being Aboriginal will be less likely to attend PSE. |
| | Gender | + , Females are expected to attend PSE at higher rates than males. |

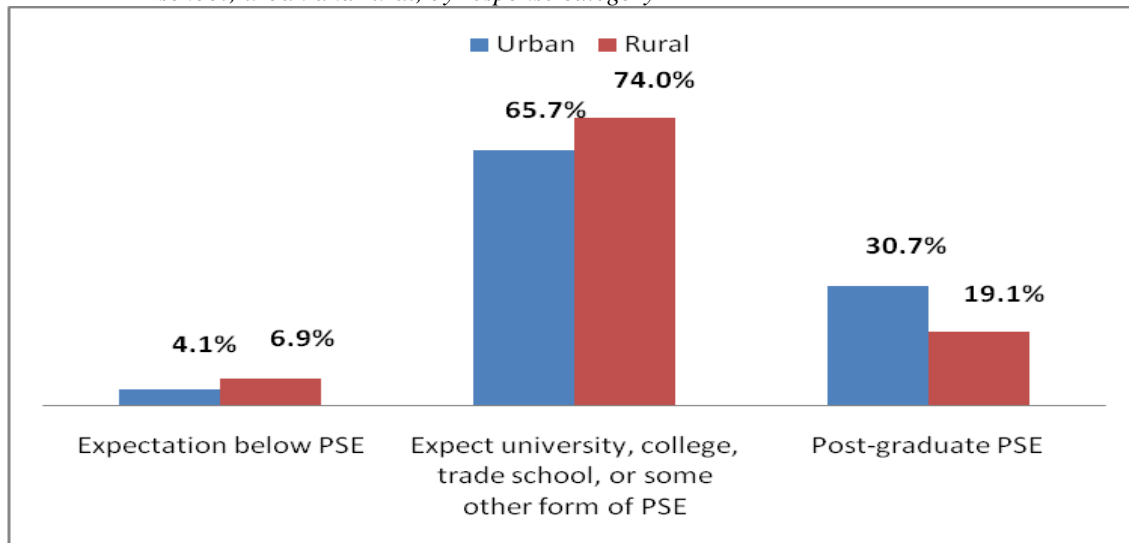
The following three variables measure cultural differences between urban and rural students. Some analysts have proposed that individual and family attitudes towards learning and education expectations have created a rural culture that discourages PSE participation (Andres and Looker 2001; Cartwright and Allen 2002; Looker 2010). These existing theories provide the justification for the inclusion of 'cultural variables'.

Parental expectations

The first ‘cultural’ variable tests the relationship between parental PSE expectations and youth PSE participation. Previous literature on rural PSE participation suggests that rural youth have lower educational expectations and attainment than urban youth (Andres and Looker 2001; Looker 2003). These lower expectations are largely attributed to rural residents’ low assessment of the value of higher education. There is an expected positive relationship between the level of importance parents place on education beyond the high school level and youth PSE participation.

The distribution of ASETS responses shows only slight differences between urban and rural parents’ expectations.

Figure 3-1: Distribution of responses to the ASETS question "How far do you hope your child to go in school; urban and rural, by response category



Urban parents are more likely than rural parents to expect their children to go on to some form of education beyond an initial degree. This outcome may be the result of urban parents having more experience of the advantage that post-graduate education can provide in some labour markets. Aside from this difference, both urban and rural parents have high educational expectations of their children. Very few respondents in both instances had expectations below the PSE level.

Parental education

After controlling for various factors, the education and income of parents have been established as important determinants of PSE participation. Frenette (2007a) and Looker (1997, 2009) found that children are more likely to go onto to PSE if at least one of their parents has PSE experience. Parents with PSE education are not only more likely to know the benefits of education, but also more likely to be familiar with how post-secondary education operates. As a result, these parents have higher educational expectations for the children. Consequently, a positive relationship between parental education level and youth PSE participation is expected.

The results from ASETS show that the likelihood that at least one parent of the youth has some form of PSE experience are similar between urban and rural respondents.

| | Urban | Rural |
|------------------------------------------------------------|--------------|--------------|
| Percentage of parents <i>with</i> PSE experience | 82.8% | 79.9% |
| Percentage of parents <i>without</i> PSE experience | 17.2% | 20.1% |

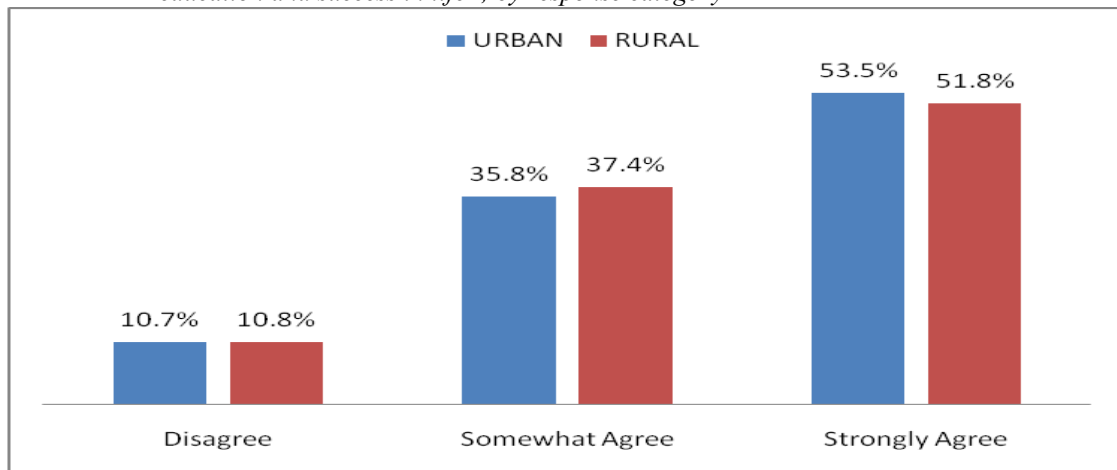
According to the results of the survey, urban youth were only slightly more likely to have parents with some form of PSE experience.

Youth Attitudes

Similar to parental attitudes, this variable attempts to measure how the youths themselves value education. Previous literature suggests that rural students may be less motivated to continue education beyond the high school level because they tend to value its importance less than their urban counterparts (Andres and Looker 2001; Looker 2003). Rural students are less likely to attend PSE because they are less likely to connect education with success in life. Based on previous literature, a positive relationship is expected between the amount of importance placed upon education and PSE participation rates.

An examination of the frequencies of the youth valuation of education measure shows only small differences between urban and rural students.

Figure 3-2: Distribution of youth responses to the question, “There is a strong relationship between education and success in life”; by response category



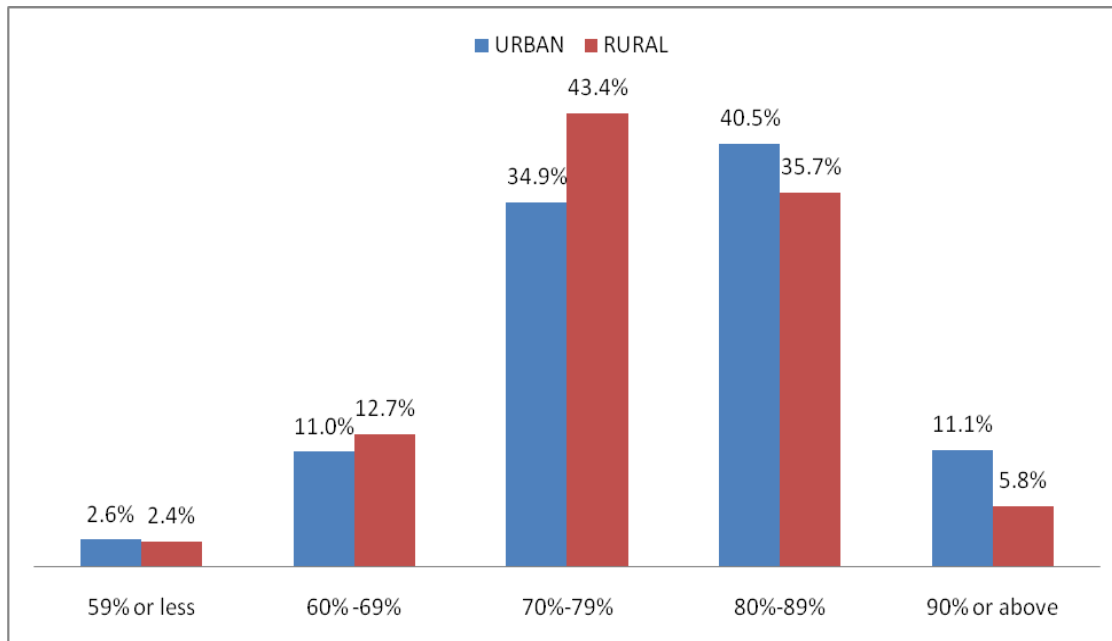
The similar distributions of responses show that there are no substantial differences between urban and rural respondents on the perceived importance of education. Contrary to some existing theories, rural youth appear to value education as much as their urban colleagues.

Student high school performance

The inclusion of this variable in the survey tests how increases in high school grades affect PSE participation rates for both urban and rural students. Previous research has cast serious doubt on the hypothesis that PSE participation is only, or at least primarily, an issue of affordability. Harrington and Sum (1999) find that once basic skills are taken into account, family household income has only a modest influence on whether a high school graduate will attend and complete PSE. Other literature suggests that past academic performance – in reading and mathematics specifically – has a strong positive relationship with PSE participation (Johnson and Buck 1995). PSE participation is argued not to be an issue of financial ability, but rather an issue of academic ability, and any programs designed to improve PSE participation should be targeted at improving high school performance. In this study, a positive relationship is expected between youths’ high school performance and PSE participation.

The results from the survey indicate notable differences in grade averages for the last year of high school between the two types of students.

Figure 3-3: Frequency distribution, high school average of youth in last year of high school, by grade category



Urban students on average are outperforming their rural colleagues. The median for rural students falls in the 70-79% range, while that for urban students is in the 80-89% range. Urban students are also almost twice as likely to be in the 90% or above range. These differences can be expected to affect the youths' preparedness and willingness to pursue PSE: poor academic performance in the upper years of high school weakens the student's ability to meet PSE institutional entrance standards. In terms of motivation, lower high school averages may indicate the student has a lower valuation of education and a disinterest in achieving higher mark in order to continue on to PSE.

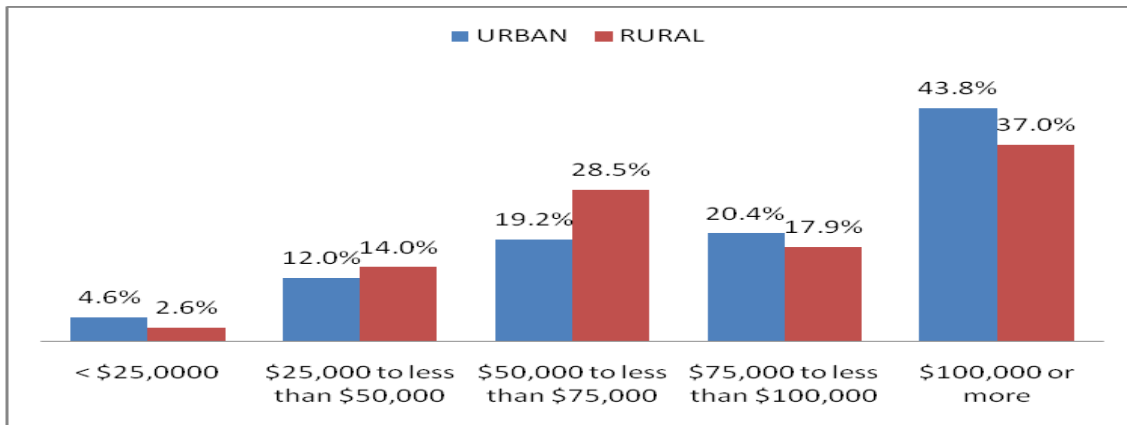
Combined Income of Parents

The added cost of moving to attend university or college may be a prohibitive barrier for rural students, particular those from lower-income families. Financial barriers are an oft-cited contributing factor to low PSE participation for all groups, including rural students. As a result, affordability of PSE has long been of concern for Canadian policy-makers. One report found that the correlation between university participation and family income changed very little between 1993 and 2001 (Drolet 2005). Similarly, Frenette (2007a) found that if the additional cost of attending a university away from the

parental home is greater than \$5000, enrolment decreases among those students from lower-income families. Additionally, household income also seems to impact the type of post-secondary education youth seek. Low-income youth are 40% more likely to participate in college studies than in university studies (Zeman 2008). Previous literature cumulatively suggests a positive relationship between income and PSE participation.

According to frequency distributions of ASETS responses, parents of urban youth earn, on average, more than rural parents. The higher costs of living, competition for labour, and greater concentration of high-skilled industries in urban areas are some of the possible reasons behind this income gap.

Figure 3-4: Frequency distribution, combined parental income of youths aged 19-2, by income category



This earnings gap is potentially an important determinant of the decision to pursue PSE education. Rural families are more likely to fall into the \$50,000 to \$75,000 income range, a range deemed most likely to suffer from the ‘middle-income crunch’. Students in families within this range are deemed too rich for full student loans, but too poor to pay tuition costs without any type of financial assistance (Brown 2007). In these instances, students often put off education in order to work and save, or seek private loans with higher and less favourable loan terms.

Region and Unemployment

The respondents' province at the time of completion of the survey is categorized into five regions⁵:

- Atlantic (Newfoundland and Labrador, Nova Scotia, New Brunswick, and Prince Edward Island);
- Quebec;
- Ontario;
- The Prairies (Manitoba and Saskatchewan); and
- The West (Alberta and British Columbia).

The reasons for the inclusion of this variable are twofold. First, this project aims to test how 'rurality' influences PSE participation in each of these distinct regions. Previous literature suggests that regionalism does not affect PSE participation rates of rural youth. In terms of access to PSE, the tabular evidence suggests both regional and rural/urban differences in participation rates.

Table 3-2: Regional PSE participation rates, urban and rural

| Region | Urban | Rural |
|-----------------|--------------|--------------|
| Atlantic | 77% | 73% |
| Quebec | 72% | 61% |
| Ontario | 83% | 74% |
| Prairies | 68% | 67% |
| West | 72% | 52% |

Source: Youth in Transition Survey; Looker 2009

However, a multivariate analysis conducted by Looker (2010) suggests that these differences reflect differences in individual characteristics. If the demographic profile and academic performance of rural youth paralleled those of urban youth, then the PSE participation rates would be similar (Looker 2009; Looker 2010). As a result, the fact that rural students on average come from households with lower levels of education and income than their urban counterparts can be the cause of lower rural PSE participation.

⁵ To be consistent with previous research, this study borrows the regional classifications used by Looker (2009).

Similar results are expected from this analysis. When controlling for the other variables included in this study, region alone is expected not to have an impact of rural PSE participation rates.

Regional classifications in this study are used to compare how economic health, in terms of regional unemployment, affects the decisions of youth to go on to PSE. Previous studies suggest that youths who experience spells of unemployment are more likely to extend their training through PSE (Mroz and Savage 2001). Youth in high unemployment regions better recognize the need for education beyond the high school level in order to gain meaningful employment in difficult labour market situations. The recent economic downturn has substantiated this theory. In periods of higher than normal unemployment, finding a desired job becomes more difficult. As well, the opportunity cost of attending PSE is reduced with higher unemployment because the expected foregone earnings are lower. In response, more youths are enrolling in PSE in order to improve their skills and qualifications and improve their chances at finding a job.

The relationship between unemployment and PSE participation is expected to be positive. The theory rests upon the notion that youth in high unemployment regions better recognize the need for education beyond the high school level in order to gain meaningful employment in difficult labour market situations. For the purposes of this study, the average unemployment rate over a five-year period leading up to June 2008 (when the survey was conducted) is used to classify each region as having a high, mid, or low unemployment rate.

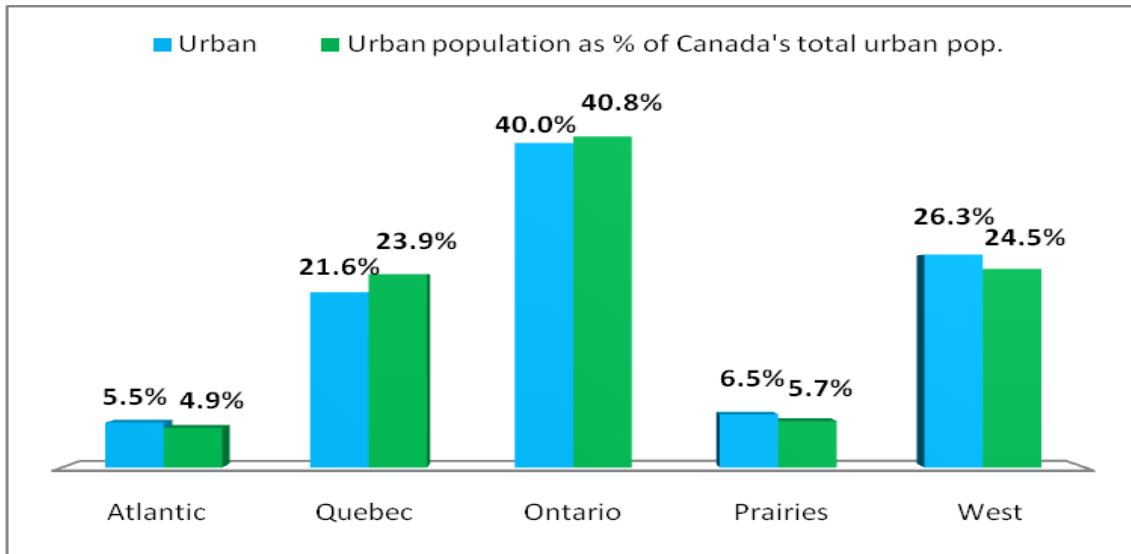
Table 3-3: Regional unemployment rates and classifications; mean average for the years 2003 to 2008

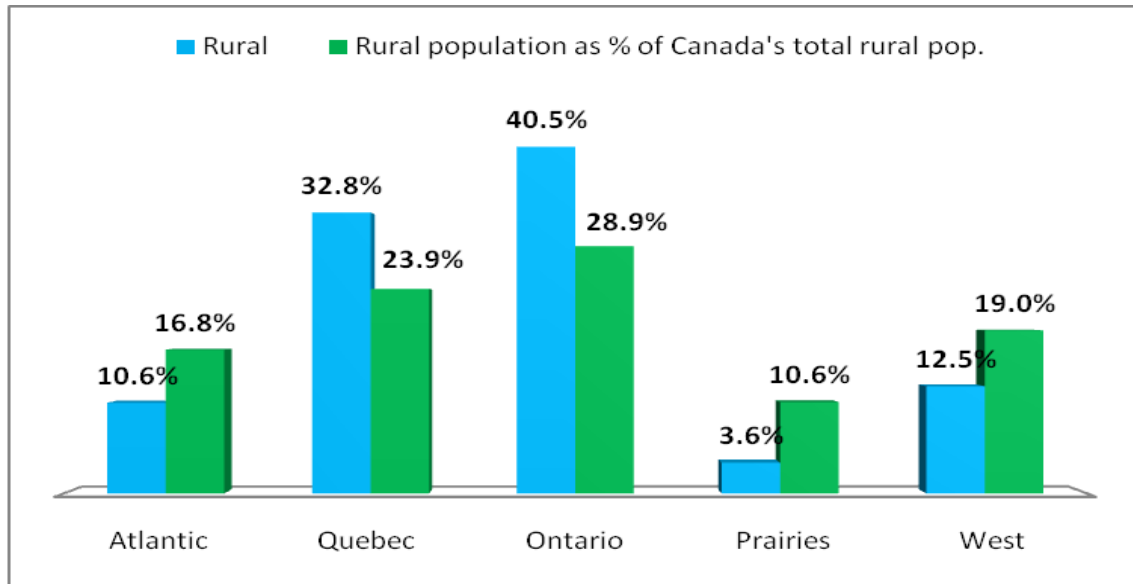
| Region | Unemployment Rate | Classification (High, Mid, Low) |
|-----------------|--------------------------|----------------------------------------|
| Atlantic | 10.6% | High |
| Quebec | 7.7% | Mid |
| Ontario | 6.6% | Mid |
| Prairies | 4.6% | Low |
| West | 4.6% | Low |

The classifications are relative to Canada's national unemployment rates over the same five-year period. Between 2003 and 2008, the national unemployment averaged 6.7%, with a low of 5.9% and a high of 7.9%. The Atlantic region exceeded the maximum national rate. Conversely, the Prairies and West were lower than the national minimum. Quebec and Ontario hovered around the national average, thus are classified as being in the mid-range level of unemployment.

The following chart compares the regional distribution of ASETS responses and the actual population estimates from Statistics Canada.

Figure 3-5: Regional Distribution of (1) urban ASETS respondents compared to actual urban population as % of total Canadian population; (2) rural ASETS respondents compared to actual rural population as % of total Canadian population





Source: Statistics Canada, 2006 Census

The first panel shows the distribution of urban responses by region closely resembles the actual urban population distribution derived from the Canadian Census. The second panel shows more discrepancies between the two distributions. The rural populations in Ontario and Quebec are overrepresented in the ASETS sample used in the study and under-sampled in the Atlantic, Prairies, and West regions. The variation in the rural distribution is likely the result of the smaller sample size derived from the rural ASETS responses.

Aboriginal identity

The Aboriginal variable is included in order to test whether Aboriginal identity affects urban and rural Aboriginal youth PSE participation independently of the other variables already discussed. Aboriginal students, both urban and rural, have low PSE participation rates. Similar to the non-Aboriginal population, geography seems to have a strong relationship with PSE participation. Aboriginal educational achievement is highest in cities, second highest in towns, and third in the rural areas, and lowest on reserves (Mendelson 2006). Many causes have been suggested for the comparatively low rates of PSE participation. Among the most often cited are lower than average high school completion rates, parental poverty, and cultural attitudes. Aboriginal students both on- and off- reserve have lower high school completion rates than non-Aboriginal

students, and this is often cited as the central cause of low Aboriginal PSE participation rates (Mendelson 2006; Richards 2008; Berger and Parkin 2009; Frenette 2010).

Aboriginal students on remote reserves in particular have performed poorly in comparison to Canada’s non-Aboriginal population. Because of the scarcity of nearby jobs, on-reserve Aboriginal peoples are less likely to invest in higher education (Richards and Scott 2009). The relationship between the Aboriginal variable and PSE participation is expected to be negative.

The Aboriginal share of respondents from the ASETS sample is consistent with Statistics Canada census data.

| | | |
|--------------------------------------------------------------------------------------------------------|------------------|-------------|
| Percentage of Aboriginal in population, 20 to 24 years of age. (2006 Census, Statistics Canada) | All Areas | 4.7% |
| Percentage of Aboriginal respondents, 19-24 years of age. (ASETS) | Urban | 5.1% |
| | Rural | 6.1% |

According to the 2006 census, approximately 4.7% of Canada’s population between the ages of 20 to 24 years identifies as being Aboriginal. The results from the ASETS survey show slightly higher percentages for both urban and rural Aboriginal students.⁶

Gender

The gender variable is included in this study because of the inequities between males and females in PSE participation. In general, women are now more likely than men to participate in PSE (Looker 1993; Corbett 2000; Looker and Thiessen 2004). One suggested reason for the gender difference in participation rates is differences in high school performance. Girls tend to perform better in high school; thus they tend to have an advantage over boys in getting into university (Frenette 2009; Zeman 2008). Another possible factor is that boys may be less motivated to pursue PSE because they are more likely to be lured into occupations that do not require education beyond the high school level (Berger and Parkin 2009). Most notably, construction, agriculture, and resource-based industries (e.g. forestry, mining, fisheries) tend to be male-dominated sectors and require less formal education. Based on prior literature and theories, the

^{6,7} The differences between Stats Can and ASETS is due to the availability of information. Statistics Canada does not disaggregate information from the 2006 Census into a 19-24 year old category.

expectations of this study are that female youth, both rural and urban, are more likely to attend PSE.

| | | Male | Female |
|-------------------------------------------------------------------------------------|------------------|--------------|--------------|
| Gender of population, 20 to 24 years of age (2006 Census, Statistics Canada) | All Areas | 50.3% | 49.7% |
| | Urban | 50.6% | 49.4% |
| Gender of respondents, 19-24 years of age (ASETS) | Rural | 53.8% | 46.2% |

The gender split from the ASETS survey is similar to that of the Canadian population at large, according to the 2006 census. Both the census and ASETS show slightly more males than females in this age category.⁷ Rural areas have a somewhat larger male share than urban areas.

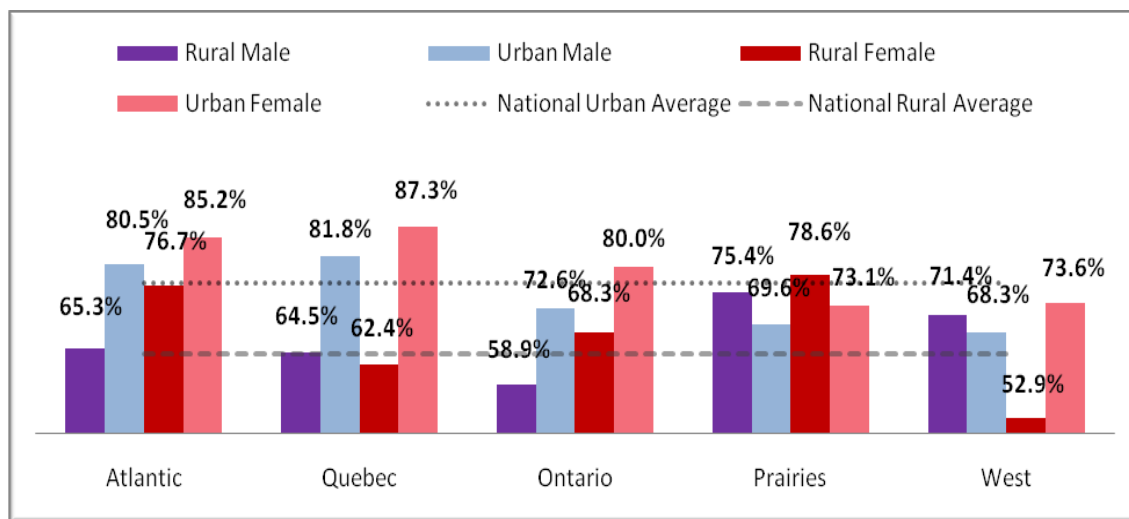
4. Results of the Statistical Analysis

The following two sub-sections present the results of the statistical analyses undertaken using the ASETS data. First, a review of the crosstab comparisons paints a picture of who is, and more importantly who is not, continuing on to PSE. Next, the results of a logistic regression are presented to better identify those factors most responsible for PSE participation.

4.1. Crosstab Analysis

The first chart provides a regional and gender comparison of PSE participation rates.

Figure 4-1: Urban and Rural PSE participation rates, by region, 19-24 year olds

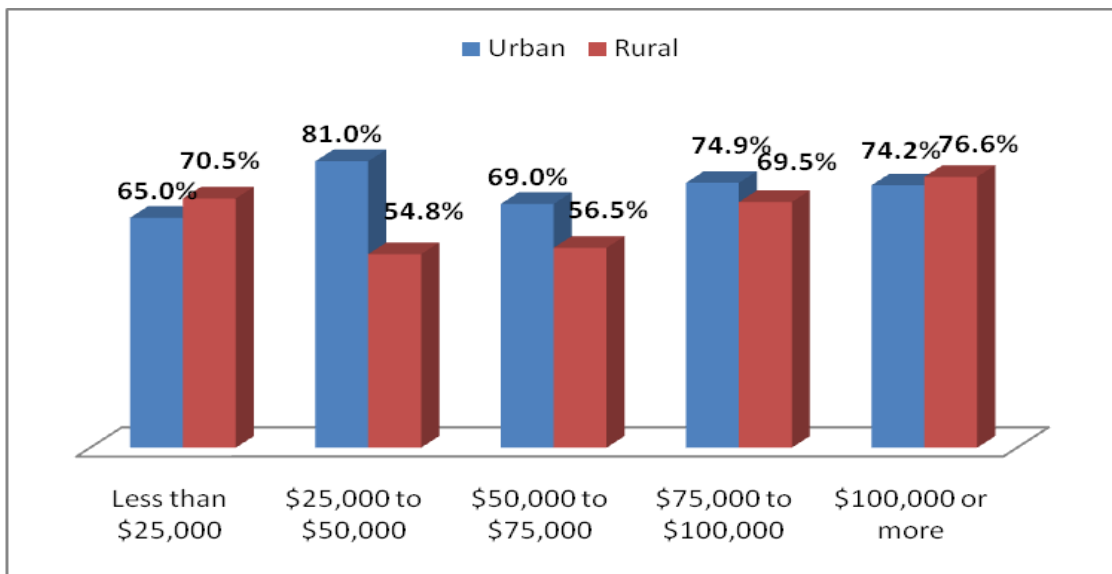


Atlantic Canada is among the highest achievers in each category. The urban and rural rates are both higher than the relevant national averages. This may be the result of the high concentration of PSE institutions in this region, as well as consistently high unemployment rates that encourage skills development. The urban/rural divide in PSE participation seems to be most prominent in Quebec. Urban males and females attend PSE at higher rates than in any other region, yet rural participation rates hover at or below the national average. Ontario male participation, both urban and rural, ranks

among the lowest in this regional comparison. Once again, urban respondents were much more likely to have PSE experience than their rural counterparts. Interestingly, in the Prairies, rural students actually attend PSE at a higher rate than their urban counterparts. Rural males in the West follow the Prairie trend by attending PSE at a higher rate than urban male respondents. Rural females in this region are the least likely to have PSE experience among all categories, as barely over half of these respondents answered in the affirmative.

Consistent with previous findings, there appears to be a positive relationship between parental income and PSE participation. However, the relationship is not monotonic and differs somewhat for urban and rural students.

Figure 4-2: Urban and rural PSE participation rates, by combined annual parental income categories

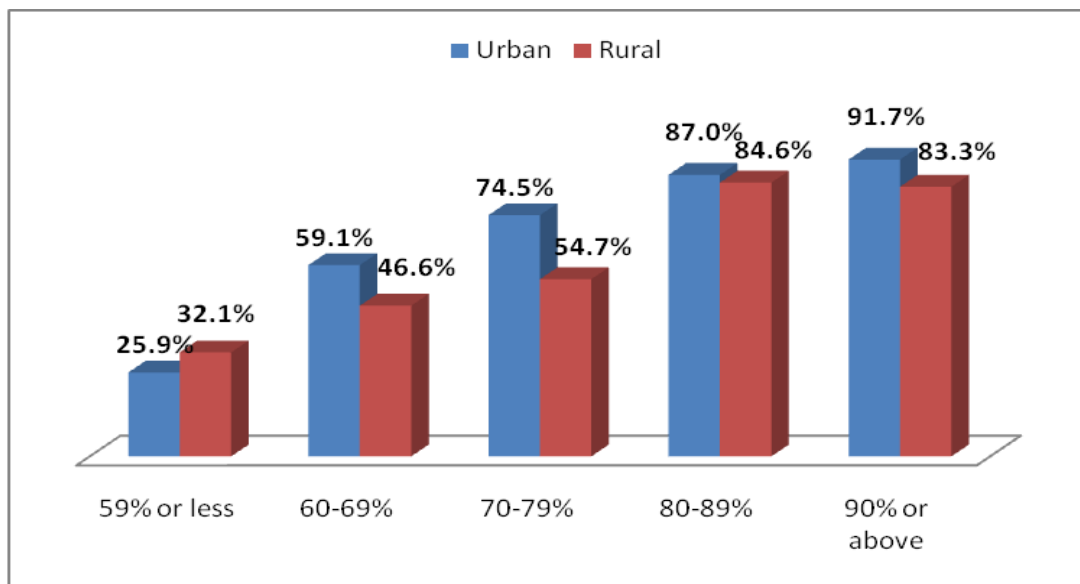


Urban students in the second lowest income category were the most likely to attend PSE, with the rates decreasing in the next group before gradually increasing towards the highest income category. Similarly, rural students have a comparably high participation rate in the first income category, before declining in the two subsequent groups. Although these trends may appear to run counter to prevailing theories on the relation between income and PSE participation, they may also be evidence of the so-called ‘middle-class’ crunch. Urban students in the \$50,000 to \$75,000 income may face the problem of being deemed too wealthy to receive government or private institution (i.e. bank) assistance, yet too poor to fund their own education costs. Rural students in

the second and third lowest categories may experience similar problems; however, the problem may extend over the two categories due to higher costs of attending PSE typically faced by rural students. The average costs of a rural student's going on to PSE are higher because they are more likely to live away from home or travel longer distances to the institution. As a result of the higher expenses, the 'middle-income crunch' may extend to those in the \$25,000 to \$50,000 income bracket who receive some government or private financial assistance, but not enough to cover the entire costs related to PSE. For both student types, PSE participation rates generally increase from the middle-income level.

PSE participation rates and high school grades also relate positively to one another. The following chart summarizes the relationship between the two variables.

Figure 4-3: Urban and rural PSE participation rates, by youth respondents' grades in their final year of high school



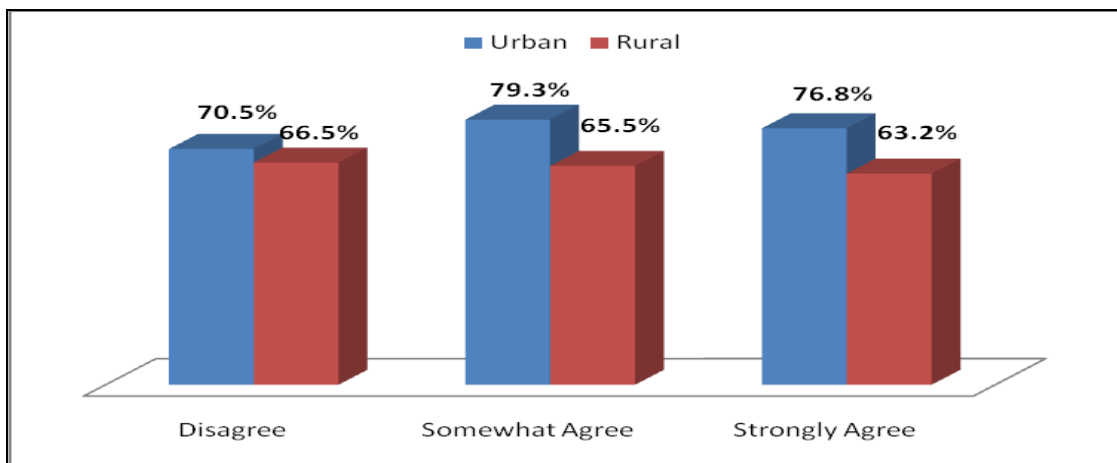
PSE participation rates markedly increase for urban students as their grades improve. Those with the highest high school average in their last year were the most likely to be in PSE. Rural students show a somewhat different trend. Those with the highest marks (80% and above) are the most likely to attend PSE; however rural students in the 90% or above range are significantly less likely than urban respondents to go on to PSE. Students in this grade range are likely to meet PSE institutional entrance

requirements that are largely based on high school grades. As a result, other factors must be impacting rural youths' decisions to not go on to PSE after high school.

Perhaps the most noteworthy difference between urban and rural students arises in considering those with mediocre high school marks in the 60 to 79% range. This grade range is significant because it covers the minimum threshold of the entry requirements for most Canadian PSE institutions. Rural students in the 60 to 79% range are much less likely to attend PSE than their urban colleagues. This could be an indication of a lack of confidence on the part of rural students that manifests itself in two different ways. These students may believe their high school marks are not high enough for admittance into PSE and do not apply for admission. Alternatively, rural students with lower high school grades may not believe they can succeed at the higher education level. This is compounded by the greater financial and social risks that rural students face when leaving home to attend a PSE institution.

Rural culture has also been suggested to play an influential role in the PSE aspirations of rural youth. Youth attitudes, parental expectations, and parent education are used as proxy measures to test the relationship between 'culture' and PSE participation. The ASETS question used to measure youth attitudes shows ambiguous results.

Table 4-1: PSE participation rates, by level of agreement to the statement "There is a strong link between education and success in life", by response category



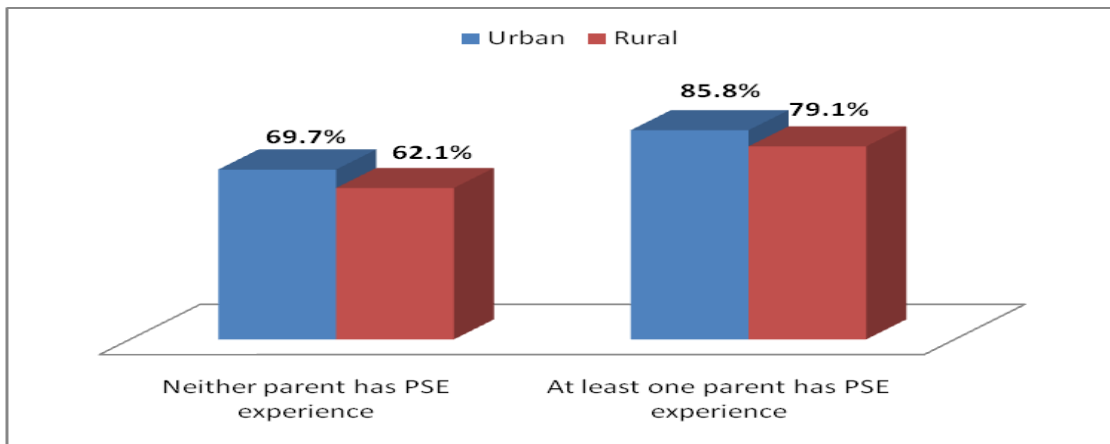
Based on the crosstab analysis alone, no meaningful relationship arises between youth attitudes and PSE participation rates. Participation levels neither significantly

increased nor decreased with the level of agreement to the question of whether education leads to success in life.

Another variable used to measure ‘culture’ is the parent’s PSE aspirations for their children. Although this variable is included in the logistic regression model presented below, the crosstab comparison is not included because of insufficient rural responses.⁸

The last ASETS variable used to measure culture is the parents’ highest level of education completed. Youths with at least one parent with PSE are expected to be more likely to have the support and guidance towards education beyond high school.

Table 4-2: PSE participation rates, by parental PSE experience, by response category



Despite the access to PSE gap existing within both population groups, both urban and rural respondents show a nearly identical marked improvement in PSE participation rates when at least one parent has some form of PSE experience. Although this is a noteworthy relationship, the crosstab analysis fails to support the theory that ‘culture’ impacts PSE participation.

4.1.1. Aboriginal Peoples and PSE education

Aboriginal peoples in Canada do not attend PSE at nearly the same rate as non-Aboriginals, and the ASETS do not suggest otherwise. Neither rural nor urban

⁸ Again, Statistics Canada privacy policy does not permit the release of crosstabs with unweighted cell counts of 5 or less.

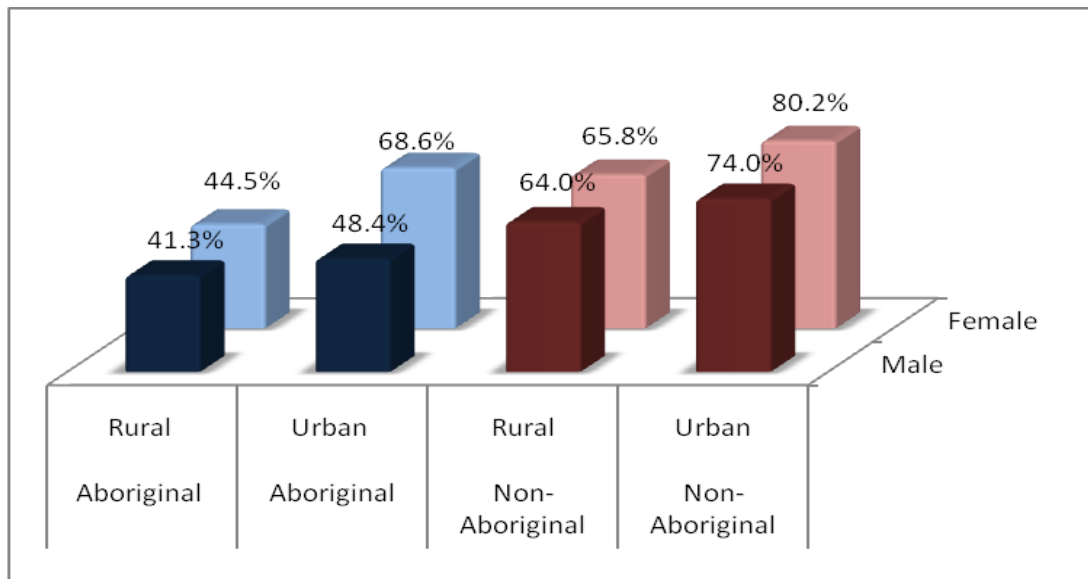
Aboriginal peoples attend PSE at rates comparable to the national averages. The urban/rural divide is more extreme when disaggregating by Aboriginal identity.⁹

| | Urban | Rural |
|----------------------------------------------------------------------------|--------------|--------------|
| Percentage of Aboriginals, 19-24 years old, with PSE experience | 58.0% | 42.8% |
| Percentage of Non-Aboriginals, 19-24 years old, with PSE experience | 77.4% | 64.8% |

Source: ASETS, 2009

While more urban Aboriginal respondents had some form of PSE experience than rural, neither Aboriginal group attended PSE at rates similar to non-Aboriginals. Consistent with previous findings relating to high school performance, urban Aboriginal peoples are more likely to continue on to PSE than those from rural areas. Additionally, female Aboriginal peoples are more likely than males to be in PSE, a trend similar to that of the general Canadian population.

Figure 4-4: PSE participation rates, urban and rural, by Aboriginal/non-Aboriginal identification and gender

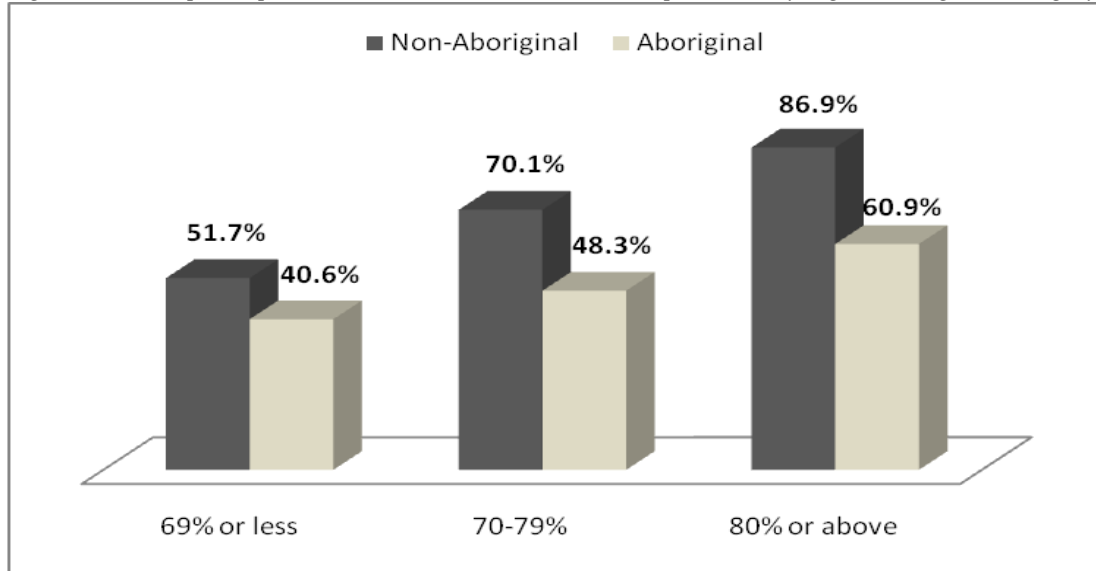


According to the ASETS findings, in addition to trailing behind urban non-Aboriginals, male urban Aboriginal peoples are going on to PSE at a much lower rate than female urban Aboriginal peoples. Another interesting finding pertaining to Aboriginal peoples is the correlation between PSE participation and high school

⁹ The participation gaps are particularly alarming given that on-reserve Aboriginal peoples, who traditionally have very low PSE participation rates, are excluded.

averages. While PSE participation rates of non-Aboriginal people increases considerably as high school grades improve, Aboriginal rates increase only modestly.

Figure 4-5: PSE participation rates, both urban and rural respondents, by high school grade category



Less than 50% of Aboriginal peoples with high school marks in the 70-79% range, and approximately 60% in the 80% or above range, attend PSE. Aboriginal middle and upper high-school achievers have PSE participation rates that pale in comparison to non-Aboriginal peoples, which suggests that non-academic factors have a stronger effect on Aboriginal peoples. A large portion of academically qualified Aboriginal peoples are not entering PSE.

The findings from ASETS highlight the Aboriginal education gap that continues in Canada. The problem becomes even more apparent when juxtaposed with the urban-rural gap. Aboriginals participate in post-secondary education at rates much lower than the rest of the population.

4.2. Results of the Logistic Regression Analysis

A binary logistic regression has been used to investigate how the independent variables jointly explain variation in the dependent variable, “Post-Secondary Experience.” In this case, the dependent variable assumes the value one if the youth (aged 19-24 years) has been in post-secondary education and zero if not. The target of

this study is to better understand why some rural students go to PSE, while others do not. Partly for this reason, and partly due to limitations in the ASETS dataset, this research does not differentiate between those in PSE at the time of the survey, those who had graduated, and those who left PSE before completion. Additionally, this research does not distinguish between the type of PSE institution. Further disaggregating the rural sample into PSE types would have left the sample too small to obtain statistically significant results.

The predicted dependent variable is the probability that a particular subject will pursue PSE as a function of the indicator variables derived from previous research and theories. The indicator variables are all statistically significant, except where noted.

Table 4-3: Summary of Logistic Regression model, unstandardized predictor values, odds ratio, and probabilities, *Urban and Rural samples*

| Predictor Variable | Urban Students | | | Rural Students | | |
|-----------------------------------------------------------------|-----------------------------------|------------|-------------------------------|-----------------------------------|------------|-------------------------------|
| | Beta (Standard Error) | Odds Ratio | Probability of PSE experience | Beta (Standard Error) | Odds Ratio | Probability of PSE experience |
| Regional unemployment | | | | | | |
| Low Unemployment (reference) | | | 0.53 | | | 0.30 |
| Mid Unemployment(1) | 0.652 * (0.009) | 1.919 | 0.68 | 0.001 (0.029) | 1.001 | 0.30 |
| High Unemployment(2) | 0.596 * (0.02) | 1.815 | 0.67 | 0.851 * (0.041) | 2.342 | 0.50 |
| Parent's education | | | | | | |
| Parents have no PSE (reference) | | | 0.53 | | | |
| At least one parent has PSE(1) | 0.652* (0.01) | 1.919 | 0.68 | 0.864 * (0.023) | 2.373 | 0.50 |
| Relationship between education and success (youth) | | | | | | |
| Disagree (reference) | | | 0.53 | | | 0.30 |
| Somewhat agree (1) | 0.352 * (0.015) | 1.422 | 0.61 | -0.624* (0.032) | 0.536 | 0.19 |
| Strongly Agree (2) | 0.213 * (0.015) | 1.237 | 0.58 | -0.173 * (0.031) | 0.841 | 0.26 |
| Average in last year of high school | | | | | | |
| 69% or less (reference) | | | 0.53 | | | 0.30 |
| 70-79% (1) | 0.823 * (0.011) | 2.277 | 0.72 | 1.176 * (0.027) | 3.241 | 0.58 |
| 80% or above (2) | 1.931 * (0.013) | 6.896 | 0.88 | 2.012 * (0.03) | 7.478 | 0.76 |
| Gender | | | | | | |
| Male (reference) | | | 0.53 | | | 0.30 |
| Female (1) | 0.014 (0.009) | 1.014 | 0.53 | 0.625 * (0.02) | 1.868 | 0.44 |
| Parental Expectations | | | | | | |
| Post-graduate PSE (reference) | | | 0.53 | | | 0.30 |
| Expectation below PSE(1) | -3.154 * (0.026) | 0.043 | 0.05 | -22.595 (572.362) | 0.000 | 0.00 |
| Expect university, college, trade, or some other form of PSE(2) | -1.289 * (0.014) | 0.276 | 0.23 | -1.128 * (0.029) | 0.324 | 0.12 |
| Combined income of parents | | | | | | |
| Less than \$25,000 (reference) | | | 0.53 | | | 0.30 |
| \$25,000 to less than \$50,000(1) | 0.39 * (0.027) | 1.477 | 0.62 | 0.395 * (0.059) | 1.484 | 0.39 |
| \$50,000 to less than \$75,000 (2) | 0.193 * (0.024) | 1.213 | 0.57 | 0.52 * (0.053) | 1.682 | 0.42 |

| | | | | | | |
|-------------------------------------|-----------------------------------|-------|------|----------------------------------|-------|------|
| \$75,000 to less than \$100,000 (3) | 0.446 * (0.024) | 1.562 | 0.63 | 0.959 * (0.054) | 2.609 | 0.53 |
| \$100,000 or more (4) | 0.695 * (0.023) | 2.004 | 0.69 | 1.871 * (0.054) | 6.495 | 0.74 |
| Aboriginal | | | | | | |
| Non-Aboriginal (reference) | | | | | | |
| Aboriginal (1) | -0.733 * (0.021) | 0.480 | 0.35 | 0.716 * (0.043) | 2.046 | 0.47 |
| Constant (reference group) | 0.102 | 1.11 | 0.53 | -0.848 | 0.43 | 0.30 |
| Number of Unweighted Cases | 1509 (2456 missing) | | | 289 (391 missing) | | |
| Nagelkerke (Pseudo) R Square: | .272 | | | .400 | | |
| Percentage Correctly Predicted: | 87.9% | | | 82.9% | | |

* Significance $\leq .01$

Note: The estimated probabilities imply that all variables, other than the relevant variable, assume the reference group values. The variable in question assumes a value of "1".

The number of urban respondents surveyed greatly exceeds the number of rural respondents, reflecting the highly urbanized nature of the Canadian population. The Nagelkerke R-squared scores also differ. According to the results, the urban sample accounts for approximately 27% of the variation of the results, while the rural sample accounts for about 40% of the variation. The higher R-squared score for the rural sample indicates that the rural sample does a better job explaining the behaviour of the survey respondents than the urban sample. The model successfully predicts 87.9% occurrences of PSE participation for the urban sample, while the model successfully predicts 82.9% of the occurrences for the rural sample.

The results from this analysis include the exponent of the beta value, the odds ratio, and the probabilities. The odds ratios compare the odds of attending post-secondary, college, or university for each group defined by the variable relative to the odds in the reference group.

A ratio greater than 1.00 indicates a higher likelihood of participation than the reference group. For example, the 1.919 odds ratio for the mid-level of unemployment in the urban sample indicates that the probability of a youth in a region with mid-level unemployment is 1.919 times that of a youth in a low-unemployment region to have PSE experience (on the assumption that all other variables assume their respective reference values). The odds ratios can be converted into probabilities of PSE participation. Using the mid-level unemployment urban sample again, the probability value is 0.68. That is,

the model predicts that 68% of urban youth in areas with mid-level unemployment will have PSE experience, setting other variables at their respective reference values.

Except where noted, all of the variables pass two-tailed significance testing at the one percent significance level ($p \leq .01$). Appendix E provides an extended listing of the results, including the probabilities and odds ratios for each predictor variable.

4.2.1. Predictor Variable: Regional Unemployment

Both the urban and rural samples suggest that respondents in areas with mid- and high-level unemployment were more likely to be in PSE than those respondents from areas with low unemployment. Urban respondents in mid- and high-level unemployment areas were about equally likely to be in PSE. The rural sample presents somewhat different results. Rural youth from areas with mid-level unemployment rates were 30% more likely than those in low employment areas to have PSE experience, while those from high unemployment regions were 50% more likely.

4.2.2. Predictor Variable: Parents' Education (PSE Experience)

Consistent with existing theories, a positive relationship exists between parental and youth PSE experience. Youths with at least one parent with post-secondary education experience are more likely to be in post-secondary education themselves, compared to those without a parent with PSE. This applies to both urban and rural students; however the effect is slightly stronger for rural respondents. Odds of a rural youth with at least one parent with PSE experience were 2.4 times the analogous odds of a rural youth not having a parent with PSE experience. The parallel ratio for urban youth was 1.9. Nonetheless, the urban sample predicts that 68% of those with a PSE parent would have PSE experience as compared to only 50% for rural students. In other words, when all else is held constant, urban students with at least one parent with PSE are 18 percentage points more likely to have PSE experience than rural students.

4.2.3. Predictor Variable: Relationship between Education and Success (Youth Responses)

Youth attitudes appear to have different impacts on PSE participation in the case of urban and rural youth. For urban youth, those who believe that education and success in life are correlated were slightly more likely to have PSE experience. However, as the level of agreement increases, the likelihood of PSE participation decreases. Urban youth who ‘somewhat agree’ that education and success are correlated were more likely to have PSE experience than those who ‘strongly agree’ with the statement. This runs contrary to existing theories. Meanwhile, rural students have a negative relationship between their attitudes towards education and PSE participation rates. Those who believe that education leads to success in life were actually *less* likely to be in PSE. Although it is difficult to interpret these results, this outcome may be an indication that rural students are less likely to be aware of the career and social benefits correlated with PSE participation.

4.2.4. Predictor Variable: High School Average

Student high school grades appear to have a strong impact on youth propensity to go on to PSE. Grades and PSE participation are positively related; as the grade level increases, so does the likelihood that the youth had PSE experience. Although both types of students demonstrate this relationship, rural students appear to be more positively impacted by high school grades.

The odds that rural students who have marks in the highest grade range (80% or over) in their final year of high school will have PSE experience are almost 7.5 times the corresponding odds of those with marks of 69% or less. Those in the middle grade range are over 3.2 times more likely to have PSE experience than those in the reference group. The urban sample shows comparable results, with the top high school achievers being almost 6.9 times more likely and middle achievers about 2.3 times more likely than the lowest achievers to have PSE experience.

This relationship may be the product of a number of different factors. First, students with higher grades are more likely to gain acceptance into PSE, which naturally

leads to higher participation rates. In addition, students with higher grades are more likely to be interested in education and willing to go on to PSE. These students understand the importance of PSE and seek educational opportunities beyond high school. Finally, students with higher high school grades are typically more comfortable in the classroom and more likely to have positive educational experiences. Students who do well in high school are typically those who are comfortable in the classroom and willing to seek new educational challenges.

Holding all other factors constant, the results from the survey reaffirm previous evidence that high school matters. The determinants of PSE participation for both urban and rural students often begin at the high school level. The consequences of failures at this education level are made evident later in the youth's life.

4.2.5. Predictor Variable: Gender

The rural sample shows that women are roughly 1.8 more times likely to have PSE experience than men, which is consistent with existing theories. Women, in general, attend PSE at higher rates than men, particularly in rural areas where men are more likely to be lured away from education in order to participate in the workforce. In the urban sample, there is no statistically significant gender difference, after adjusting for other variables.

4.2.6. Predictor Variable: Parental Expectations

Before examining the logistic regression results of the parental expectations variable, it is important to note that the reference category used for comparison is 'expectation of post-graduate PSE'. Contrary to the other categorical variables, the 'highest' value is the reference category. (Using the 'lowest' value, the results were corrupted due to a low cell count.) The negative relationship is consistent with previous analyses that suggest parents with expectations that their children get some form of PSE have a significant impact on their children's decision toward participation in PSE.

The results from the urban sample imply that parental expectations do matter. The higher the expectations placed on the youth, the greater the likelihood of PSE

participation. Youths who had parents with no PSE expectations were much less likely to have PSE experience than those whose parents had expectations of at least some form of PSE. In the rural case, the lowest expectations variable is not statistically significant; the intermediate expectations variable is significant, with the expected sign.

4.2.7. Predictor Variable: Combined Income of Parents

The standardized coefficients in both the urban and rural results show, as expected, a positive relationship between income and PSE participation. All income categories above the lowest (i.e. the reference) category increase the odds that the respondent has PSE experience. However, the rural and urban samples present some important differences. Whereas the odds gradually increase for urban respondents, rural youth in the two highest categories are much more likely than rural youth in the lowest income category to go on to PSE. The odds for rural youth in the \$75,000 to \$100,000 group to have PSE experience are 2.6 times higher than those in the lowest income group; for those in the \geq \$100,000 group, the odds grow to 6.5 times higher. Compared to respectively 1.6 times and 2.0 times higher odds for urban students, it appears the effect of parental income is more profound for rural students. This supports the conclusion that financial barriers are more prominent among rural students due to the increased costs of attending PSE. Because urban youths are more likely to have the option of attending PSE in their communities, the expenses of attending are typically less discouraging than for rural students who are forced either to travel long distances or live away from home.

4.2.8. Predictor Variable: Aboriginal Peoples

The final predictor variable, Aboriginal identity, presents mixed results. In the urban sample, those respondents who identify as being 'Aboriginal' were less likely to have PSE experience. Consistent with previous literature, Aboriginal peoples attend PSE at lower rates, other variables constant, than non-Aboriginals. In the rural sample, however, respondents were *more* likely than non-Aboriginal peoples to have PSE experience, holding all else constant. This is inconsistent with existing evidence that posits that rural Aboriginal peoples have worse overall educational outcomes than urban

Aboriginal peoples. This is likely due to two important limitations of ASETS. First, the survey did not include First Nations reserves. The exclusion of on-reserve limits the research model's ability to make any inferences in this highly underserved segment of the Canadian population. Second, given the narrow target population (rural Aboriginal respondents between the ages of 19-24), the sample size is small. Although this analysis displays some statistically significant relationships, the results should be taken with caution.

4.3. Summary of Findings

The logistic regression analyses identify some similarities and differences between urban and rural students. Parental support and guidance are important determinants of PSE participation. Students from households where the parents expect their children to go on to PSE are more likely actually to do so. However, the evidence fails to suggest any noteworthy differences between how these cultural characteristics affect rural and urban respondents. In respect to PSE participation, both urban and rural students appear to respond to parental supports in a similar way.

Similarly, the regional unemployment rate fails to identify any relevant differences between urban and rural students. Urban and rural youths from areas with mid to high unemployment rates compared to the national average were more likely to have PSE experience.

The findings also indicate that Aboriginal peoples continue to trail non-Aboriginals in terms of PSE participation. Both urban and rural Aboriginal peoples attend PSE at rates considerably lower than non-Aboriginal people. This study does not aspire to understand the specific determinants of education for Aboriginal peoples. Given that the ASETS data do not include respondents from the North or living on-reserve, the Aboriginal respondents can largely be assumed to have attended provincial-run high schools and live in non-aboriginal communities. As a result, the policies derived from this analysis would likely affect rural Aboriginal students as they would non-Aboriginal students.

The most pertinent findings are the importance of high school grades and household income. As mentioned, success at the high school level is an important

indicator of potential PSE participation for both types of students, but the effect on rural students is more profound. Possibly because of the increased risks in attending PSE (e.g. moving away from home, high financial costs, leaving social networks), rural students with low-to-moderate grades attend PSE at lower rates than urban students, according to the cross tabular comparison. The findings from logistic regression model indicate that increases in high school marks greatly raise the probability that the youth will go on to PSE.

Rural students are also more sensitive than urban students to increases in household income. Again, both urban and rural students show rates of PSE participation that rise with household income. However, as measured by the odds ratios in the top two income intervals relative to the reference group, the impact of higher income matters more for rural than for urban students. These findings suggest that ability to pay is a strong determinant of rural PSE participation.

4.3.1. Policy Implications

The policy implications of this statistical analysis suggest that any initiatives to increase rural participation in PSE should do the following:

- Reduce the costs of attending PSE for rural students.
- Improve the performance of rural high school students, recognizing that success at this education level is a major determinant of future PSE participation.
- Better inform qualified rural students about various types of PSE, explain the intricacies of going to PSE, and raise awareness of the correlation between PSE and long-term benefits such as greater income and mobility.

5. Policy Alternatives

In addition to the status quo, four policy alternatives are included for evaluation. The first two alternatives serve to reduce the costs of attending PSE for rural students by providing additional financial assistance. The next policy proposal involves improvements of education quality at the high school level in order to better prepare students for PSE. The final option incorporates an awareness campaign that better informs students and their families about various facets of post-secondary education, while also providing supplemental tutoring.

Given the distinct division of constitutional responsibilities in Canada, these policies transcend jurisdictional boundaries. Increasing financial assistance to rural students could be done through federal or provincial mechanisms, or a combination thereof. Both the Government of Canada and the provinces and territories have the jurisdictional authority to institute such programs. However, any policies that seek to strengthen education at the high school level fall within the mandate of the provinces and territories, and policy action would have to begin within these governments¹⁰. The final option, increasing familiarity of PSE, would be best implemented by school boards or other local non-government organizations, with federal funding. The analysis of these options must respect the fact that these policy boundaries are well guarded by each respective government and authority. The following table outlines the policy options and provides a brief description of each.

¹⁰ An exception is on-reserve schools, which fall under the responsibility of the federal government, as stipulated in the *Indian Act*, 1867.

Table 5-1: Policy Options

| Option | Description |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| (1) Status Quo | No change in existing programs and policies. |
| (2) Repayable Financial Assistance | Adjust CSLP's needs assessment process to better reflect actual living costs. |
| (3) Non-Repayable Financial Assistance | Additional funds to rural students who must live away from their family homes in order to attend their desired PSE program. |
| (4) Increased Investment in High School | Re-calculate provincial funding formulas to help rural schools meet the additional challenges. |
| (5) Outreach Programs | The creation of a PSE preparation course for rural high school students, designed to reduce the non-financial barriers to PSE participation. |

In Section Six, the policies are evaluated on the basis of cost, effectiveness, federal and provincial acceptability, administrative ease, and equity. More details of each criterion are listed in Appendix F. All of the proposed options will be contrasted with the status quo.

The objective of the following policy objectives is to increase rural participation in PSE. If successful and more rural students do attend PSE, consideration has to be given to institutional capacity. University and college enrolment spaces are reliant on the available infrastructure (e.g., classroom and lab spaces), teaching resources (professors), accommodation (residences), and support staff. As a result, PSE capacity is not infinite. In the absence of additional funding provided by the provincial and territorial governments to universities or colleges (or significant increases in tuition) for capacity expansion, any increase in rural student participation may be offset by a decrease in non-rural students. In this sense, the success of the proposed policies may simply change the composition of PSE attendees, and possibly raise the quality of attendees (through higher minimum academic requirements).

5.1. Option One: Status Quo

The existing programs offered by governments to help rural students are reflective of the character of all student financial assistance in Canada. Responsibility for the financing, administration, and control over student financial assistance programs is shared between federal and provincial/territorial governments. Because provincial and

territorial governments also offer their own loans, grants, and scholarships (such as rural bursaries), the assistance rural students receive depends on their province of residence.

Through the Canada Student Loans Program (CSLP), the Government of Canada provides financial assistance to students in an effort to reduce socioeconomic inequities in PSE participation. The following program components benefit primarily, though not exclusively, rural students:

- The program allows for one return trip to their permanent home for each 16-week period of study; two trips per academic year at the maximum rate of \$600 for each trip.
- Student loan needs assessment process includes allowances for living costs, such as rent.

In addition to the federally administered program, a number of provinces provide further assistance that offers preference for rural students.

Manitoba

- A Rural/Northern Bursary for students who must relocate or commute long distances.
 - Bursaries are \$600 per year (non-repayable).

Ontario

- Ontario Distance Grants are set out for students from remote or rural areas who need help with their travel costs. There are two types of grants:
 - Commuting grant: For students who live at home but must commute 80km or more to the closest PSE institution.
 - The grant is worth \$500 per academic term.
 - Travel Grant: For students who live away from their family home in order to attend a PSE institution.
 - The grant is worth \$300 per academic term.

Quebec

- Additional financial assistance to students who do not live with parents and reside in an 'outlying' area.
 - \$65/month for full-time students, to a maximum of \$520 per award year.

Although the programs differ, all focus on increasing rural PSE participation by means of increasing financial assistance.

5.2. Options Two and Three: Funding

In response to the observed relationship between income and PSE participation, supplementary student financial assistance could mitigate the financial barriers caused by the additional costs of PSE for rural students. Two policy alternatives of this kind are proposed for assessment. The first option calls for adjustment of repayable assistance programs through improvement of the needs assessment process used to determine the amount of loans made available to students. The second option calls for increasing the amount of non-repayable assistance by establishing a new rural bursary for students who *must* live away from their family homes in order to attend PSE.

5.2.1. Repayable Assistance: Reassess the Assessment Process

The federal government, in conjunction with the provinces and territories, already has in place a well developed and effective student loans program that provides repayable financial assistance to those with demonstrated needs. The Government of Canada provides 60% of the assessed need, up to a maximum of \$210 in loans per week of study. In addition to funding the final 40%, the provinces and territories determine eligibility and assess students' financial need based on federal criteria.¹¹ To improve the way this program serves rural students, the assessment process could better reflect the actual costs incurred by rural students when attending PSE.

Aside from taking into account income (and household income for students dependent on their parents), the assessment process is designed to consider accommodation, travel costs to and from family home, and other living expenses. However, the provincial and territorial assessments of accommodation costs do not give distinction to local housing markets. Rental costs, for instance, vary significantly across cities, towns, and regions throughout Canada.

¹¹ Québec, the NWT, and Nunavut do not participate in the CSLP, but they offer their own Student Assistance Programs and receive alternative payments from the Government of Canada to assist in the operation those programs.

Table 5-2: Average apartment monthly rental prices, select cities in Ontario, 2009

| | <i>Bachelor</i> | <i>One Bedroom</i> | <i>Two Bedroom</i> |
|-------------|-----------------|--------------------|--------------------|
| Ottawa | \$688 | \$853 | \$1,028 |
| Sudbury | \$508 | \$678 | \$830 |
| Thunder Bay | \$480 | \$607 | \$742 |
| Toronto | \$758 | \$926 | \$1,096 |
| Windsor | \$462 | \$622 | \$747 |

Source: Canada Mortgage Housing Corporation, 2009

For example, the Ontario Student Assistance Program (OSAP) does not take into consideration these variations in living costs in their assessment process (see Table 5-2). Rather, the various student assistance programs provide a single housing allowance in the assessment process. For the academic year 2009-10, OSAP assessed a housing need of \$823 for a one-bedroom apartment, including utilities (OSAP, 2010). OSAP participants attending a PSE institution in Windsor would likely be assessed higher accommodation costs than actual costs, while those in Toronto would have accommodation costs exceeding the assessment.

Provincial and territorial SFA programs can model their assessments after those used to assess the amount of financial support provided to social assistance beneficiaries. The *Ontario Works* program, which provides temporary financial assistance to those with demonstrated need, provides an alternative assessment model. The program's assessment process takes into consideration the applicants' actual rent and related expenses.

One major consideration worth noting is the existing weekly loan limits. Combined, the federal and provincial/territorial student loan programs have a maximum weekly loan allowance of \$350 (\$210 Federal, \$140 PT) for single students with no dependants. Adjusting the assessment process to better reflect actual cost may require loans exceeding the established limit. Consequently, instituting this policy option would likely require an increase, or elimination, of weekly loan limits.

5.2.2. Non-Repayable Assistance: Direct Bursaries to Rural Learners

The federal government already provides grants to Canadian students considered to be in a disadvantaged position. The Canada Students Grants program provides non-repayable financial assistance to the following sub-populations: low- and middle-income families, dependants, part-time students, those with permanent disabilities, and those with dependants. Through this program, a bursary could be designed to help rural youth meet the additional costs of PSE attendance.

The United Kingdom currently has in place a student support program that can be used as model. The *Residential Support Scheme* does not target rural students per se, but rather provides assistance to low-income students who have no option other than to live away from the family home in order to attend PSE. Canadian bursaries would also be income-tested and only made available to rural students who have no other choice than to move away from the family home.

This program would follow a similar institutional arrangement as the CSLP. A federal funding formula, based on the number of rural residents in each province and territory, would determine the amount of money the federal government would transfer to the respective student financial assistance programs in the form of a block grant. Delivering the financial assistance through this arrangement allows provincial and territorial programs to adjust their programs to better direct the aid at the targeted populations

5.3. Option Four: Strengthening the Base, Improving High School Performance and Retention

The strong positive relationship seen between rural high school grades and PSE participation suggests that rural learners' academic futures are determined in the years leading up to PSE. This is of particular concern in rural areas where high school dropout rates are much higher than in urban areas. Between 2001 and 2005, the national rural dropout rates were almost double the rates of urban areas (17.2% versus 9.2%), with some variation among provinces (Bowlby 2006). Rural students would almost certainly

benefit from targeted programs that increase high school retention and performance in advance of PSE.

Providing education in a rural high school at comparable levels of quality as in an urban school has been a continuing challenge for provincial and territorial policymakers. Maintaining equivalent services is made difficult by the country's large area and dispersed populations. In a 2003 review of the state of rural K-12 education in Ontario, the following points were identified as the most significant inequities between urban and rural schools (MoE, 2003):

- **Scaling:** Urban schools, unlike most rural schools, are able to use resources and staff effectively and efficiently through sharing of resources and consolidation.
- **In-school leadership and administration:** Rural schools often lack the ability to have full-time administrators, such as principals, vice-principals and secretaries. Principals, for instance, are valuable but there is often not enough administrative work to justify a full-time position in a small rural school.
- **Instruction:** The attraction and retention of quality teachers in rural areas is often a challenge for rural school boards. Additionally, small class sizes often result in triple-grade classes and limited range of courses (specifically core French training and special education).
- **Learning Materials and Resources:** Essential resources such as internet connections, e-learning, and relevant and current library books are sometimes inaccessible for rural schools with limited resources. Per-pupil costs for these resources are higher.
- **Transportation:** Large and sparsely populated catchment areas for rural schools make school transportation difficult and costly. Rural education authorities must balance costs with bus times and safety concerns.

The remedies to these problems require increased investment on the part of provincial and territorial governments. Provinces and territories use funding formulas based on student enrolment and the needs of the students for each educational board. This policy alternative proposes a change in school funding formulas in order to better

accommodate the additional costs inherent in rural schools.¹² Adjusting the formulas will help rural school boards ensure quality education and student access in remote and northern regions. Although school boards would have flexibility in how to use the additional funding, improving staffing levels, increasing the availability of learning resources, and meeting the higher costs of operating schools (e.g. transportation) would be the three targeted priorities.

Bolstering investment through reconfigured funding formulas would better enable rural school boards to meet the additional challenges of providing quality and accessible education to rural learners and increase the likelihood of future PSE participation.

5.4. Option Five: Outreach Programs

The findings suggest that rural learners with at least one parent with PSE experience are more likely to go on to PSE than ‘first-generation’ learners with no parent with PSE experience. Part of the explanation behind this relationship could be that rural first-generation learners have less information about post-secondary opportunities than if they had a PSE parent. As a substitute, early intervention programs can improve PSE preparation and awareness. These programs differ from those that target high school performance in that they focus on providing both tutoring and counselling support. Similar programs in the US have shown that preparatory work in high school can help first-generation learners narrow the participation gap (Warburton et al. 2001). Such programs can deliver a variety of types of information and services:

- Tutoring: Additional support can be provided to low- and mediocre-performing students to help them reach minimum academic requirements for PSE.
- Entrance requirements: Information on the type of skills, course prerequisites, and entrance exams required for the different types of PSE programs.
- Funding options: Present the available options for financing PSE education, including both public and private loans, scholarships, and bursaries.

¹² Since 2007, the Ontario government has provided additional funding to rural schools through its Geographic Circumstances Grant. However, at a cost of \$10 million/year, the program falls short of the \$50 million recommended by the Bowlby Report.

- Benefits of PSE: Explain to youths the potential benefits of PSE participation, such as increased earnings, improved ability to relocate, and reduced likelihood of unemployment.
- PSE expectations: Provide students with an understanding of the university and college experience, including information on the types of problems and challenges that PSE students often experience.
- Career possibilities after PSE: Better connect labour market information with PSE seekers. Provide information about labour market demands and earnings potentials of different professions.

Some school boards and private institutions provide these programs, although the level of service across the country is not consistent.

This policy option proposes the creation of PSE preparation courses for high school students. This student resource would be expected to reduce reliance on family and friends for the provision of PSE information. The programs would be federally funded, while existing NGOs would be relied upon to develop and deliver programs. These organizations tend to have a better understanding of the needs of the community and how best to deliver services. Included in the funding agreement would be a requirement for participating organizations to maintain participation and achievement data in order to enable evaluative feedback.

This policy proposal is modelled largely on the *Pathways to Education* program. *Pathways* is an initiative that aims to improve education drivers for youth at risk. Aside from providing financial assistance, the program offers counselling, social support, and tutoring outside of regular school hours. The results from a Toronto branch of this program demonstrate that such a program can be successful. The high school dropout rates among program participants have declined by more than 75%, while the rate of PSE participation has increased from 20% to 80% (*Pathways to Education*, 2010).¹³

Importantly, the proposed program would in some ways differ from *Pathways*. First, the existing program currently operates only in urban areas, mostly in Ontario.

¹³ These program results must be taken with caution. *Pathways* participants are self-selected, so they already demonstrate a willingness to excel in school.

Naturally, this policy option would target youth in rural areas. The program would incorporate a component that addresses some of the non-financial and non-academic barriers to PSE participation. In this respect, the policy option borrows from another program, the *Life After School* initiative in BC. This program helps Grade 12 students in the province apply for their intended program of study at a college or university and make a budget for their studies.¹⁴ In the latter years of high school, students have to navigate through many PSE schools and program options, often with little support from family or high school resources. The intent of the program is to help guide inexperienced high school students through these processes, as well as help students manage their financing options (i.e. loans, scholarships, etc.). In addition to offering academic support, the program provides PSE counselling services to help reduce barriers to continuing education.

¹⁴ Because this program is in its infancy, it is not yet possible to judge its effectiveness.

6. Policy Option Assessment

The following section evaluates the status quo and the policy alternatives. The results of the evaluation are first presented in a matrix for easier comparison of the relative merits and drawbacks of each option. Each criterion receives a score of either 1 (low), 2 (moderate), or 3 (high). The total score for each option is listed in the far right column. A more complete description of the criteria can be found in Appendix F.

Table 6-1: Policy Option Assessment Matrix

| Option | Annual Extra Costs | Effectiveness in Increasing Rural PSE | Political Acceptability (Federal) | Political Acceptability (Provincial/Territorial) | Administrative Ease | Equity/Fairness | Total (out of 18) |
|-----------------------|----------------------------------------|-----------------------------------------------|-----------------------------------|--------------------------------------------------|--------------------------------------|-----------------------------------------------------|-------------------|
| Status Quo | None | No Increase | No Change | No Change | No Change | Rural students still disadvantaged | |
| <i>Score</i> | 3 | 1 | 1 | 1 | 3 | 1 | 10 |
| Repayable Funding | Difficult to predict | Increase assistance | Increase loan costs | Increase loan costs | Uses existing financial aid networks | Benefits all loan recipients | |
| <i>Score</i> | 2 | 2 | 1 | 1 | 3 | 3 | 12 |
| Non-Repayable Funding | \$50-\$80 million | Increase assistance | Increases spending | No cost/No risk | Uses existing financial aid networks | Exclusive benefit (to rural students) | |
| <i>Score</i> | 1 | 2 | 1 | 3 | 3 | 1 | 11 |
| Investment in HS | \$0.5-50 million Varies by province | Increase supply of potential PSE participants | No risk | Investment in rural areas | No funding formulas | Brings rural schools to same level as urban schools | |
| <i>Score</i> | 1 | 3 | 3 | 1 | 2 | 3 | 13 |
| Outreach Programs | \$3-5 million | Targeted imitative | No risk | K-12is P/T responsibility | Existing networks | Exclusive benefit (to rural students) | |
| <i>Score</i> | 3 | 3 | 3 | 2 | 3 | 2 | 16 |

The following sections provide more detailed justifications for the scoring of each policy option on each criterion, as well as a summary of the policy evaluation.

6.1. Status Quo

| Annual Extra Costs | Effectiveness in Increasing Rural PSE | Political Acceptability (Federal) | Political Acceptability (P/ T) | Administrative Ease | Equity/Public Acceptance | Total (out of 18) |
|--------------------|---------------------------------------|-----------------------------------|--------------------------------|---------------------|--------------------------|-------------------|
| 3 | 1 | 1 | 1 | 3 | 1 | 10 |

Because the status quo requires no policy action, it fares well in the cost and administrative ease criteria. Neither the federal nor provincial governments would have to provide any additional funding support towards their respective student financial assistance programs.

The federal government would be somewhat reluctant to continue with this alternative, given its mandate to ensure equal educational opportunities for all willing and able Canadians. Recent research conducted both within and outside of the federal government has suggested that rural students require policy attention in order to overcome the persistent PSE participation gap. As evidence of this gap mounts, educational policymakers with Human Resources and Skills Development (HRSDC) will be under increasing pressure from relevant stakeholders to act. Equally important, provincial and territorial governments are unlikely to accept the persistence of education gaps between urban and rural students.

In respect to the equity criterion, the status quo appears to be failing rural Canadians. Given the federal government’s vision that all Canadians have the opportunity “...to develop the knowledge and skills to participate fully in the economy and in society” (HRSDC), the urban/rural gap suggests that rural Canadians are not being afforded the same opportunities as other Canadians. As a result, the status quo receives the lowest score on the equity criterion.

Finally, the status quo does not appear to be an effective option. As the research findings presented earlier in this study suggest, barriers to rural PSE participation remain unaddressed. The status quo is partly the reason the rural PSE participation gap exists.

6.2. Funding

Because the two policy options to change student financial assistance differ in substance, they are evaluated separately. Still, it is worth noting that both schemes have the same ultimate objective: to reduce the effects of income on rural PSE participation.

6.2.1. Repayable Assistance

| Annual Extra Costs | Effectiveness in Increasing Rural PSE | Political Acceptability (Federal) | Political Acceptability (P/ T) | Administrative Ease | Equity/Public Acceptance | Total (out of 18) |
|--------------------|---------------------------------------|-----------------------------------|--------------------------------|---------------------|--------------------------|-------------------|
| 2 | 2 | 1 | 1 | 3 | 3 | 12 |

Predicting the costs of this policy option is complicated. Adjusting the needs assessment process to better reflect actual living costs would increase the amount of student loans provided to students in areas where living costs are higher than average. In this respect, the policy option would increase loan distribution totals. However, those who live in areas deemed to have lower living costs (i.e. lower rent) would have the amount of their student loans reduced. The exact costs of this program would be contingent on the distribution of students between areas above and below average living costs. The unpredictability of costs, combined with the fact that the majority of students attended institutions in high-rental expense areas, explains why this option receives only a moderate score under the cost criterion.

Although this option serves to reduce financial barriers, it does not address motivational and ability barriers. As a result, under the effectiveness criterion, this policy receives a moderate ranking. By providing additional financial resources to rural students, it targets assistance to those students willing and able to go on to PSE, but with unmet financial need (i.e. financial expenses exceed all financial resources). However this measure does not affect the non-financial drivers of PSE education, namely high school grades or aspiration for further education.

Federal and provincial acceptability of this option is tied to the program costs. For both levels of government, this option would likely require increased funding to their respective student financial assistance programs. Although the money would largely be spent in the form of loans that will eventually be repaid, the additional costs associated

with loan provision must be considered. Loan defaults, interest-maintenance programs, debt forgiveness, and administration costs would all likely increase if more student loans were distributed. Additionally, the federal government is already under pressure from education stakeholder groups to reduce student debt, while this option would likely increase outstanding debt. The federal government would likely be very reluctant to raise, or remove, weekly student loan limits.

This option fares well in the administrative ease and equity criteria. The policy calls for an adjustment of the well-established Canada Student Loans Programs and would not require much new administrative infrastructure. Because the new assessment process would apply to all CSLP participants, the potential benefits of the option could be realized by program participants. The end result is that this option would likely be considered highly equitable.

6.2.2. Non-Repayable Assistance

| Annual Extra Costs | Effectiveness in Increasing Rural PSE | Political Acceptability (Federal) | Political Acceptability (P/ T) | Administrative Ease | Equity/Public Acceptance | Total (out of 18) |
|--------------------|---------------------------------------|-----------------------------------|--------------------------------|---------------------|--------------------------|-------------------|
| 1 | 2 | 1 | 3 | 3 | 1 | 11 |

The annual estimated costs for this bursary are based on the existing Canada Student Grants program. In the 2008-09 school year, the program issued 245,000 grants to students from low- and middle-income households, with an estimated 49,000 going to rural students.¹⁵ The additional funds would help rural students meet the extra costs incurred by living away from the family home. The following table outlines two potential alternatives.

Table 6-2: Potential non-repayable funding options

| | <i>Amount of assistance per month of study</i> | <i>Total for 8 month study period</i> | <i>Total cost of program</i> |
|------------|------------------------------------------------|---------------------------------------|------------------------------|
| Scenario A | \$150 | \$1,200 | \$58.8 million |
| Scenario B | \$200 | \$1,600 | \$78.4 million |

¹⁵This figure represents 20% of the total grants issued. This is based on the Canadian rural population consisting of about 20% of the country's total population.

The exact annual costs of the rural bursary program would be contingent on the number of rural learners deemed to be in financial need and would fluctuate between years. However, with estimates between \$50 and \$80 million dollars per year, a rural bursary would be a very costly option compared to the policy alternatives. The high cost of this program would likely make this option unattractive to federal policymakers. Conversely, provincial leaders, who would face no additional costs or risks, would likely be very supportive of a federally funded bursary program.

For the same reasons as the repayable funding option, this option receives a moderate score under the effectiveness criterion. Providing students with more financial resources would not increase their willingness or academic capability to go on to PSE.

Similar again to the previous funding option, the proposed bursary would be run as an extension of the existing Canada Student Grants program and would require little administrative adjustment. Unlike the previous option, this program receives the lowest score under the equity criterion. The federal government would be committing a large amount of money towards a relatively small number of Canadians. There exist non-repayable grants provided by the federal government to target underrepresented populations (e.g. low-income and people with disabilities). These are likely to be perceived by the public more favourably than grants to students whose families chose to live in rural areas. Many non-rural learners also struggle to meet the costs of PSE participation, and would likely argue that rural students do not suffer from the same disadvantages as underrepresented groups already targeted.

Based on this evaluation, the non-repayable is not a feasible policy option to address the needs of rural learners.

6.3. Investment in High Schools

| Annual Extra Costs | Effectiveness in Increasing Rural PSE | Political Acceptability (Federal) | Political Acceptability (P/ T) | Administrative Ease | Equity/Public Acceptance | Total (out of 18) |
|--------------------|---------------------------------------|-----------------------------------|--------------------------------|---------------------|--------------------------|-------------------|
| 1 | 3 | 3 | 1 | 2 | 3 | 13 |

Targeting high school performance in order to increase rural participation ranks well in comparison to the other options. In terms of costs, the application of this policy alternative would vary between provinces. An assessment of the state of rural high schools undertaken in 2003 by the Ontario provincial government estimated an additional \$50 million annually would have to be spent on rural schools in that province alone in order to overcome their disadvantages comparative to urban schools (Hartman 2003). Given the considerable demographic and geographic differences between provinces in Canada, each jurisdiction would have to assess the state of its rural K-12 schools. Regardless, this policy option would require an increase in provincial spending. As a result, it would be unwelcomed by provincial and territorial governments whose financial resources are limited. The federal government, however, would incur no cost and would likely be highly supportive of such policy action.

In terms of equity, this policy seeks to provide rural service levels comparable to urban areas; thus the likelihood of a perceived inequity on the part of the general public is low. Finally, in respect to effectiveness, this policy directly targets one of the leading causes of low rural PSE participation, high school performance. Significant investments in rural high schools would likely increase student outcomes, increasing the number of rural learners academically qualified to go on to high school. Given that PSE participation is most often a function of capability and motivation, this policy presents itself as an effective way to increase rural PSE participation rates.

6.4. Outreach Programs

| Annual Extra Costs | Effectiveness in Increasing Rural PSE | Political Acceptability (Federal) | Political Acceptability (P/ T) | Administrative Ease | Equity/Public Acceptance | Total (out of 18) |
|---------------------------|----------------------------------------------|------------------------------------------|---------------------------------------|----------------------------|---------------------------------|--------------------------|
| 3 | 3 | 3 | 2 | 3 | 2 | 16 |

The option of creating outreach programs presents as the most appealing means of reducing the rural PSE participation gap.

The estimated cost of this program is approximately \$4-6 million, depending on the scope of the program. The estimates are based on the current expenditures of the

Pathways to Education program¹⁶ and would vary depending on participation rates. The cost of the outreach policy would be approximately \$1100 per student, and the program would target rural students in their upper years of high school.

The *Pathways* model has proven to be successful, substantially increasing PSE participation rates of marginalized urban youth. Assuming the replication of the success of *Pathways*, this policy option receives the highest effectiveness score.

Outreach programs have been able to achieve significant results with little funding relative to the cost of other policy options. The federal government would likely be willing to support such a program due to its relatively low risks. At the provincial and territorial level, there may be some reluctance to allow the federal government to venture into K-12 education. Legislative boundaries have been historically well guarded by sub-national governments in Canada, and the creation of a federal-NGO initiative that works with high-school students may be conceived as the federal government over-stepping its constitutional authority. For this reason, this option only receives a moderate score under the provincial acceptability criterion.

Finally, because this initiative provides additional supports to rural Canadians, there is some inequity between urban and rural residents. However, the policy action is partially justified as an affirmative action to reduce identified inequities between rural and urban learners. Stated differently, the policy option serves to provide rural learners with the same non-financial supports to PSE more frequently enjoyed by urban students.

6.5. Summary

The status quo option does not compare well with the alternatives, suggesting an opportunity for policy action. Increasing financial assistance is the most common method by which federal education policymakers promote PSE participation to underserved segments of the population, such as low-income households, people with disabilities, and students with dependants. The evaluation of both the repayable and non-repayable funding options suggests that the federal government should move beyond these conventional means of assistance. The low evaluation scores of the second and third

¹⁶ The costs of this alternative, however, would be much lower than *Pathways* as the proposed option does not include \$4000 scholarship awards to students.

options put in doubt the ability of student financial assistance alone to reduce rural PSE participation gaps. More attention should be given to non-financial supports, namely better investments in high school and the creation of outreach support and career counselling programs.

Higher investment in rural high schools on the part of provincial governments would likely see improvements in the share of rural youth attending PSE. Bringing rural learners to the same level of academic preparedness as urban students would be a valuable first step in targeting the persistent urban-rural PSE participation gap. However, the large financial expenditures required for this initiative makes it unattractive to financially constrained provincial leaders. Despite the potential of this policy action, it is not the best option in my evaluation.

Based on the evaluation of policy alternatives, the creation of outreach programs in rural communities emerges as the most highly rated policy action. If the federal government wants to directly address rural participation gaps, it should replicate the *Life After School* program recently instituted in BC, but with a focus on students living in rural areas. This policy option is distinguished by targeting a variety of the key determinants of PSE participation. The program serves to reduce discrepancies in high school grades by providing additional tutoring outside of school hours. Additionally, the program aims to overcome the disadvantages associated with being a first-generation learner by providing career and PSE counselling to rural high school students.

Before creating a nation-wide program for rural students, a smaller scale initiative in a selected province can be used to predict actual program operating costs and take-up rates. Such a pilot project can refine the program before national delivery so that costs are minimized and effectiveness is increased.

The policy fills a role left vacant by the loss of high school guidance counsellors and support personnel in many Canadian high schools. In the name of fiscal constraint, provincial and territorial education ministries have decreased their spending on high school counsellor services. Counsellors often have to fill a variety of roles in a high school, including teaching part-time. As a result, career counselling services often lose priority. As well, student-to-counsellor ratios have generally increased across Canada, creating higher workloads for support personnel (CCA, 2004). The outreach policy

option strengthens investment in the valuable roles and services that career counsellors can provide to vulnerable high school students.

7. Conclusion

This study aims to understand why rural Canadians do not participate in post-secondary education at rates comparable to other Canadians. The analysis explores data obtained in the 2009 Access and Support to Education and Training Survey administered by Statistics Canada, with cooperation and support by Human Resources and Skills Development Canada.

My statistical analysis uncovers several important characteristics to explain differences between urban and rural youth. Urban youth are more likely to have parents with PSE and, perhaps as a result, are more likely to have parents with post-graduate PSE expectations. Despite urban and rural youth respondents having near identical response distributions to the ASETS questions on the relationship between education and success, the effect of this variable on PSE participation differs significantly between the two groups. Urban youth who agreed with the suggestion that education leads to success in life were more likely than those who disagreed to have PSE experience, while rural students were less likely.

Two of the most noteworthy differences arise in relation to high school performance and income. Not only are dropout rates higher in rural communities, but those who remain in school have lower overall grades on average. Rural youth were more likely than urban students to fall within the 70-79% grade category in their last year of high school, a range close to the threshold of minimum requirements of many PSE institutions. A similar relationship exists with household income. Urban students were more likely to come from households in the two highest income categories, while rural students were more likely to come from the middle household income categories.

The results of the crosstab and logistic regression analyses suggest that income, high school performance, and parental education levels are the most significant determinants of rural PSE participation. Rural youth are not as financially or

academically prepared for post-secondary education, and they are typically less familiar with PSE than their urban peers.

Based on these findings and subsequent policy analysis, the recommended policy proposal is for early intervention, outreach programs targeted towards rural high school students in need of additional guidance towards PSE. In a cost-effective manner, such a program has the potential to increase high school grades, help students find financial resources, and help make PSE less overwhelming. This option differs from the conventional federal approach to increasing PSE participation, namely increased transfers to students by way of student loans and grants. Evidence increasingly suggests that PSE participation is determined by other factors in addition to affordability. Although the costs of PSE are undeniably a barrier to many Canadians, more money does not solve all questions surrounding PSE participation.

8. Appendices

A. Hypotheses and Variable Names

| <i>Variable Name</i> | <i>Target Population</i> | <i>Hypothesis</i> |
|-------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| “AL_Q04”- Relationship between education and success. | Parents of youth aged 18 to 24. | + Youth and Parents of Youth who believe there is a strong connection between education and success will more likely to go to PSE. |
| “PAR_ED”- Highest level of parent’s education. | Parents of youth aged 18 to 24. | + As the parent’s level of highest education increases, the Youth’s PSE participation will also increase. |
| “EH_Q05”- High School Performance | Youths aged 18 to 24. | + The higher the average, the more likely the Youth would enter PSE. |
| “TOTINC”- Parent and Youth Income | Parents and youths. | + Parents with highest incomes are more likely to have Youth that continue on to PSE. |
| “EMPLOY”- Unemployment rates | N/A | +/-, Unemployment can both positively and negatively affect PSE participation. |
| “DPROV”-Province | Youths aged 18 to 24. | N/A |
| “GDR”- Gender of Youth | Youths aged 18 to 24. | +, Females are expected to have higher PSE participation rates than males. |
| “IM_Q10”- Aboriginal | Youths aged 18 to 24. | - Those that identify as being Aboriginal will be less likely to attend PSE. |

B. Access and Support to Education and Training Survey questions and Possible Responses

| <i>Variable</i> | <i>Question</i> | <i>Possible Responses</i> |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| “AL_Q04”- Relationship between education and success. | “To what extent do you agree or disagree with the following statements: There is a strong relationship between education and success in life.” | Strongly agree Somewhat agree Somewhat disagree Strongly agree Neither agree or disagree |
| “PAR_ED”- Highest level of parent’s education. | Highest level of education of parents living in selected household. | Derived socio-demographic variable. |
| “EH_Q05”- High School Performance | In your last year of high school, what was your overall grade average, as a percentage? | 90% or above 80% to 89% 70% to 79% 60% to 69% 50% to 59% Under 50% |
| “TOTINCP”- Parent and Youth Income | PMK and their spouse or partner’s combined income. | Derived socio-economic variable |
| “DPROV”- Province | Province code for respondent’s current address. | Derived socio-demographic variable |
| “GDR”- Gender of Youth | Gender | Male Female |
| “IM_Q10”- Aboriginal | Are you an Aboriginal person that is, a North American Indian, a Métis, or an Inuit? | Yes No |

* In addition to those listed, ‘Don’t know’ or ‘Refused’ were possible answers.

C. Data Problems and Limitations

Consideration should be given to the following data problems and limitations when analyzing the results of this research.

- **Missing values:** There are a number of missing observations for most ASETS questions. Responses listed as ‘Unsure’, “Don’t know”, “Not applicable” “Neither agree nor disagree” and “Refused” were excluded from this research as missing values. The number of missing values greatly varies amongst the questions, however the questions regarding sensitive personal characteristic (such as income, race, and education) are those with the most missing responses. Perceived personal intrusion on the part of the government may have been responsible for the amount of respondents that did not answer these questions. The following questions had the greatest amount of missing values:
 - “Parent’s Highest Level of Education”: Over half of the responses to this question were categorized as ‘missing’. The results indicate the parents of the selected youth were reluctant to divulge this information to the ASETS surveyor.
 - “Income of Parent and Spouse/Partner”: About one-quarter of respondents did not answer this question. Expecting reluctance to answer questions concerning income, the designers of ASETS initially asked the respondent to provide an open response to the question. If the respondent refused or was unsure, the surveyor provided different income categories to the respondent.
 - “Are you and Aboriginal Person?”: Approximately 17% of survey responses to this question are missing. Many respondents to this question were unable to answer this question because they were unsure of their ancestry.

The other independent variables in the regression model have less than 5% of their responses listed as missing.

- **Collapsing of responses:** To maintain a culture of confidentiality, Statistics Canada prohibits the release of any information that can be used to identify any individual

person, business, or organization. To adhere to the privacy regulations as set by Statistics Canada, a number of response categories were grouped together to protect the identity of respondents. The following questions have response categories that cell counts too low to be published.

- “Average last year of high school”: The amount of rural students who had averages less than 50% are so few that they could theoretically be used to identify individuals in a particular rural community. To overcome this problem, the two lowest categories were combined into a single “59% or less” category.
- “Relationship between education and success”: The number of rural students who responded either ‘Somewhat disagree’ and ‘Strongly disagree’ are also less the required minimum Statistics Canada threshold. To overcome this problem, the two categories were merged into one single category called ‘Disagree’.
- Data limitation: Despite the depth of the Access and Support to Education and Training Survey, there some data limitations worth consideration.
 - The dependent variable used in this study measures PSE experience as of June 2008 for 19-24 year old respondents. The researcher acknowledges that this does measure those that enter PSE at some point when they are older. By focusing on those between the ages 19-24, the research resolves itself to measuring those who choose the so-called ‘traditional pathway’ into PSE.¹⁷
 - ‘Rural’ is simply denoted as those areas outside of commuting zone centres of 10,000 or more in population. Identifying rural communities through this criterion alone does not adequately capture other important characteristics of the area. For example, a rural community in Nova Scotia is different from a community in Northern British Columbia. The data also does not identify the distance of the nearest PSE institution, which Marc Frenette among others has identified as an important determinant of PSE participation.

¹⁷ According to the traditional pathway, students who do go on to PSE would already have done so by the time they are 19.

D. ASETS Sample Weighting

Estimates were produced using weights attached to each sampled unit. The weight of a sampled unit indicates the number of units in the population that the unit represents. The weights were calculated in several steps:

- An initial weight was calculated based on the probability of selecting the unit in the sample.
- The weights were adjusted to account for household level non-response.
- The weights were adjusted to account for the selection of one person within the household.
- The weights were adjusted to account for person level non-response.
- The weights were calibrated to make them agree with July 2008 demographic counts, at the province by age group by gender level.

The quality of the estimates was assessed using estimates of their coefficient of variation (CV). The CVs were calculated using bootstrap weights which take the sample design into account.

E. Regression Results

The chart below notes both probabilities and odds ratio. The presented probabilities can be used to classify subjects with respect to whether the survey respondent will have some form of PSE experience or not. For example, the model predicts that the probability of urban respondents having been in PSE is 68% (probability: 0.68) for those with parents with some PSE experience and 53% (probability: 0.53) for those with parents with no PSE experience. For categorical variables, the predictor's probability is in comparison to the reference category. For example, the probability value for respondents whose parents earn between \$25,000 to \$50,000 (urban, probability: 0.62) are in comparison to those that earn \$25,000 or less (probability: 0.53).

| Variable Name | Reference/ Predictor | Urban Respondents | | | Rural Respondents | | |
|----------------------------------------------------|-----------------------------------------------------------|-------------------|-------------------|------------|-------------------|-------------------|------------|
| | | Probability (x=1) | Probability (X=0) | Odds Ratio | Probability (x=1) | Probability (x=0) | Odds Ratio |
| Regional unemployment | Low unemployment | - | -- | -- | -- | -- | -- |
| Reg_employ(1) | Mid unemployment | .68 | .53 | 1.919 | .30 | .30 | .1001 |
| Reg_employ(2) | High unemployment | .67 | .53 | 1.815 | .50 | .30 | 2.342 |
| Parent's education | No PSE experience/At least one parent with PSE experience | .68 | .53 | 1.919 | .50 | .30 | 2.373 |
| Relationship between education and success (youth) | Disagree | -- | -- | -- | -- | -- | -- |
| Edu_Suc(1) | Somewhat Agree | .61 | .53 | 1.422 | .19 | .30 | 0.536 |
| Edu_Suc(2) | Strongly Agree | .58 | .53 | 1.237 | 0.26 | .30 | 0.841 |
| Average in last year of high school | 69% or less | -- | -- | -- | -- | -- | -- |

| | | | | | | | |
|-----------------------------------------|-------------------------------------------------------|---------------------|-----|-------|-------------------|-----|-------|
| Avg_hs(1) | 70-79% | .72 | .53 | 2.277 | .58 | .30 | 3.241 |
| Avg_hs(2) | 80% or above | .88 | .53 | 6.896 | .76 | .30 | 7.478 |
| Gender | Male/Female | .53 | .53 | 1.014 | .44 | .30 | 1.868 |
| Parental Expectations | Expect post-graduate PSE | -- | -- | -- | -- | -- | -- |
| Par_exp(1) | Expect university, college, or some other form of PSE | .05 | .53 | 0.043 | .00 | .30 | 0.000 |
| Par_exp(2) | Expectation below PSE | .23 | .53 | 0.276 | .12 | .30 | 0.324 |
| Combined income of parents in household | Less than \$25,000 | -- | -- | -- | -- | -- | -- |
| Income(1) | \$25,000 to less than \$50,000 | .62 | .53 | 1.477 | .39 | .30 | 1.484 |
| Income(2) | \$50,000 to less than \$75,000 | .57 | .53 | 1.213 | .42 | .30 | 1.682 |
| Income(3) | \$75,000 to less than \$100,000 | .63 | .53 | 1.562 | .53 | .30 | 2.609 |
| Income(4) | \$100,000 or more | .69 | .53 | 2.004 | .74 | .30 | 6.495 |
| Aboriginal | Non-Aboriginal/Aboriginal | .35 | .53 | 0.480 | .47 | .30 | 2.046 |
| Number of Unweighted Cases (N): | | 1509 (2456 missing) | | | 289 (391 missing) | | |
| Nagelkerke (Pseudo) R Square: | | .272 | | | .400 | | |
| Percentage Correctly Predicted: | | 87.9% | | | 82.9% | | |

F. Evaluation Criteria

| Criteria | Definition | Measurement |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Initial (Setup) Cost | Financial cost of implementing the policy | Monetary costs, in comparison to the other alternatives (Low, Moderate, High) |
| Operation Cost | Annual operating cost of the policy | Monetary costs, in comparison to the other alternatives (Low, Moderate, High) |
| Effectiveness in increasing rural PSE participation | How well does the program target rural students specifically? | Low: Alternative does not increase rural PSE participation. Moderate: The policy offers potential, but no guarantee, of increased rural PSE participation. High: If implemented, policy will increase rural PSE participation. |
| Political Acceptability | 2 Measurements: <i>Provincial</i> and <i>Federal</i> willingness to accept policy recommendation. | Low: No Acceptance Moderate: Tentatively accept/conditional High: Willingness to act on policy |
| Administrative Ease | How much new administrative infrastructure would be required to institute the program? | Low: Requires major administrative changes Moderate: Requires some administrative changes. High: Can be operated within existing administrative channels, with only minor changes |
| Equity/Fairness | Will the policy be perceived as unfairly benefitting a minority of Canadians? | Low: Targets only rural students. Moderate: Benefits universal, but rural youth more likely to benefit High: Universal program (open to all Canadian youth) |

G. Correlation Matrix

| | <i>Regional Employment</i> | <i>Parental Education</i> | <i>Education and Success</i> | <i>Average High School</i> | <i>Gender</i> | <i>Parental Expectations</i> | <i>Income</i> | <i>Aboriginal</i> |
|------------------------------|----------------------------|---------------------------|------------------------------|----------------------------|---------------|------------------------------|---------------|-------------------|
| <i>Regional Employment</i> | 1 | .053* | .000 | .067* | .014* | .046* | -.012* | -.093* |
| <i>Parental Education</i> | .053* | 1 | .008* | .108* | .002* | .139* | .166* | -.028* |
| <i>Education and Success</i> | .000 | .008* | 1 | -.009* | .040* | .031* | .000 | .039* |
| <i>Average High School</i> | .067* | .108* | -.009* | 1 | .178* | .262* | .083* | -.117* |
| <i>Gender</i> | .014* | .002* | .040* | .178* | 1 | .082* | -.005* | .006* |
| <i>Parental Expectations</i> | .046* | .139* | .031* | .262* | .082* | 1 | .202* | -.106* |
| <i>Income</i> | -.012* | .166* | .000 | .083* | -.005* | .202* | 1 | -.115* |
| <i>Aboriginal</i> | -.093* | -.028* | .039* | -.117* | .006* | -.106* | -.115* | 1 |

H. Variance Inflation Factor (VIF) Test

| <i>R-Squared</i> | <i>VIF Value</i> $VIF(\beta_j) = \frac{1}{(1-R_j^2)}$ | <i>Dependent Variable</i> | <i>Independent Variables</i> |
|------------------|----------------------------------------------------------|---------------------------|-------------------------------------------------------|
| .022 | 1.022495 | Reg_emp | Par_edu, Edu_suc, Avg_hs, Sex, Par_exp, Inc, Abor |
| .070 | 1.075269 | Par_edu | Reg_emp, Edu_suc, Avg_hs, Sex, Par_exp, Inc, Abor |
| .010 | 1.010101 | Edu_suc | Reg_emp, Par_edu, Avg_hs, Sex, Par_exp, Inc, Abor |
| .146 | 1.17096 | Avg_hs | Reg_emp, Par_edu, Edu_suc, Sex, Par_exp, Inc, Abor |
| .056 | 1.059322 | Sex | Reg_emp, Par_edu, Edu_suc, Avg_hs, Par_exp, Inc, Abor |
| .128 | 1.146789 | Par_exp | Reg_emp, Par_edu, Edu_suc, Avg_hs, Sex, Inc, Abor |
| .074 | 1.079914 | Inc | Reg_emp, Par_edu, Edu_suc, Avg_hs, Sex, Par_exp, Abor |
| .019 | 1.019368 | Abor | Reg_emp, Par_edu, Edu_suc, Avg_hs, Sex, Par_exp, Inc, |

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