Low-Income Mature Students in Canadian Postsecondary Institutions: Who They Are and Why They Matter

by

Victoria A. Fritz

A Thesis

presented to

The University of Guelph

In partial fulfillment of requirements

for the degree of

Master of Science

in

Family Relations and Applied Nutrition, Family Relations and Human Development

Guelph, Ontario, Canada

ABSTRACT

Low-Income Mature Students in Canadian Postsecondary Institutions: Who They Are and Why They Matter

Victoria A. Fritz
University of Guelph, 2016

Advisor:
Dr. Tricia van Rhijn

The purpose of this thesis was to deepen understanding of low-income mature students in Canadian postsecondary institutions. Using data from the 2011 Survey of Labour and Income Dynamics, provincial enrolment was explored in order to provide context. Secondly, descriptive statistics were used to create a profile of low-income mature students based on individual, family and institutional characteristics. Lastly, chi-squares and t-tests were used to examine gender and institutional differences among each of the profiled characteristics. Many characteristics of low-income mature students were found to be shared by mature students and low-income students (e.g., employment while in school and the strong influence of maternal education level); however, it was also found that mature students differed in several ways (e.g., gender and enrolment status), suggesting that mature low-income students are themselves a unique group. This thesis is the first look at low-income mature students in Canada, and demonstrates that further study of this unique group is required.

Acknowledgements

First and foremost, I have to acknowledge my thesis committee for all of the time and efforts they put into this project alongside me. Thank you to my incredible advisor Dr. Tricia van Rhijn for providing constant support and encouragement, and for pushing me to become all that I can be. Without you I would never have completed this project, and for that I can never thank you enough. Secondly, thank you to my committee member Dr. Donna Lero. Your vast wealth of knowledge always amazes me, and I thank you for always challenging me to think deeper and to be a stronger student. You both have been such an integral part of this process, and this thesis belongs to you as much as it belongs to me.

Thank you to my colleagues in the department who have both challenged me academically and provided encouragement along the way. Another thank you to my colleagues at the Library. You have all been so incredibly supportive and I have made so many wonderful connections that I look forward to developing over coffee, tea, drinks and dinners now that I am finished.

Thank you to Statistics Canada for collecting this data and granting me the privilege of working with it. I hope that I will have many future datasets to explore as I continue my research.

A huge thank you to my friends (you know who you are), my mom Arlene, my dad Gord, my brother Matt, and my partner Michael for your unconditional love and patience with me during this project. I am ever grateful to you for listening to me complain, for calling me out when I was procrastinating, for allowing me to tell you about my thesis over and over again, and for being the incredible people you all are. I owe a huge amount of my success to all of you.

Lastly, thank you to all of the students who have inspired this project.

Table of Contents

Introduction 1
Theory 1
A Review of the Literature 6
The Many Benefits of a Higher Education 6
The Multifaceted Decision to Attend a Postsecondary Institution 9
Affordability and Accessibility: Why Look at Access? 13
Defining ‘Traditional’ vs. ‘Non-traditional’ Students 17
Low-Income Students 18
Mature Students 22
The Current Study 28
Terms in the Study 29
Contributions 30
Research Objectives 31
Research Objective 1. 31
Research Objective 2 31
Research Objective 3 32
Methods 33
Data Source 33
Analytic Strategy 35
Variables. 35
Weighting 37
Data interpretation 37
Normality 37
Descriptive statistics 38
Independent t-tests 39
Chi-squared tests 40
Results 40
Normality 40
Research Objective 1: Provincial Enrolment 41

Research Objective 2: Individual, Family, and Institutional Characteristics 42
Individual characteristics 42
Family characteristics 43
Institutional characteristics 45
Research Objective 3: Gender and Institution Analysis 45
Gender 45
Institution type 47
Discussion 49
Overview 49
Research Objective 1: Provincial Enrolment 49
Research Objective 2: Individual, Family, and Institutional Characteristics 51
Individual characteristics 51
Family characteristics 52
Institutional characteristics 54
Research Objective 3: Gender and Institution Analysis 54
Limitations 56
Conclusions 57
Implications 58
References 60
Appendix A: Copy of Signed Letter Approving Access to the BRDC 70
Appendix B: Variables used in the study 72
Appendix C: Comparison of Categorical Characteristics by Gender 74
Appendix D: Comparison of Institutional Characteristics by Gender 75
Appendix E: Comparison of Categorical Characteristics by Institution 76
Appendix F: Comparison of Interval Characteristics by Institution 77

List of Tables

Table 1: Enrolment Breakdown by Province 41
Table 2: Individual Characteristics of Low-Income Mature Students 43
Table 3: Family Characteristics of Low-Income Mature Students 44
Table 4: Institutional Characteristics of Low-Income Mature Students 45
Table 5: Comparison of Categorical Characteristics by Gender 46
Table 6: Comparison of Interval Characteristics by Gender 47
Table 7: Comparison of Categorical Characteristics by Institution 48
Table 8: Comparison of Interval Characteristics by Institution 48

Introduction

The importance and benefits of a postsecondary level education are well known. Numerous studies have been conducted, each supporting the importance of attaining a higher education for employment success and future earnings (Bergman, Gross, Berry, & Shuck, 2014; Kerr, 2011). Despite these many benefits, access to and subsequently enrolment in postsecondary institutions is not equal and many groups are underrepresented including low-income students, mature students, and Aboriginal students. The decision to study at the postsecondary level is a very complex one, with many inhibitory factors, which often manifest as barriers to access. In order to ensure that access is equitable for all individuals, a focus on underrepresented groups is needed. Researchers have demonstrated the importance of examining low-income students (e.g., Junor & Usher, 2004) and, as the demographics of students attending postsecondary schooling continues to expand, mature students (e.g., Kerr, 2011). Yet a gap in the literature exists for one especially vulnerable group, one that occupies multiple marginalized identities at the postsecondary level: low-income mature students. This research project begins to explore the characteristics of this unique group.

This thesis will provide a review of the literature, including an exploration of the benefits of a higher education, the decision to attend postsecondary study, and the concept of access. The literature regarding low-income students and mature students will then be explored. The research methods and analyses used for this project will be outlined, followed by the results of the study. Lastly, this thesis will conclude with a discussion section.

Theory

Theory is important to help guide research, and to help frame understanding. For this project, Human Capital Theory (HCT) provided an appropriate lens to understand why individuals choose to enter postsecondary education and which individuals make this choice. It

helped to frame the research by identifying the need to explore the characteristics of the students who attend PSE, providing the basis for research objectives 1 and 2. By adopting a HCT lens, the researcher was encouraged to explore the decision to attend postsecondary schooling (which is included in the section entitled *The Multifaceted Decision to Attend a Postsecondary Institution*). In order to address the limitations of HCT (outlined in the following paragraphs), the researcher chose to explore the benefits of a postsecondary education, both financial and non-financial (included in the section entitled *The Many Benefits of a Higher Education*). The development of HCT, its main tenets, limitations, and feasibility for this study are presented in the ensuing section.

Sweetland (1996) suggests that HCT developed its roots in the 1770's, when Adam Smith suggested the interconnectedness between human effort and individual wealth. This connection was furthered in the 1840's when John Stewart Mill posited that human abilities are related to economic wealth (Sweetland, 1996). These ideas forged the connection between wealth and some measurable human characteristics. The modern understanding of human capital can be attributed to the works of Schulz and Becker, who sought to understand economic development that occurred at a rate much higher than the growth of traditional capital (i.e., finances) and labour (Crocker, 2006). Becker describes several observed phenomena that set the foundation for Human Capital Theory:

> *1) Earnings typically increase with age at a decreasing rate, 2) unemployment rates tend to be inversely related to the level of skill, 3) firms in underdeveloped countries appear to be more "paternalistic" towards employees than those in developed countries, 4) younger persons change jobs more frequently and receive more schooling than older persons do, 5) the distribution of earnings is positively skewed, especially among professional and other*

> *skilled workers, 6) Abler persons receive more education and other types of training than others, 7) the division of labour is limited by the extent of the market, 8) the typical investor in human capital is more impetuous and thus is more likely to err than is the typical investor in tangible capital. (Becker, 1975, p.16)*

In all of the above phenomena, there appears to be some relationship forming between human skill, education, and earnings. There also appears the beginnings of the relationship between individual capital and national capital. Both of these relationships are important to the HCT and form the tenets of this theory.

The first, and most essential, tenet of Human Capital Theory (HCT) is that "individuals and societies derive economic benefits from investments in people (Sweetland, 1996, p. 351)". These investments in people are crucial to Human Capital theory, where knowledge and skills of an individual function alongside financial capital, labour, and natural resources to impact the well-being of society (Crocker, 2006). HCT predicts that an increase in knowledge and skill will lead to improved economic outcomes (Crocker, 2006), both for the individual and for society. Perhaps most studied are the individual benefits derived from investment in human capital. Mincer (1974) proposed a model which suggested that years of education, plus experience would yield a higher income for individuals. For the purposes of this study, the specific equations developed by Mincer were not examined in detail, as the researcher lacks formal education and training in economics, but were used to provide a basis for understanding why individuals choose to invest in their own human capital.

Both Becker (1975) and Mincer (1974) posit that individuals will make some considerations prior to their investment in human capital, where both costs and benefits are considered. Becker (1975) suggests that, although experience plays an important role in

measuring one's human capital, education remains an essential component. Thus, the decision to increase one's level of schooling can be deemed to be an investment in one's human capital. The use of the term 'investment' is quite intentional in HCT; benefits tend to be considered as occurring in the future, whereas costs tend to be considered as occurring in the present. Becker (1975) describes this investment as a sort of cost-benefit analysis, where investment costs (e.g., foregone earnings, costs of tuition) are weighed against investment returns (e.g., higher income after completion of schooling). Mincer (1974) found that "years of work foregone to pursue education were rationally compensated with higher earnings" (p. 345), suggesting that there is indeed a benefit to the choice to pursue further education and invest in human capital. Naturally, perceived costs increase over time and perceived benefits decrease (Mincer, 1974), suggesting that as individuals age the investment in human capital becomes less valuable. Ultimately it is left to the individual to determine the value of the investment, and, simply put, individuals will choose to invest in human capital when the benefits outweigh the costs (Junor & Usher, 2004; Schatzel, Strandholm & Callahan, 2012).

Human Capital Theory is ever-present in modern educational policies (Crocker, 2006; van der Merwe, 2010). Further to this, Sweetland (1996) suggests that the predictions of HCT theory are echoed in the views of the general public: that pursuit of education yields individual and societal economic growth. This sentiment is shared by Crocker (2006) who suggests that a majority of educational policy statements reference education as an essential step to individual and societal well-being and prosperity. Yet, despite its prevalence among educational policies, and its principles held as fact among the public, HCT is not without its limitations.

Tan (2014) identified four major critiques of human capital theory: methodological, empirical, practical, and moral. Methodologically, HCT places emphasis on the individual, and

assumes that this individual is able to correctly estimate the costs and benefits associated with the investment in human capital (Tan, 2014; van der Merwe, 2010). Individuals' cognitive abilities and perceptions vary greatly (Tan, 2014) and, as will be discussed further in the literature review section entitled *Low-Income Students,* the ability to accurately estimate costs and benefits is not consistent across individuals. Empirically, there is some question as to whether it is education that is contributing to the increase in income or if it is something about the type of individual who chooses to invest in education (Tan, 2014). It is possible that investment in education is chosen by those individuals who are more intelligent, possess better cognitive abilities, and are more determined (Tan, 2014). This group of individuals might outperform their counterparts based solely on their abilities and skill, rather than their education (Crocker, 2014). Practically, HCT tends to focus on economic benefits and may diminish other non-financial aspects of education (Tan, 2014; Schatzel et al, 2012). Further to this, as this theory was developed in the field of economics, there is some question as to its applicability in other disciplines (Tan, 2014). Lastly, and morally, Tan suggested that HCT oversimplifies human behaviour into a consumption-production dichotomy, and he asserts that human beings function to do much more than make income. Yet, Sweetland (1996) suggests that the criticisms of HCT must be considered in terms of the applications of HCT. It is imperative to note that HCT does not seek to provide empirical answers, and instead seeks to "add useful information to that which is already known" (Sweetland, 1996, p. 355). In considering the limitations of HCT, Tan still describes it to be a strong theory, yet emphasizes that it is just that: a theory.

HCT has been applied in many studies examining access and enrolment trends (e.g., Davies et al., 2009; Engberg & Allen, 2011; Junor & Usher, 2004; Oreopoulos & Salvanes, 2011), and its use continues to be relevant for the current study. Schatzel and colleagues

demonstrated in their 2012 study of employees working at a large manufacturing firm that a significant number of indivuduals were more likely to invest in their own human capital than to take a severance package offered to them, suggesting that the investment in education is still worth the costs. Their study found that women, younger employees and those who were single were more likely to invest in their education, suggesting the importance of considering individual factors as they relate to the decision to attend PSE. HCT predicts that likelihood of enrolment in PSE will decline with age, due to the decreased benefits and increased costs over time (Becker, 1975; Jepsen & Montgomery, 2012). With age to retirement and time spent working both increasing, it becomes especially important to apply a human capital lens to research, and to expand this lens to include non-traditional students (including low-income mature students) who enrol in PSE. As Jepsen & Montgomery (2012) suggest, studies including mature students may actually strengthen our understanding of Human Capital Theory.

A Review of the Literature

The Many Benefits of a Higher Education[1]

It is well known that a postsecondary education (PSE) has many benefits. Whether at the college or university level, the successful completion of a postsecondary education yields both financial benefits and non-economic benefits. Swain and Hammond (2011) grouped the benefits of attaining a postsecondary level education in to four distinct categories: professional, economic, personal, and social. Perhaps the most widely recognized benefits of a postsecondary education are the economic benefits. Many researchers have suggested the inextricable link between obtaining a postsecondary level education and success in the labour market (Belley, Frenette, & Lochner, 2014; Berger, Motte, & Parkin, 2009; Finnie, 2012; Oreopoulos &

[1] Note that the terms higher education and postsecondary level education will be used interchangeably as they are synonymous with one another

Salvanes, 2011). Education is a key factor in employment, especially as the labour market changes. The Ministry of Training, Colleges and Universities (MTCU) had forecasted in 2012 that seven out of every ten jobs created in Ontario would require successful completion of a postsecondary education. The MTCU (2012) further argues the importance of higher education in creating jobs, filling these jobs with skilled workers and, thus promoting a flourishing labour market. In fact, the Government of Ontario goes so far as to suggest that students are the "key to the Government's economic future" (2015).

The relationship between education and the labour market is reciprocal in that the benefits are not exclusive to the labour market, but rather are extended to the individual as well. Individuals with a postsecondary education are more likely to be employed, as well as more likely to have higher earnings when compared to their lesser-educated counterparts (Berger et al., 2009; Gault, Reichlin, & Román, 2014). Using data from the 2006 Census, Finnie (2012) demonstrated that, during the time when earnings typically peak, higher education graduates made $50,000 more, on average, than their peers who had only completed a high school level education. Additionally, Oreopoulos and Salvanes (2011) found that those with a higher education were more likely to feel satisfied with their jobs, more likely to have found employment that offers opportunities for growth, more likely to have employment that provides health and dental coverage, and more likely to enjoy a sense of occupational prestige. As the time between entering the workforce and retirement becomes increasingly longer, so do the benefits of a higher education. Further, with adults remaining in the workforce longer and delaying retirement, this means higher wages across the lifespan, and a longer time to experience the economic benefits of a PSE (Gault et al., 2014).

Lesser known are the non-economic benefits of a PSE: benefits that extend across the personal and social domains of an individual's life. As Swain and Hammond (2011) suggest, postsecondary education helps individuals to develop a unique set of skills that impact not only their work life, but also their personal life. During their studies, students who enrol in a postsecondary program are more likely to develop stronger analytical skills and more effective critical thinking skills than their peers who had not attended a postsecondary institution (Oreopoulos & Salvanes, 2011; Swain & Hammond, 2011). Further to this, study at the postsecondary level helps to develop and hone thinking skills long-term (Oreopoulos & Salvanes, 2011). Interestingly, these personal skills developed at the postsecondary level are not uniquely cognitive in nature but also stretch to encompass the more emotionally-focused aspects of an individual's life. Participation at the postsecondary level helps to encourage patience-building skills as well as civic engagement (Oreopoulos & Salvanes, 2011). These emotional and social skills are observable in the lives of individuals as well as in the relationships they are a part of: individuals with a higher education are more likely to be happier in their relationships, less likely to engage in risky behaviours, and more likely to participate in health-promoting activities (Oreopoulos & Salvanes, 2011). For those who become parents and raise children during their lifetime, education continues to be an important factor for both parents and their children. Several researchers have demonstrated the link between parental level of education and the child's decision to enter study at the postsecondary level (e.g., Engberg & Allen, 2011; Hoy, Christofides, & Cirello, 2001; Mueller, 2008), which will be further explored in the next section of this chapter. This cross-generational impact suggests that the benefits of a higher education may actually extend across periods of time, and continue to impact future individuals.

Considering the many benefits of obtaining a postsecondary education, many of which continue as one ages, the decision to attend a postsecondary institution appears to be an easy one; however, as will be demonstrated in the following section, this decision is extremely complex (Gault et al., 2014; Mueller, 2008; Osborne, Marks, & Turner, 2004).

The Multifaceted Decision to Attend a Postsecondary Institution

Despite the many benefits of attaining a postsecondary education, several factors influence individual decision-making, many of which constrain the choice to study at the postsecondary level. Traditionally, research has referred to those components as 'barriers' to study (e.g., Berger & Motte, 2007; S. Davies & Quirke, 2002; Finnie, 2012); however, Finnie, Mueller, Sweetman, and Usher (2010) posit that the use of the term 'barriers' when examining access to postsecondary schooling may actually complicate understanding, as it is often poorly defined. Thus, in order to examine the complexity of the decision to attend postsecondary schooling, this section will instead focus on some of the various components that are involved in this decision, and avoid use of the term 'barrier'.

There are several components in this decision-making process, which can motivate or hinder an individual from accessing a postsecondary institution. Firstly, are factors that an individual has little control over. These factors include relationships between parents and children, relationships between individuals and their peers, choice of school, and school affordability. Not surprisingly, one of the most influential factors on an individual's attendance in PSE begins in the home. Researchers have demonstrated that parental level of education is positively correlated with the child's decision to enter higher education; as the parent's level of education increases, so does the likelihood that the child will enter postsecondary education (Engberg & Allen, 2011; Finnie, 2012; Hoy et al., 2001; Mueller, 2008). There are many ways

that parents' level of education may impact the child, both implicitly and explicitly. Implicitly, because the parents have completed higher-level degrees/diplomas the child may have been exposed to more reading materials and more cognitively stimulating toys and activities while growing up, thus raising the child in an environment where education is highly valued. Similarly, children may observe their parents engaged in reading, cultural events and learning activities and have the opportunity to model these behaviours and identify with their parents. This creates a culture where education is highly valued (Finnie, 2012), where the child feels a strong sense of connectedness to education and continues to explore this relationship throughout their lifetime. There may also be an abundance of support from those parents who have completed a higher education, therefore implicitly and explicitly encouraging the child to enter study (Thomas, 2002). Parents who have not completed a higher education may not be able to finance their child's education, even if they wanted their child to attend, in part to have opportunities they did not. This will be discussed further when examining the literature related to low-income students. Or perhaps, more explicitly, the parents have told their children that they expect completion of a higher-level education and thus the child enters PSE to please their parents. Regardless of the mechanism of impact, it is evident that parents have a big impact on their child's decision to study.

The relationship between parent(s) and their child(ren) is not the only social factor that impacts an individual's decision to study. As one delves further into the decision of whether or not to attend a postsecondary institution, a second and equally important relationship emerges: the relationship between individuals and their peer group. In a similar manner to the impacts of parents' education, peers' decisions to attend PSE have a positive impact on the individual (Finnie, 2012; Thomas, 2002). Not surprisingly, should an individual's most-respected peers

choose to attend a postsecondary institution, that individual is more likely to attend a postsecondary institution as well. It is clear that the social aspects of an individual's life play an important role in the decision to study, yet they are beyond the control of the individual. Several other factors impact an individual's decision to study at the postsecondary level. These factors are also important to consider as they can be influenced by changes in policy, and can be consciously changed by the individual. Often, the first conscious decision considered by an individual thinking of returning to PSE is where to go to school.

Choice of school is another important component in the decision to enter studies at the postsecondary level. With 23 universities (Ontario, 2015a) and 24 colleges (Ontario, 2015b) to choose from in Ontario alone, inevitably the choice of school further complicates the decision to study at the postsecondary level. Students may also struggle to choose a degree or diploma program prior to enrolment, and be impacted by perceptions of how they will fit in at their chosen school. As is expected, social relationships continue to impact an individual's choice of school; however, when choosing a school to attend, the nature of the institution itself begins to become an increasingly important factor. When choosing an institution, an individual will consider the quality of the education they will receive and the reputation of the school and program they will attend (Carneiro & Heckman, 2002). They must also consider the culture of the institution, and determine whether it is complementary to their own sense of self (Finnie, 2012). Lastly, the location of the school plays a very impactful role. Distance to school and subsequently the ability to commute to, or the need to move to attend an institution plays a large role in the decision of whether or not to attend postsecondary schooling, and which school to attend. Of course there are exceptions to any trend, but, in general, students are more likely to attend a school if they are within commuting distance (Hoy et al., 2001; Oreopoulos & Salvanes,

2011). Distance from school has both temporal implications as well as financial implications (Frenette, 2004). Not only does commuting take time, it also costs a significant amount of money. When considering the costs associated with travel (transit fares, the costs of owning/renting and driving a vehicle, parking passes, costs of relocating, housing costs, etc.), it is easy to see how these potential expenses can add up and ultimately impact an individual's decision to study.

Probably the most researched component of the decision to attend PSE is the affordability factor. Affordability encompasses both an individual's willingness to pay, as well as their ability to pay (Palameta & Voyer, 2010). Willingness to pay refers to the individual's inclination to pay for schooling, whereas ability refers to the individual's financial position and whether or not they have the funds available to actually meet financial requirements. An individual may be willing to pay for school yet lack the ability to pay for it, or vice versa. A growing number of students must work part-time or full-time in order to pay for school (Finnie et al., 2010), or take out loans, suggesting that these students are willing to pay for school, and are taking steps to ensure they are able to do so.

Statistics Canada (2015a) reported that, on average, undergraduate students in Canada paid $6,191 for their tuition in 2015/2016. This price was an increase from the previous year's tuition at $5,898 per year. Statistics Canada further reported that students in Newfoundland and Quebec on average are paying the lowest tuition rates, $2660 and $2799, respectively; while students in Ontario are paying the highest, $7,868. According to the most recently released report from Employment and Social Development Canada (2013), student loans per year increased from an average of $5,376 in 2011-2012 to an average of $5,435 in 2012-2013. However, an increase in student loan amounts may act in an inhibitory manner, as students may

become worried about the money they will owe and choose to work instead of taking out a loan. Those students, who work to support themselves through schooling are also at a disadvantage, as time spent working takes away from time spent studying. Not all students feel comfortable with this diminished study time and rely on student loans to pay for school. This can also be problematic; as time spent in school increases, the amount of debt inevitably increases as well. Concerns about increasing debt can lead to another decision-making factor: debt aversion. Callender and Jackson (2005) found that aversion to debt was a significant deterrent to pursuing a higher education for many students, especially those who come from a low-income background. This is an important notion to consider as most Canadians underestimate the benefits of a postsecondary education, yet overestimate the costs associated with one (Junor & Usher, 2004; Usher, 2005); this belief is referred to as 'faulty estimation'. This faulty estimation is a reality for many individuals, and further complicates the decision to study. More importantly, the notion of faulty estimation brings up the need to explore an integral concept related to finances that has a huge impact on the decision to study at the postsecondary level: affordability. The concept of affordability will be discussed in the following section, and is complemented by a discussion of the concept of accessibility.

Affordability and Accessibility: Why Look at Access?

In their 2006 report, *Beyond the 49th Parallel II: Affordability of University Education,* Usher and Steele explore the connections between the concepts of affordability and accessibility. Usher and Cervanan (2005) suggest that affordability of education relates to the specific costs associated with study, and the ability of an individual to meet these costs. Affordability of education can be influenced by many factors including an individual's current financial status, an individual's access to student loans and grants, and an individual's perception of their ability to

pay (which includes an individual's assessment of how much schooling will cost, and what their cost of living will be; stronger perceptions of ability to pay means stronger perceptions of affordability). Individuals may see a higher education as an investment, one which costs a significant amount of time and money in the present, but does not provide any benefits, financial or otherwise, until a future date. Consequently, they may choose to enter the work force instead, where benefits (e.g., a stable pay cheque and increased finances) would be immediate. For these individuals, perceptions of the affordability and the benefits of a PSE are being weighed against perceptions of the benefits of entering the work force, thereby strongly influencing the individual's decision to study (Green & Foley, 2016; Palameta & Voyer, 2010).

Though scholarships, student loans, and government grants may help to increase the affordability of a higher education, they do not necessarily increase accessibility. For example, consider a traditional student from a middle class background, who may be able to afford the financial costs of a PSE but does not meet the entry requirements of an institution. Alternatively, consider a mature student who receives a substantial student loan, enough to cover tuition and living expenses, but who notices that the institution where she has been accepted does not have readily available child care for her young daughter. For both of these students, a postsecondary education is affordable, but not accessible. Therefore, it is still of utmost relevance to consider the accessibility of higher education, and to ensure that access is indeed equitable for every individual. This section will focus on the importance of examining accessibility.

Accessibility of education relates more to participation rates in higher education than to costs (Usher & Cervanan, 2005). Accessibility of education is directly linked to an individual's characteristics, focusing on how many individuals participate in postsecondary education and who these individuals are (Usher & Cervanan, 2005). One of the most common examples of

accessibility concerns related to individual characteristics is socioeconomic status. As is discussed in the following section of this chapter, students of high socioeconomic status are significantly more likely to attend postsecondary schooling than their peers of low socioeconomic status (Belley et al., 2014; Berger & Motte, 2007; Dooley, Payne, & Robb, 2012). For these high socioeconomic status individuals, education itself can be deemed accessible, whereas for those low-socioeconomic status individuals PSE can be deemed less accessible. The move to include non-traditional students as part of an examination of education accessibility is a key factor in ensuring that marginalized groups are represented in higher education, and is highly visible in recent government documents and policy, for example in the Standing Senate Committee on Social Affairs, Science and Technology's 2011 report *Opening the Door: Reducing Barriers to Postsecondary Education in Canada* and also in policies at the institutional level, for example in the University of Guelph's 2016 Strategic Renewal Plan (available from http://strategicrenewal.uoguelph.ca/).

The Ontario Ministry of Training, Colleges and Universities (MCTU) reported that postsecondary enrolment is growing five times faster than it did in the 1990's (MTCU, 2012). Correspondingly, the Government of Ontario has a target attainment rate for completion of a postsecondary education of 70% by 2020 (Ontario, 2015). Yet, it has been suggested that there is actually a decline in the enrolment numbers for postsecondary schooling, particularly in the number of traditional students via direct entry from high-school (Berger, 2008). In order to address this decline, institutions must look to underrepresented and non-traditional groups to fill the gaps in enrolment, and must increase the accessibility of education to these groups, which include low-income students, first-generation students (Social Research and Demonstration Corporation, 2009), and mature students (Kerr, 2011), among others. Seeking to include these

groups in higher education would be an immensely positive step for postsecondary institutions, and would begin to address the decline in enrolment numbers of traditional students. Unfortunately, several academics have suggested that, despite the need to include a more diverse group of students, access to postsecondary schooling continues to be unequal (Berger et al., 2009; Dooley, Payne, & Robb, 2009; Junor & Usher, 2004; Mueller, 2008; Weingarten, Hicks, Jonker, Smith, & Arnold, 2015), and certain groups of individuals continue to be inadequately represented including students from a low-income background, first generation students, mature students, students with disabilities, and Aboriginal/Indigenous students.

In 2016, the Government of Ontario proposed changes to the current funding model of education with the explicit goal of improving access to and funding for postsecondary education. The government proposed that, starting in the 2017-2018 school year, qualified students from low-income families (e.g., those who make less than $50,000 per year) will receive a postsecondary education at no cost to them through the use of grants (Ontario, 2016a). Despite the proposed increase in grants and changes to the current student loan eligibility model, the actual decrease in loan debts for partnered students and mature students who are non-low-income is negligible. According to this new model, for example, the loan received by a partnered student with one child and a family income of $40,000 would change from $7400 per year to $7140, lessening their student debt by only $260 (Ontario, 2016a). This family qualifies as low-income according to the new changes, yet there is little difference in the debt that the student will incur. This example illustrates that mature students continue to be overlooked. Although this proposed change in funding is a positive step in increasing access to underrepresented groups, there continues to be a need to focus on mature postsecondary students and how changes in policy can benefit their access to postsecondary study.

Given that access to a postsecondary institution is the first step towards completion of a higher education, it is essential to examine access for underrepresented groups in order to determine whether an inequity in access does indeed exist. As Kerr (2011) suggests, an understanding of patterns of enrolment is an essential piece in both planning programs and in supporting students. This thesis begins to explore access to postsecondary education through an examination of enrolment statistics to determine the provincial enrolment rates of low-income mature students, and to create a profile of this group in order to better understand their unique characteristics. A more thorough understanding of their characteristics can provide insight into strategies for recruiting these students to postsecondary education, and to help support them in accessing and completing their studies.

In order to move forward and examine a unique non-traditional group, it is also important to examine the current literature regarding students in higher education. Thus, the following sections will examine the literature as it relates to two non-traditional groups of students: low-income students, and mature students. To begin to explore the literature on non-traditional students, definitions of 'traditional' and 'non-traditional' students will first be examined.

Defining 'Traditional' vs. 'Non-traditional' Students

Although not often explicitly defined, a traditional student would be any student who follows a typical path of direct entry from high school through to postsecondary school. A more specific definition of a traditional student is any student who graduates from high school and directly enters postsecondary schooling, who is studying on a full-time basis, and whose family occupies the middle-to-upper class income level (Hoy et al., 2001). This is contrary to the concept of the non-traditional student, which leaves significant room for interpretation. In research, non-traditional students are often presented as any individuals who do not fall under the

definition of traditional student. Fragoso et al. (2013) suggest that the concept of a non-traditional student is so varied that it must be considered in the context in which it is used. Schuetze and Slowey (2002) suggest that a non-traditional student may be one who is from a low-income background, who is an ethnic minority, who resides in a rural area, or does not follow traditional educational pathways (e.g., holds a G.E.D. rather than a high school diploma). On the other hand, Bean and Metzner (1985) define a non-traditional student as an individual who is 24 years or older in age, who is not residing on campus and who has returned to study on a part-time basis. Furthermore, many studies use the terms 'non-traditional' student and 'mature' student interchangeably (e.g., Ely, 1997; Schuetze & Slowey, 2002). Interestingly, the term mature student is also ill-defined in the literature and varies not only according to the researcher's preferences (Fragoso et al., 2013), but also according to institutional definitions (Kerr, 2011). This leads to an indisputable need to clearly and explicitly define the terms being used in research, in order to minimize confusion and solidify understanding. Regardless of their varying definitions, it remains clear that there is a difference between traditional students and non-traditional students that likely affects access to postsecondary institutions for both groups. The literature relating to two specific groups of students – low-income students and mature students, both of whom are commonly referred to as non-traditional students – will be explored in more detail to determine whether non-traditional students are indeed disadvantaged with respect to access. This exploration will begin with low-income students and be followed by the literature on mature students.

Low-Income Students

Postsecondary education is a largely middle and upper class dominated institution (Hoy et al., 2001). Not surprisingly, there is evidence of class exclusion echoed throughout the

literature on low-income students and there is a general consensus that students who are economically disadvantaged (i.e., those from a low-income background) are disproportionately less likely to pursue a postsecondary level education than those students from middle or upper class backgrounds (Belley et al., 2014; Berger & Motte, 2007; Dooley, Payne, & Robb, 2012; Finnie et al., 2010; Frenette, 2004; Palameta & Voyer, 2010). Within the literature that supports this notion of underrepresentation, income level emerges as an inhibiting factor for entering postsecondary study; however, scholars interpret the impacts of low-income status in several ways.

Firstly, there are those scholars who suggest that income status is related to access to information and that students from a low-income background are more likely to be misinformed. Canadians who are low-income are more likely than those who are middle- or high-income to overestimate the costs of a postsecondary education (Usher, 2005). For individuals who are lacking resources, overestimation of costs can have huge impacts on enrolment at the postsecondary level. Mueller (2008) supports this statement by adding that there is a large misconception among low-income students in relation to financing a higher education. The lack of awareness among low-income students leads them to overestimate the loans and/or funding they will need and/or receive, thus increasing their already high level of vulnerability (Mueller, 2008). Media may also contribute to this misinformation by virtue of the way information is presented. For example, television commercials providing information on a tuition rebate from the Government of Ontario were airing regularly in the fall of 2015. At face value, these commercials appeared to suggest that all students in Ontario will receive a 30% rebate off of their tuition; however, this is not the case. There are many stipulations around receiving the tuition rebate which are available on the Government of Ontario 2016 webpage (accessible at:

http://www.ontario.ca/education-and-training/30-off-ontario-tuition). Individuals who do not seek further clarification by exploring this webpage will be misinformed. Regardless of whether it occurs by some error on the part of the institution or by some error on the part of the individual, the fact remains that low-income students are more likely to be misinformed about the costs of a postsecondary education (Bettinger, Long, & Oreopoulos, 2009; Gault et al., 2014). Berger and Motte (2007) found that awareness of information surrounding PSE was extremely influential in determining who will access postsecondary schooling and who will not.

Misinformation and lack of information are not the only causes for concern amongst low-income individuals. Debt-aversion amongst low-income individuals is also common and can prevent an individual from choosing to pursue a higher education (Callender & Jackson, 2005). Given rising tuition costs, it is not surprising that some students are averse to obtaining a loan to pay for schooling. This debt aversion acts as a highly influential deterrent for low-income students, preventing them from entering PSE (Callender & Jackson, 2005; Junor & Usher, 2004).

Thirdly, there are those who suggest that low-income students are disadvantaged academically by virtue of their socioeconomic status. Families that have higher incomes may spend more money on educational materials for their children as they age, and tend to live in neighbourhoods that house better schools and more opportunities for educational advancement (Berger & Motte, 2007; Frenette, 2004). These individuals become more likely to do well on academic achievement tests throughout their schooling and, ultimately, are significantly more likely to attend postsecondary schooling than their low-income peers (Berger & Motte, 2007; Finnie et al., 2010). Research has also shown that children who have grown-up in low-income neighbourhoods are less likely to have positive peer and parental support concerning higher education (Frenette, 2004). Many of these factors combine to disadvantage a student growing up

in a low-income neighbourhood and these students often underperform in terms of grade level at the high school level (Frempong, Ma, & Mensah, 2011; Mueller, 2008). Poor grades disadvantage students as high school marks play a big role in access to higher education both in terms of admissions and also merit-based scholarships. Though merit-based scholarships can be helpful for those students who happen to be low-income and have achieved a high graduating average from high school (Dooley et al., 2012), a majority of low-income students who have underperformed may not meet eligibility criteria and thus are inhibited from entering PSE (Corrigan, 2003). Predictably, for those students who do not qualify for any merit-based scholarships and/or bursaries, finances continue to be a major concern.

Gault et al. (2014) suggest that low-income students are much more likely than their peers to attend postsecondary schooling part-time given that they have much greater time constraints and are more likely to work in order to support themselves financially. These students may take longer to complete their PSE and experience greater difficulties during this time, which may affect their ability to receive in-class, merit-based awards. It is clear that growing up low-income has a strong impact on access to higher education (Berger et al., 2009; Dooley et al., 2009; Frempong et al., 2011; Frenette, 2004; Junor & Usher, 2004; Mueller, 2008).

There are those scholars who suggest that low-income students lack financial resources and posit that the affordability of higher education is lower for those students who come from a low-income background. Finnie (2012) suggests that affordability of education is one of the most important factors to consider when examining access. Individuals from higher-income families are more likely to perceive education to be affordable given that they have more resources available to them. Although individuals from middle or high income families may have to obtain a loan to fund their studies, tuition reductions often have the most benefit for this particular

group of students (Coelli, 2009). Thus the benefits of tuition reductions are not as high for low-income students as they are for students of higher-income backgrounds.

As mentioned previously, distance to a postsecondary institution has a large effect on the decision to attend. The effects of distance are far stronger for those individuals who are low-income, given that they are already vulnerable (Frenette, 2004). The implications of distance to school and thus the need for resources (e.g., time, access to transportation, finances) to either relocate or commute can result in students from a low-income background being less likely to attend PSE than individuals from either middle or upper class backgrounds. Research also shows that students from low-income families are less likely to have financial support from their parents, are more likely to be financially independent, and are less likely to perceive higher education as affordable (Carneiro & Heckman, 2002; Gault et al., 2014; Junor & Usher, 2004).

Whether it is due to a lack of information, a lack of resources, or social and ecological factors experienced through a marginalized socioeconomic group, it continues to be clear that low-income students are indeed disadvantaged when compared to their higher income counterparts. Regrettably, low-income students are not the only disadvantaged group in higher education. The literature relating to mature students will be examined next in order to understand the difficulties that these students face.

Mature Students

As more individuals are returning to formal schooling to reap the benefits of a higher education, the composition of students on university and college campuses continues to change. This expansion means that more students from different socioeconomic and cultural backgrounds, different life-situations, and with different goals and motivations are attending postsecondary institutions (Schuetze & Slowey, 2002). Among these students is a small but

expanding group: mature students. In 2013 mature students (those 25 and older) represented 23.3% of all undergraduate students in Canada (Statistics Canada, 2013). It is clear that mature students represent a significant minority population and one that requires further exploration in order to meet their unique needs.

Though many mature students may occupy several of the identities of a non-traditional student (e.g., being a parent, being financially independent, living in a rural area, being an ethnic minority), not all non-traditional students are mature students (Compton, Cox, & Laanan, 2006). It is therefore important to examine the identity of mature students more closely. Research has demonstrated that mature students are more likely to have family responsibilities (such as parenting or caregiving for a partner or parent), are more likely to study part-time, are more likely to be financially independent, and are more likely to adopt multiple roles in their lives (Fragoso et al., 2013; Gault et al., 2014; Jepsen & Montgomery, 2012; MacFadgen, 2008). Many of these factors combine to further complicate the decision to study at the postsecondary level.

As stated previously, the decision to study at the postsecondary level is a complex one, and this remains true for mature students. In fact, there are additional factors adding to the complexity. When comparing mature students to traditional students, the reasons for returning to study at the postsecondary level are slightly different. Though mature students still consider the benefits of a PSE and the potential costs, research suggests that for many mature students there exists an ‘action catalyst’ or some form of life event that pushes the individual back into school (Compton et al., 2006; Stone, 2008; Swain & Hammond, 2011). These catalysts are significant life events that motivate an individual to study (van Rhijn, Lero & Burke, 2016). They may be employment-related such as wanting to get promoted, seeking new employment, or wishing to make a higher salary (Davies & Williams, 2001), or more personal such as experiencing a

divorce or widowhood, wanting to provide more security for their children, or simply wanting to complete a life-long goal (Compton et al., 2006; van Rhijn et al., 2016). Despite these strong catalysts, the decision to study at the postsecondary level remains complex. Not surprisingly, the inhibitory factors in the decision to study for low-income students are mirrored for mature students.

Mature students face many inhibitory factors in accessing postsecondary schooling. Financial factors tend to be intensified for non-traditional students (Thomas, 2002). Mature students are more likely to be financially independent, and thus have less financial support from outside sources (Gault et al., 2014; Kerr, 2011; Stone, 2008). Further complicating the matter, mature students are also more likely to be excluded from traditional methods of financial support, such as student loans and bursaries (Kerr, 2011; Schuetze & Slowey, 2002).

Because they are more likely to be employed in order to fund their studies and ensure that their needs are met, mature students experience higher levels of time constraints than traditional students (Gault et al., 2014). Mature students also experience greater difficulty studying on a full-time basis and engaging in learning-related activities such as enroling in courses, attending office hours, accessing support services on campus, and meeting with peers for group projects, than their traditional peers (Davidson & Holbrook, 2014; Schuetze & Slowey, 2002; Stone, 2008). Many mature and low-income students also have additional claims on their resources such as caring for children or other family members, which further complicates their financial situations and inhibits enrolment in PSE. Family responsibilities require time and energy and, for many individuals, take priority over study, thus inhibiting access to study (Kerr, 2011; Stone, 2008; Swain & Hammond, 2011; van Rhijn, Lero, Bridge & Fritz, 2016). A lack of childcare on campus and a lack of financial support for child care for those students who are also parents only

makes matters more difficult (Schuetze & Slowey, 2002). Some mature students choose to prioritize parenting and family obligations over schooling, thus delaying study for a time when it is more convenient or limiting their involvement to study on a part-time basis (Compton et al., 2006).

Naturally, inhibitory factors are not only external to the individual, but internal as well. Research suggests that one of the biggest influences on the decision to study for mature students is actually internal, and relates to an individual's self-perceptions. Several studies have found that mature students struggle with a lack of self-confidence in academia that may stem from being out of school for a long period of time (Anisef, Brown, & Robson, 2013; Fragoso et al., 2013; Reay, 2002). Reay (2002) posits that mature students may feel that their past mistakes and experiences in education will continue to disadvantage them in higher education, and may lead them to be disinclined to enrol. Similarly, Tones, Fraser, Elder, and White (2009) suggest that this perceived disadvantage and lack of self-esteem does not end at enrolment, and continues to affect perceptions of writing ability, reading ability, and ability to cope with academic work. Another internal factor that influences an individual's satisfaction with their personal and academic life are self-efficacy beliefs. A study by van Rhijn and Lero (2014) found that, among adult learners (mature students), those with high self-efficacy beliefs felt more satisfaction with their education than those with lower self-efficacy beliefs. van Rhijn and Lero further suggest that self-efficacy beliefs for mature students, who have been absent from traditional education for a long period of time, may be negatively impacted by this absence, providing additional support to the idea that mature students are a unique group. Overall, it is clear that mature students face a variety of unique challenges in their pursuit of a higher education.

Yet not all aspects of being a mature student are inhibitory. In fact, there are many aspects that are extremely positive and may actually act in an encouraging manner. MacFadgen (2008) suggests that mature students are more diverse in their experiences than traditional students, meaning that their life experiences are actually a benefit to the older student. Trueman and Hartley (1996) found that mature students had better time management skills than their traditional counterparts, helping them to succeed in academia. Richardson (1994) found that, on average, mature students out-performed their traditional peers academically due to their higher level of expertise and more developed systems of knowledge. Cognitive aspects, experience, and time management skills are not the only positive traits that a mature student has. Compton et al. (2006) suggest that mature students are clearer about their goals for completing a higher education, which can help these students continue to be motivated and ultimately achieve success.

Conversely, mature students are more likely to discontinue their studies, either by dropping out or failing to enrol in subsequent semesters (Carney-Crompton & Tan 2002; MacFadgen, 2008). A recent study demonstrated that mature students are more likely to follow alternate pathways during their education than traditional-age students, and suggests that there are a diversity of reasons that mature students leave their studies such as personal concerns, family concerns, and institutional concerns (van Rhijn et al., 2015). Interestingly, based on their research findings, van Rhijn et al. suggested that many of those mature students who leave study may return to study in subsequent semesters, yet these students continue to be classified as ‘withdrawals’. This finding suggests that there is a need to further study mature students and supports the notion that this group of students experience unique challenges and successes. Despite many valuable positive characteristics, the fact still remains that mature students are a

minority group among the postsecondary student population, and there is still much left to be known about this group.

Why Study Low-income Mature Students?

A student who feels that they are high-risk for not graduating may feel disadvantaged prior to even starting postsecondary schooling and thus deny themselves the opportunity to try. Swail (2014) provides a list of risk factors which make a student less likely to graduate, including characteristics such as: being of non-traditional age, being low-income or financially independent, having children/dependents, delaying entry to college, being a first generation student, working more than 20 hours per week, having a low GPA, and studying on a part-time basis. Although these are only a few of the risk factors identified, it is evident that low-income mature students have many of these characteristics.

As previously mentioned, the Ontario Ministry of Training, Colleges and Universities (MCTU) posited that postsecondary enrolment is currently growing five times faster than it did in the 1990's (MTCU, 2012). Correspondingly, the Government of Ontario has a target attainment rate for completion of a postsecondary education of 70% by 2020 (Ontario, 2015); however, in reality, the enrolment numbers for traditional students are declining (Berger, 2008). Berger further suggests that these numbers will continue to decline as the years progress. Scholars have suggested that institutions must look to underrepresented and non-traditional groups to fill the gaps in enrolment, seeking to include groups such as low-income students, first-generation students (Social Research and Demonstration Corporation, 2009), and mature students (Kerr, 2011). Tones, Fraser, Elder and White (2009) suggest that mature, low-income students are especially sensitive to those factors impacting access, thus it is essential to closely examine the characteristics of this group. Further to this, for many low-income adults the

attainment of a higher education is the only method to free themselves from the prospect of low-wage employment (Tones et al., 2009). As Campbell (2005) suggested, low-income mature students are an especially important group that must be researched, in order to be better understood. By improving access rates for low-income mature students, institutions could potentially offset the decline in enrolment numbers and begin to address inequity in access, ultimately improving the lives of those from this potentially underrepresented group.

The Current Study

This study developed a profile of low-income mature students by considering three research objectives: 1) To examine provincial differences in enrolment percentages of low-income mature students in terms of enrolment in college and enrolment in university; 2) To examine various individual, family, and institutional characteristics of low-income mature students in order to create a profile of this unique group; 3) To compare low-income mature students, using the individual, family, institutional characteristics described in the second research objective; first by gender (female students vs. male students) and second by institution type (enrolment in college vs. enrolment in university).

A thorough review of the literature relating to low-income students and mature students was conducted in order to inform the study. This literature review demonstrated that there is a scarcity of literature related to low-income mature students, and suggested that little is known about this unique population. In fact, only two published articles relating to low-income mature students were found by the researcher while conducting this project. Neither of the articles found provided a Canadian perspective on low-income mature students: one was Australian (Tones et al., 2009) and one was American (Campbell, 2005). Tones and colleagues' (2009) study provided a mixed methods perspective on low-income mature students' experiences in

postsecondary schooling with both barriers to success and supports. Although this study provides a detailed look at the stories of low-income mature students in postsecondary study in Australia, it provided little demographic information about these students. Despite the fact that Campbell's (2005) study provided an analysis of low-income mature students as compared to their non-low-income counterparts, it was done in the United States, and thus lacks any Canadian content. As such, a study regarding low-income mature students in Canadian postsecondary institutions was needed.

In order to conduct a thorough study of low-income mature students, statistical analysis was conducted using national level data. Enrolment numbers were examined at the institutional (i.e., college and university) and provincial/territorial levels in order to provide a more complete assessment of low-income mature students.

Terms in the Study

This study sought to create a profile of mature low-income mature students in Canadian postsecondary institutions. As noted in the section, entitled *Defining 'traditional' vs. 'non-traditional' student*s, it is imperative to clearly and explicitly define all terms used in a study. This study sought to examine the characteristics of low-income mature students, a group of non-traditional students, thus the terms '*mature student'*, '*low-income',* and '*traditional student'* were all defined prior to the study being conducted.

In this study, the term '*mature student'* was used to describe any undergraduate student who was 25 years or older during postsecondary study regardless of gender, ethnicity, marital status, number of dependents, or place of residence. The 'mature student' may have completed a postsecondary education prior to entering study and may or may not have been employed for a

number of years prior to entering study. Lastly, for the purposes of this study, the 'mature student' may have been studying on either a part-time or full-time basis.

The term '*traditional student'* was used to refer to any student who was less than 25 years of age who entered postsecondary schooling after a period no longer than one year following high-school graduation. The 'traditional student' may have been of any gender, ethnicity, or marital status, have any number of children, and may reside at any place of residence. For the purposes of this study the 'traditional student' may have been studying on either a part-time or full-time basis (or both).

The term '*low-income'* was defined using the low-income cut-offs (LICOs) as developed by Statistics Canada. A LICO "is an income threshold below which a family will likely devote a larger share of its income to the necessities of food, shelter and clothing than an average family would", and is calculated using the annual Consumer Price Index (Statistics Canada, 2013). LICOs incorporate household demographics as well as community size, and current LICOs vary by seven family sizes and five community sizes (Statistics Canada, 2013). Two sets of LICOs are produced for each community size and family size: one that is in before-tax dollars and the other that is in after-tax dollars (Statistics Canada, 2013). For this study, only the after-tax dollar LICOs were used given that after tax dollars represents the actual funds that can be devoted to necessities, including food and shelter, as well as education. LICOs are embedded into the Survey of Labour and Income Dynamics and thus were not calculated or applied by the researcher. Instead, they were provided as a variable within the data set by Statistics Canada.

Contributions

This study sought to develop an understanding of the low-income mature postsecondary student population in Canada through three primary research objectives. First, this study

examined provincial differences in enrolment percentages of low-income mature students in terms of enrolment in college and enrolment in university. Second, this study examined various individual, family and institutional characteristics of low-income mature students in order to create a profile. Third, using the individual, family, institutional characteristics described in the second objective, low-income mature students were compared on the basis of gender, then on the basis of institution type. This study begins to raise awareness of a vulnerable group of students in the hopes of encouraging further research to help reduce inequities. Lastly, this study helps to fill in the gap in the literature related to the low-income, mature student.

Research Objectives

Research Objective 1: To examine provincial differences in enrolment percentages of low-income mature students in terms of enrolment in college and enrolment in university.

As Junor and Usher (2004) have suggested, in order to better understand access and inequity in access, one must examine trends in enrolment. Trends in enrolment have been used by many researchers to help explain issues that are occurring (e.g., Berger et al., 2009; de Brouker, 2005; Dooley, Payne, & Robb, 2013) and to help provide a deepened understanding. As part of this study, enrolment trends of low-income mature students in Canada were examined according to province of study, broken down by college enrolment and university enrolment. This was done in a way similar to work by Junor and Usher (2004).

Research Objective 2: To examine various individual, family, and institutional characteristics of low-income mature students in order to create a profile of this unique group.

These variables include: Individual characteristics (age, gender, Aboriginal status, age at immigration, employment (F/T or P/T), previous education, and amount owing on student loan, if applicable), family characteristics (income, parental education level (both mother and father),

relationship status, number of children/dependents, household size, age of youngest person in economic family, and ratio of family after tax income to the LICO), and institutional characteristics (type of institution they are attending, F/T (full-time) or P/T (part-time) enrolment status, and province of study).

Following a study by Anisef et al. (2013), a profile for low-income mature students was created. In their study, Anisef et al. profiled students labelled non-direct entrants by exploring age, region, gender, marital status, composition of household, time in Canada, unemployment and income, property ownership, and previous level of education. Although they were exploring the pathways of individuals who were attending PSE in order to upgrade their skills and education, the variables that were examined remained relevant for this study. Creating a profile of underrepresented groups helped to provide insight into the unique needs and characteristics of that population and provided background information to help inform admission processes (Anisef et al., 2013). Demographic characteristics are often examined in research (Belley et al., 2014; Davidson & Holbrook, 2014; Gault et al., 2014) and their use continued to be relevant for this study. Given that there are many factors that contribute to the decision to attend and enrol in postsecondary study, it is important to make comparisons at the group level as well as at the subgroup level, thus providing the rationale for the first two research objectives.

Research Objective 3: To compare low-income mature students, using the individual, family, institutional characteristics described in the second research objective; first by gender (female students vs. male students) and second by institution type (enrolment in college vs. enrolment in university).

An examination of the literature regarding low-income traditional students suggests that individuals from a low-income background are typically underrepresented in higher education

(e.g., Berger et al., 2009; Dooley et al., 2009; Frempong et al., 2011; Frenette, 2004; Junor & Usher, 2004; Mueller, 2008). It is very likely that this phenomenon will also hold true for mature students. Researchers have suggested that mature students are more likely to attend college due to the perception of lower up-front costs, shorter times to completion of study, and the perception of college programs being more hands-on than university programs (e.g., Compton et al., 2006). Similarly, it has been suggested that students from low-income backgrounds are also more likely to attend college (Finnie, Childs, & Wismer, 2011; Junor & Usher, 2004). This phenomenon is likely to hold true for low-income mature students given that they occupy both marginalized identities, and thus was explored further. It has been suggested that gender is a significant factor in postsecondary enrolment, especially as it relates to student parents (van Rhijn, Smit Quosai & Lero, 2011). Given that the SLID dataset included the presence/number of children that a mature low-income student has, it was very beneficial to also assess the impacts of gender on enrolment. This was done in a manner similar to van Rhijn, Smit Quosai, and Lero (2011), by conducting a gender-based comparison of low-income mature students.

Methods

Data Source

To answer the research questions, data from the 2011 Survey of Labour and Income Dynamics (SLID) were used. A thorough review of available national data sets regarding enrolment in postsecondary schooling and income status was conducted and the SLID was selected as the most appropriate for the purposes of this research project. The SLID provides a great deal of valuable information regarding individual, family, and institutional characteristics, as well as provincial data. Information on the variables in the SLID can be found in the SLID Electronic Data Dictionary (accessible at http://www.statcan.gc.ca/pub/75f0026x/2013000/alpha-

eng.htm). Numerous researchers have used the SLID while examining access and enrolment at the postsecondary level (e.g., Berger et al., 2009; Frenette, 2004; Junor & Usher, 2004; Weingarten et al., 2015) and its use remained relevant for this research study. The SLID was a longitudinal survey administered to Canadians residing in the provinces and examined demographic characteristics, labour market activity (including education), as well as income dynamics (Statistics Canada 2013a), yet it also yields cross-sectional data. Since the SLID is no longer active, data from the most recent cross-sectional component of the SLID, from 2011, was examined. The SLID had a high response rate: in 2005 the response rate was 76.1%, in 2006 it was 74.9%, in 2007 it was 71.8%, in 2008 it was 70.6%, in 2009 it was 70.1, and in 2010 the response rate was 67.3% (Statistics Canada, 2013b). In 2011, the year being examined in this study, the response rate for the SLID was 67.3% (ODESI, n.d.). As the SLID has been used frequently in government reports and documents it can reasonably be assumed that it is of high reliability and high quality.

Secondary data analysis was conducted to address the research objectives for this study. Although Research Ethics approval is typically needed prior to use of secondary data, this was not the case for this study due to the fact that Statistics Canada has their own strict policies and procedures for ensuring confidentiality of their data. This project abided by all of the rules outlined by Statistics Canada. As was previously discussed, the data for this project was derived entirely from a single dataset: the 2011 cross-section of the SLID, a Statistics Canada survey. The SLID samples all individuals in Canada except those in the Yukon, the Northwest Territories and those in Nunavut. It also does not sample residents of institutions and those living on Indigenous reserves. (Statistics Canada, 2013a). Respondents for the SLID are randomly selected from participants of the Labour Force Survey (another Statistics Canada survey) and the

SLID uses a similar sampling design: a stratified, multi-stage design using probability sampling (Statistics Canada, 2013a). Data are collected from approximately 34,000 respondents over the telephone using computer-assisted interviewing and supplemented by use of administrative files (e.g., tax data). Data were collected between January and March of each year regarding the previous calendar year (Statistics Canada, 2013a); therefore, data for the 2011 cross-section would have been collected in January to March of 2012.

Statistics Canada data are provided through the Research Data Centres Program. At the University of Guelph, the Branch Research Data Centre (BRDC), which is a branch of the South-Western Ontario Research Data Centre, is located at the library on campus. Access to all data is controlled by Statistics Canada, and applicants are required to submit a research proposal outlining their intended study including information on the rationale for the study, the data sets to be used, the statistical analyses being conducted, and expected products (e.g., journal publications, presentations, theses) prior to gaining access to the data. As the variables required for this study were not available through use of a public use microdata file, a proposal to the BRDC was created prior to commencement of this research project in order to gain access to the detailed microdata. Approval for this project was granted on January 22, 2016 and a copy of the letter is attached as Appendix A. An overview of the application process can be accessed at http://www.statcan.gc.ca/eng/rdc/process.

Analytic Strategy

The next section provides a brief overview of the three main research objectives, the variables examined, how they were analyzed, and the statistical analyses that were conducted.

Variables. In order to address the three research objectives of this study some variables were re-coded. Appendix B provides a detailed overview of the variables that were used in this

study. As Statistics Canada requires a minimum cell count of 5 using unweighted data, in order for data to be releasable, some variables were re-coded to meet this cell count. All re-coding is detailed in Appendix B.

Missing data was treated as missing, and excluded from the analysis. Overall, very few data points were missing from the data set. Those that were missing included full-time vs. part-time school status (3.2% missing), paternal education level (11.7% missing), maternal education level (8.7% missing), and previous education level (5.5%) missing. Those variables that might be expected to be missing data (e.g., income level, low-income status) in fact were missing no data points as all calculations were made using administrative documents available to Statistics Canada, and input into the survey, thus were not calculated by the researcher.

Student status was determined by attendance at a University, a College, or a CEGEP[2]. It is important to note that the way in which enrolment is assessed for the purposes of the SLID is that the "student" could have been enroled at any point during the previous calendar year. This means that the students in this study were not necessarily in school for the entire duration of the previous year, but had been enroled at some point. In order to remain consistent with previous studies, the decision was made to include those students at a CEGEP in the analysis. Despite being included in the SLID, the decision was also made to exclude students attending business schools or vocational schools in this study. This decision was made to preserve the researcher's intent of examining students from publicly-funded institutions (i.e., Colleges, Universities and CEGEPs).

[2] CEGEP stands for *Collège d'enseignement général et professionnel* which roughly translates to College of General and Vocational Teaching. CEGEPs exist only in Quebec. Students may choose to attend a CEGEP after completing high school and prior to entering university. From http://www.fedecegeps.qc.ca/english/what-is-a-cegep/

Weighting. In order to address research objectives 1 and 2, the cross-sectional individual weighting provided by Statistics Canada (variable name: ilbwt26) was applied to all cases. Normalized weightings (also referred to as standardized weightings), calculated by averaging the mean of the cross-sectional individual weight and dividing each raw weight by this mean, were applied prior to analyzing the data for the third research objective. These weights were recommended by the Statistics Canada Research Data Centre Analyst as the weights provided by Statistics Canada for the SLID could not be applied during these analyses, as they yielded too many falsely positive significance tests. Despite not accounting for the complex sample design of the SLID, the application of the normalized weightings yields more accurate standard error estimates (Hahs-Vaughn, 2005) which decrease the likelihood of a falsely positive significance test. The normalized weights ensured that the sample reflected the sample itself rather than the population (Hahs-Vaughn, 2005) given the likelihood that specific subsets of the population had been oversampled. Normalized weights have been applied to national datasets by other researchers (e.g., Cairney, 1998; Cairney, Boyle, Offord & Racine, 2003) and their use remains relevant for this study.

Data interpretation. Prior to data analysis, normality of the data was examined. In those cases where the data did not meet normality criteria, the results were interpreted with caution. Only those results with significance at or under the 0.05 level were interpreted as statistically significant (i.e., $p \leq 0.05$ is significant). All results, regardless of significance, are reported followed by a brief interpretation.

Normality. In order to answer the aforementioned research questions, independent t-tests and Pearson's chi-squared tests were used. Descriptive statistics were used to create a profile of low-income mature students at the college and university levels. All statistical analyses were

performed using SPSS v23. All of the statistical tests used assume that the data for each variable being tested are normally distributed. As an available dataset was used for all statistical analyses, normality was assessed prior to analysis by examining skewness and kurtosis. Data are skewed if the skewness statistic is greater than two times the standard error for the skewness statistic. Data display kurtosis if the kurtosis statistic is greater than two times the standard error for the kurtosis statistic. A detailed description of normality is provided in the results section for all variables used in this study.

Descriptive statistics. Descriptive statistics were used to answer the first and second research objectives. Analysis was completed in SPSS and is reported according to variables, in the results section. Data were compared for those registered in a college or university in the reference year (2011). Means as well as ranges and standard deviations are reported for each variable including age, number of children, and income status. Each category and the number of individuals who occupy each category are listed for individual characteristics (*age, gender, Aboriginal status, age at immigration, employment (F/T or P/T), previous education, and amount owing on student loan, if applicable);* family characteristics *(income, parental education level (both mother and father), relationship status, number of children/dependents, household size, age of youngest person in economic family, and ratio of family after tax income to the LICO),* and institutional characteristics *(type of institution they are attending, and full-time or part-time enrolment status).* Proportions are also included in order to determine the number of individuals that fall into each category. For example, proportions may demonstrate that 30% of respondents are not Canadian born, suggesting that this is an important characteristic to note. Published research reports often include proportions to add depth to statistical analysis (e.g., Weingarten et al., 2015).

Independent t-tests. Independent t-tests were used to compare groups of individuals who had attended a postsecondary institution in the reference year. Only those individuals who had been registered in postsecondary programs during the reference year were considered in the analysis. There are several assumptions inherent in the use of an independent t-test. It is assumed that variables are normally distributed, that there is homogeneity of variance, that the cases used in the analysis represent a random sample from the population and that each individual being used in the analysis is independent of the others. As data are from a Statistics Canada survey, it is reasonable to assume that the sample is random and each individual is independent of the others. Homogeneity of variances was tested using SPSS. A result of $p > 0.05$ suggests that there is homogeneity of variance, whereas a result of $p < 0.05$ suggests that there is heterogeneity of variance. When homogeneity of variance occurred, then the Tukey or Bonferroni post-hoc tests were used to help interpret the results. If heterogeneity of variance occurred, then the Games-Howell post-hoc test was used to help interpret results. Levene's test for equality of variances was used to ensure that the variances between groups were equal. When Levene's test yielded a $p > 0.05$ then it was assumed that the variances for both groups were equal.

Independent t-tests were used to examine the differences between different groups of low-income mature students attending postsecondary schooling. The null hypotheses for these t-tests were that there was no significant difference between groups, while the alternative hypotheses were that there was a significant difference between the groups being assessed. The t-tests are reported in the results section as follows: t (degrees of freedom) = t-statistic, followed by the p value, for each variable tested. The mean for each group is reported and was examined in order to provide an interpretation of the direction of the relationship between groups (i.e., college vs. university and male vs. female enrolment numbers).

Chi-squared tests. Chi-squared tests were used to determine if there was a relationship between two categorical variables: for example, gender and institution type (college level vs. university level). Chi-squared tests assume that the data are normally distributed, and that the sample used is representative of the larger population and each individual is independent of each other. Normality of the data was tested prior to the chi-squared analysis. As the data were from a Statistics Canada survey, it is reasonable to assume that the sample is random and each individual is independent of the others. For the purposes of this analysis, only individuals who were mature students were included (where age will be used as the independent variable). Data were grouped according to registration at college or registration at university, and low-income or non-low-income (used as the dependent variables). The null hypothesis was that there was no relationship between groups (i.e., that there is no relationship between income status and type of institution). The alternative hypothesis was that there was an association between income and institution type. The Chi-squared statistic is reported as follows χ^2 (degrees of freedom) = x, p value. Should this p-value be <0.05, then the null hypothesis was rejected. The results of these tests helped to address the third research objective.

Results

Normality

Prior to analysis being conducted, normality of the data was assessed using estimates of skewness and kurtosis. All of the linear variables appeared to display skewness and kurtosis; however, given that this data belongs to a very specific sub-sample of the population this non-normality is not surprising. Analysis was conducted despite the non-normality and in recognition that t-tests are robust to violations of normality when sample sizes are large, as is the case with these data (Lumley, Diehr, Emerson, & Chen, 2002).

Research Objective 1: Provincial Enrolment

In order to meet the first research objective, postsecondary enrolment was examined across provinces. Enrolment was broken down into three sub-categories: mature student status, low-income student status, and low-income mature student status. To provide context for this research objective enrolment totals were first examined nationally. In total 41% of students were identified as mature, 11.1% were identified as low-income, and 5.2% were identified as being low-income mature. Table 1 provides a complete breakdown for each sub-category by province, as well as national totals. Alberta had the highest proportion of both mature students, and low-income students, while British Columbia had the highest proportion of students who were low-income mature. The proportions of mature students were much more consistent across provinces (i.e., ranging from 39.1% in the Atlantic Provinces, to 44.3% in Alberta) when compared to the proportions of low-income students (ranging from 5.2% in the Atlantic Provinces, to 15.0% in Alberta) and low-income mature students (ranging from 2.2% in the Atlantic Provinces, to 7.8% in British Columbia.). The percentage of mature students, low-income students, and low-income mature students were all lowest in the Atlantic Provinces.

Table 1. Enrolment Breakdown by Province

Province	Number of students in postsecondary school[a]		Number of students that are mature[b]		Number of students that are low-income[b]		Number of students that are mature low-income[b]	
	n	%	n	%	n	%	n	%
Atlantic Provinces	153,853	8.0	60,184	39.1	7,999	5.2	3,358	2.2
Quebec[c]	687,891	10.6	277,974	40.4	82,510	12.0	41,691	6.1
Ontario	1,266,123	11.7	502,420	39.7	119,689	9.5	53,741	4.2
Manitoba	96,393	10.2	41,653	43.2	10,484	10.9	5,962	6.2
Saskatchewan	71,008	9.0	30,196	42.5	8,616	12.1	2,990	4.2

Province	Number of students in postsecondary school[a]		Number of students that are mature[b]		Number of students that are low-income[b]		Number of students that are mature low-income[b]	
	n	%	n	%	n	%	n	%
Alberta	321,285	10.8	142,429	44.3	48,138	15.0	17,808	5.5
British Columbia	375,831	10.0	164,301	43.7	52,815	14.1	29,484	7.8
Total	2,972,381	10.7	1,219,157	41.0	330,251	11.1	155,034	5.2

[a]As a percent of the total population
[b]As a percent of the total post-secondary student population
[c]Includes CEGEP

Research Objective 2: Individual, Family, and Institutional Characteristics

The second research objective was addressed using descriptive statistics. Of the total postsecondary student population, 41% were identified as mature students and 11% were identified as low-income; 5.2% (155,034) were identified as low-income mature students.

Individual characteristics. Of the 155,034 low-income mature students, a majority were male (55.2%; Table 2). The largest group of students (48.3%) were between 25 and 29 years of age; the smallest group (4.6%) were between 40 and 44. The complete break down for student ages can be found in Table 2. For the low-income mature students, 13.5% identified as Aboriginal, 58.5% were employed while in school, 49.7% were working full-time, and 50.3% were working part-time. The average amount owing on student loans was $25,958.78. The majority of students in the sample (30%) had completed a college diploma, while 9.4% had completed only some non-university postsecondary. 25.7% of these students had previously completed an undergraduate university degree, while 18% had completed only some university. Less than one-fifth of the sample had previously completed a graduate degree.

Table 2. Individual Characteristics of Low-Income Mature Students

Variable	Variable Subcategory	n	%	Mean (SD)
Age				33.29 (9.50)
Age (Range)	25 – 29	74,821	48.3	
	30 – 34	33,540	21.6	
	35 – 39	19,099	12.3	
	40 – 44	7,100	4.6	
	45 – 49	8,170	5.3	
	50+	12,305	7.8	
Gender	Male	85,608	55.2	
	Female	69,426	44.8	
Aboriginal Status	Yes	20,930	13.5	
	No	134,104	86.5	
Immigrated to Canada	Yes	37,803	24.4	
Age at Immigration				29.44 (9.08)
Age at Immigration (Range)	Under 30	17,805	47.1	
	30 – 39	15,728	41.6	
	40 – 49	4,270	11.3	
Employed	Yes	90,634	58.5	
Employment Status (of those employed)	Full-time	45,087	49.7	
	Part-time	45,547	50.3	
Amount owing on student loan?	Yes	52,128	33.6	
Amount owing on student loan				$25,958.78 (26902.11)

Family characteristics. A complete description of all family characteristics is provided in Table 3. The majority (66.7%) of low-income mature students in the sample were not partnered (i.e., single, never married, separated, divorced or widowed). Slightly more than one-third of the sample had children (36.8%), with an average of 0.74 children. The average household size was 2.4 individuals. Parental education was broken down into maternal and paternal education, and was classified as one of two categories: high school diploma or below, or

postsecondary degree/diploma (which includes completion of a CEGEP program, college diploma or university degree at the Bachelor's, Master's or PhD level). In both cases, parents were more likely to have a postsecondary degree or diploma than to have a high school diploma or less. Low-income cut offs were used to determine whether or not an individual/family was low-income. The degree of low-income status was also examined in terms of ratio to the low-income cut off. The majority of the sample were between 10 – 50% below the LICO.

Table 3. Family Characteristics of Low-Income Mature Students

Variable	**Variable Subcategory**			
		n	**%**	**Mean (SD)**
Household after-tax income	Annual income			9024.38 (5668.00)
Relationship Status	Partnered	51,600	33.3	
	Non-Partnered	103,434	66.7	
Household size (economic family)				2.4 (1.43)
Children/dependents	Yes	57,126	36.8	
	No	97,908	63.2	
Number of children/dependents				0.74 (1.21)
Age of Youngest person in Economic family				23.45 (13.38)
Age of Youngest person in Economic family (Range)	Under 1	7,884	5.1	
	1 – 3	10,013	6.5	
	4 – 6	6,764	4.4	
	7 – 9	9,377	6.0	
	10 – 15	9,519	6.1	
	16 – 24	6,819	4.4	
	25 and older	104,698	67.5	
Ratio of Family After-tax income to the LICO	More than 50% below LICO	61,448	39.6	
	Between 10-50% below LICO	73,033	47.1	
	No more than 10% below LICO	20,554	13.3	
Maternal Education (Range)	High school diploma or less	58,572	41.4	

Variable	Variable Subcategory	n	%	Mean (SD)
	Postsecondary degree or diploma	82,900	58.6	
Paternal Education (Range)	High school diploma or less	52,515	38.4	
	Postsecondary degree or diploma	84,382	61.6	

Institutional characteristics. Institutional characteristics were explored by examining the type of institution attended, the enrolment status of the individual and the province of residence (Table 4). For these low-income mature students, 73.7% of the sample were studying on a full-time basis, and 26.3% were studying part-time. The majority of students (58.2%) were studying at a University, with a smaller percentage at college, and a minority at a CEGEP. Table 3 provides a full breakdown of institution type, and enrolment status.

Table 4: Institutional Characteristics of Low-Income Mature Students

Variable	Variable Subcategory	n	%
Type of Institution	University	90,223	58.2
	College	55,201	35.6
	CEGEP	9,610	6.2
Enrolment Status	Full-time	110,617	73.7
	Part-time	39,496	26.3

Research Objective 3: Gender and Institution Analysis

The third, and final, research objective was addressed by comparing low-income mature students on the basis of gender and institution type. Pearson's chi-square tests and independent t-tests were conducted. As mentioned in the *weighting* subsection of this thesis, standardized weightings were applied to the dataset prior to chi-square tests and t-tests being conducted.

Gender. When comparing the sample on the basis of gender, maternal education, age, number of children, and household size were found to be statistically different between male and

female students (Tables 5 and 6). Mothers of the male students were more likely to have a postsecondary degree or diploma while mothers of the female students were more likely to have a high school diploma or less. The average age of females (35.54) was statistically higher than that of males (31.47), as was the average number of children. Correspondingly, average household size was significantly larger for females than for males. No significant differences were found for the remaining variables, as outlined in Tables 5 and 6. Further details related to gender comparisons can be found in Appendices C and D.

Table 5. Comparison of Categorical Characteristics by Gender

		% of total[a]		**Statistics**	
Variable	**Variable Subcategory**	Male	Female	χ^2	df
Aboriginal Status	Yes	12.2	15.0		
	No	87.8	85.0	0.23	1
Employment Status	Full-time	45.1	57.1		
	Part-time	54.9	42.9	1.05	1
Maternal Education	High School or below	29.0	57.4		
	Postsecondary degree/diploma	71.0	42.6	10.08**	1
Paternal Education	High School or below	36.6	40.8		
	Postsecondary degree/diploma	63.4	59.2	0.22	1
Partnered	Yes	32.0	35.0		
	No	68.0	65.0	0.14	1
Ratio to LICO	More than 50% below	40.5	38.3		
	10 – 50% below	44.6	50.0		
	Less than 10% below	14.9	11.7	0.50	2
Institution Type	University	68.1	55.2		
	College	31.9	44.8	2.25	1
Enrolment Status	Full-time	70.8	76.3		
	Part-time	29.2	23.7	0.49	1

Note: *denotes p<0.05, **denotes p<0.01
[a]Calculated using standardized weightings

Table 6. Comparison of Institutional Characteristics by Gender

Variable	Group					Statistics[a]	
	Male		Female				
	M	SD	M	SD	95% CI	t	df
Age	31.47	7.77	35.54	10.99	-7.39 (lower) -0.74 (upper)	-2.43*	103.58
After-tax income	8978.49	5989.15	9,080.97	5,345.06	-2,057.32 1,852.37	-0.10	133
Age at immigration	30.22	7.22	28.68	11.00	-5.10 8.17	0.47	31
Amount owing on loan	19,183.17	26,503.50	33,381.39	26,583.42	-30,099.96 1,703.51	-1.80	43
Number of children	0.35	0.80	1.24	1.45	-1.31 -0.47	-4.18**	83.77
Age youngest person in family	25.24	11.03	21.24	15.71	-0.74 8.75	1.68	103.14
Household size	2.11	1.27	2.74	1.55	-1.12 -0.16	-2.63**	133

Note: *denotes p<0.05, **denotes p<0.01
[a]Calculated using standardized weightings

Institution type. When comparing the sample on the basis of institution type several characteristics were found to be statistically significant. Maternal education was found to be higher for those in university than those in college: mothers of those in university were more likely to have a postsecondary degree or diploma while mothers of those in college were more likely to have a high school diploma or less (Table 7). Those who were enroled in college were more likely to have children than those in university, more likely to have younger children than those in university, and more likely to have larger household sizes than those students in university (Table 8). No significant differences were found for the remaining variables, as outlined in tables 7 and 8. Further details related to institutional comparisons can be found in Appendices E and F.

Table 7. Comparison of Categorical Characteristics by Institution

		% of Total[a]		Statistics	
Variable	**Variable Subcategory**	University	College	χ^2	df
Sex	Male	59.5	45.8		
	Female	40.5	54.2	2.25	1
Aboriginal Status	Yes	14.1	12.5		
	No	85.9	87.5	0.07	1
Employment Status	Full-time	42.9	56.0		
	Part-time	57.1	44.0	1.15	1
Maternal Education	High School or below	29.3	57.5		
	Postsecondary degree/diploma	70.7	42.5	8.69**	1
Paternal Education	High School or below	31.5	44.7		
	Postsecondary degree/diploma	68.5	55.3	1.90	1
Partnered	Yes	29.1	39.6		
	No	70.9	60.4	1.48	1
Ratio to LICO	More than 50% below	45.6	31.3		
	10 – 50% below	45.6	45.8		
	Less than 10% below	8.9	22.9	5.69	2
Enrolment Status	Full-time	71.8	71.1		
	Part-time	28.2	28.9	0.007	1

Note: *denotes p<0.05, **denotes p<0.01
[a]Calculated using standardized weightings

Table 8. Comparison of Interval Characteristics by Institution

	Group						
Variable	University		College		**Statistics[a]**		
	M	SD	M	SD	95% CI	t	df
Age	32.14	8.34	34.11	10.27	-5.47 (lower) 1.51 (upper)	-1.13	84.32
After-tax income	8,285.10	5,963.86	10,214.85	5,495.93	-4,028.77 169.26	-1.82	125
Age at immigration	30.40	6.27	27.32	11.36	-3.83 9.99	0.91	28
Amount owing on loan	31,349.86	31,338.57	19,682.69	15,527.74	-3279.23 26,613.57	1.58	37.29
Number of children	.47	1.04	1.17	1.41	-1.18 -0.22	-2.92*	70.77

Variable	Group				Statistics[a]		
	University		College				
	M	SD	M	SD	95% CI	t	df
Age youngest person in family	25.24	12.78	19.50	13.14	1.06 10.42	2.43**	125
Household size	2.14	1.35	2.87	1.52	-1.24 -0.21	-2.78**	125

Note: *denotes p<0.05, **denotes p<0.01
[a]Calculated using standardized weightings

Discussion

Overview

The primary purpose of this thesis was to examine low-income mature students in postsecondary study by addressing three research objectives: to examine provincial differences in enrolment percentages of low-income mature students in terms of enrolment in college and enrolment in university, to examine various individual, family and institutional characteristics of low-income mature students in order to create a profile of this unique group, and to compare low-income mature students on the basis of institution type and on the basis of gender, using the individual, family, institutional characteristics described in the preceding research objective. The following section reviews the findings of this study while providing significance and interpretation. A brief discussion of the limitations of this study, as well as future directions for research is also provided.

Research Objective 1: Provincial Enrolment

Provincial enrolment was examined using three demographic characteristics: mature student status, low-income student status, and mature low-income student status. Interestingly, the Atlantic Provinces (i.e., P.E.I, Nova Scotia, New Brunswick, and Newfoundland, collectively) yielded the lowest percentages of low-income mature students (as a percentage of

the total postsecondary enrolment in each area) for each of the three demographic characteristics examined. This may be due to the small number of institutions in the Atlantic Provinces where low-income mature students may feel the need to leave the province in order to study. Given the smaller number of schools in the Atlantic Provinces, proximity may also play an important role in the lower enrolment numbers. Research supports the idea that closeness to institutions, and thus length of travel required from home to school impacts the decision to enrol at an institution especially for mature students (van Rhijn, Lero & Burke, 2016) and for low-income students (Frenette, 2004). Student financial aid policies may also have a large impact on student enrolment as evidenced by student enrolment percentages in Ontario. Despite having the highest percentage of students in total, Ontario yielded the second lowest percentages for enrolment of mature students, low-income students, and low-income mature students. Affordability of education has been identified as a potential significant factor influencing Ontario's low percentages of mature, low-income and low-income mature students (Finnie, 2012). Students in Ontario are paying the highest tuition rates (Statistics Canada, 2015a), and, as discussed in the literature review section, student loans may not be accessible for mature, or low-income mature students, thus leading these students to perceive a postsecondary education as not affordable, and not enroling. As Hoy et al (2001) suggested, postsecondary institutions are largely dominated by the middle and upper class. As the national average for low-income students enroled in school in 2011 was just over 11%, this suggests that this middle and upper class domination continues to be the case a decade later.

Conversely, the national average for mature students was 41%, suggesting that this population is much more represented in postsecondary education than low-income students. The highest percentages of low-income students and mature students are seen in Alberta. British

Columbia has the highest percentage of low-income mature students, more than 2% above the national average. It is well known that a high percentage of Canada's Aboriginal population resides in the Western provinces (Richards, 2008), and it has been suggested that Aboriginal students are more likely to attend postsecondary schooling at a later stage in life (Richards, 2008), as mature students. This may be why Alberta and British Columbia yielded percentages that are higher than the national average, for both mature and low-income mature students.

Research Objective 2: Individual, Family, and Institutional Characteristics

Individual characteristics. Examining individual characteristics of low-income mature students was the first step in creating a profile of this unique group. Not surprisingly, the majority of students in this study were between 25-34 years of age. Yet almost 8% of the sample were older than 50 years of age, suggesting that it is important to consider low-income mature students as a heterogeneous group. Further exploration of the age ranges may yield insight into the differences among low-income mature students. This finding also supports the use of a Human Capital Theory lens, which encourages the idea of lifelong learning regardless of age. Buchman, DiPrete and McDaniel (2008) suggest that a larger number of females attain a postsecondary education compared to males. Yet the percentage of males among low-income mature students is around 11% higher than that of the females. This phenomenon could be explained by the non-linear path that mature students often take in postsecondary study (i.e., dropping out one semester and re-enroling sometime later), potentially changing the enrolment statistics from semester to semester (van Rhijn et al, 2015). It is also more likely for females to take time off to have a child, and thus not be enroled in school, therefore explaining the gender difference.

Another individual characteristic that was examined in this study was age at immigration. Around one-quarter of the low-income mature students in the study identified as immigrants to Canada: more than half of whom (52.9%) immigrated when they were 30 years of age or older. Immigrants who have already completed some postsecondary schooling prior to entering Canada are likely to have to enrol in a postsecondary institution in order to re-credential in the Canadian context (Grant, 2008). Given the later age of immigration, it is highly probable that these students who had immigrated to Canada account for a large proportion of those students who had previously completed a university degree. According to Human Capital Theory, by solidifying their education these individuals will have also increased their earning potential allowing them to provide a better life for themselves and their families.

More than half (58.5%) of the students in this study were employed while going to school. This finding is supported by the literature where it has been suggested that students, especially mature students, are increasingly likely to be employed during school in order to pay for school (e.g., Finnie et al, 2010; Gault et al, 2014). Individual characteristics encompass only a portion of the characteristics examined in this study. The following section provides a discussion of the family characteristics explored in this study.

Family characteristics. In order to create a complete profile of low-income mature students, this study also examined family characteristics of low-income mature students. As income and finances are integral to this study, they were examined first. Financial factors tend to be intensified for non-traditional students (Thomas, 2002), leading to the small national percentage (5.2%) of mature-low income students being enroled in postsecondary study. With an average after-tax income of only $9024.38, it is easy to see how low-income mature students may feel that school is not affordable. Yet, almost 40% of the students in this study were more

than 50% below the LICO. It is possible that these students qualify for higher student bursaries than their not-as-low-income peers, therefore encouraging them to enrol. With an average student debt of approximately $26000, low-income mature students may be so far below the LICO that feelings of debt aversion (e.g., Callender & Jackson, 2005) may not be as strong for this group of individuals, and thus not have the same inhibitory effect. This phenomenon may also be explained by the way income is calculated. Given that after-tax income relies solely on tax records, and does not include scholarships and bursaries it may be that individuals have a slightly higher income than is showing in this study.

Another important family characteristic that was explored was relationship status. The majority of students in this sample (66.7%) were not partnered (i.e., single, never married, widowed, divorced, or separated). As research has suggested, significant life events such as divorce or separation often act as catalysts, pushing individuals back into schooling (Compton et al., 2006; Stone, 2008; Swain & Hammond, 2011; van Rhijn, Lero & Burke, 2016). The same catalyst effect can also be seen with the birth of children. More than half of the sample did not have children; however, for the 36.8% that did have children either by birth or by adoption, these children may have been the push for the parent(s) to return to school.

Many studies have demonstrated the link between parental education and an individual's decision to study at the postsecondary level (e.g., Engberg & Allen, 2011; Hoy, Christofides, & Cirello, 2001; Mueller, 2008). This study yielded further evidence to support this link, by demonstrating that the education level for both mothers and fathers of individuals in the study was more likely to be at the postsecondary level. More specifically, 58.6% of the mothers of students in the study had a postsecondary degree or diploma and 61.6% of the fathers of students in the study had a postsecondary degree or diploma.

Institutional characteristics. Lastly, institutional characteristics were examined to complete the profile of low-income mature students. A majority of the low-income mature students in this study (58.2%) were studying at a university. A higher proportion of students enroled in university than in college is a stable trend that continued to be present in the 2013/2014 academic year (Statistics Canada, 2015b). Research has suggested that low-income students (e.g., Gault et al, 2014) and mature students (Fragoso et al., 2013; Jepsen & Montgomery, 2012; MacFadgen, 2008) are more likely to study on a part-time basis. This study found that only 26.3% of the low-income mature students included were studying on a part-time basis, meaning that almost 74% of them were studying full-time. This discrepancy may be due to the fact that student bursaries and scholarships are not often provided for part-time study, thus encouraging these students to attend full-time. Also given that only 36.8% of the students in the study had children, and only 33.3% were partnered, perhaps this group of students did not experience as many time constraints and multiple roles as those students with children/in partnerships.

Through exploration of individual, family and institutional characteristics a profile of the unique features of low-income mature students was developed. In order to build upon this understanding, each of the characteristics explored for the second research objective were compared on the basis of gender and institution type. The following section provides an overview of the gender and institution type comparisons.

Research Objective 3: Gender and Institution Analysis

Individual, family and institutional characteristics were compared by gender and subsequently by institution type. Maternal education was found to be a statistically significant factor in both the gender analysis and institutional analysis. Maternal education was higher (e.g.,

postsecondary diploma/or degree) for those in university than for those in college where maternal education was more likely to be a high school diploma or less. This trend was also present in the gender analysis where maternal education for males was more likely to be a postsecondary degree or diploma and maternal education for females was more likely to be a high school diploma or less. Maternal education has been shown to be a significant factor in both childhood outcomes like health and well-being as well as in educational outcomes (Magnuson, 2007). It is not surprising that maternal education continues to be a significant factor in this study.

Interestingly, females (m = 35.54) were more likely to be older than males (m = 31.47), more likely to have bigger households than males (m = 2.74 for females; m = 2.11 for males), and had more children than males (m = 1.24 for females; m = 0.35 for males). Reflecting on these numbers, it makes sense that if females have more children, then they would also have bigger household sizes. Following this, it is highly possible that females are older on average as they have taken time to have children, and raise a family prior to returning to education. It is likely that these children acted as catalysts that pushed the mothers back into study (van Rhijn, Lero & Burke, 2016) in order to create a better environment for the child(ren).

A similar phenomenon was observed in the institutional analysis where students in college (m = 1.17) had higher number of children than students in university (m = 0.47), and had bigger household sizes than those in university (m = 2.87 for college; m = 2.14 for university). These statistics are easy to understand as the larger the number of children, the larger the household size would be. Research has shown that mature students and low-income students are more likely to attend college due to the lower up-front costs and shorter time to completion (Compton et al, 2006; Finnie, Childs & Wismer, 2011). It is very likely that this trend continues

to be true, thus explaining the difference in number of children and household size. Children cost money to raise and take care, of thus the lower up-front costs of college means less money spent on education, and more money saved for child-raising. Similarly, the shorter time to completion for college diplomas means less time spent at school, and more time spent with children. Likewise, age of youngest person in the family was statistically lower for those in college (m = 19.50) than for those in university (m = 25.25). As this age is an average, it is conceivable that students in college have younger children than students in university. Again, this phenomenon may be explained by the lower up-front costs and shorter time to completion for college.

Limitations

As this study was based entirely on secondary data, the study is limited by the information that was collected. As a sample of the size obtained using the secondary data could not otherwise have been collected in the time of this study, the benefits of using a secondary sample outweighed the costs; however, in the future where research may not be as time sensitive, researchers may want to consider selecting variables that would be useful to them.

Slightly less than one-fifth of the low-income mature students identified as Aboriginal, which seems to be higher than Richards' (2008) prediction of one in every eight students identifying as Aboriginal; nevertheless, it is likely that there are more Aboriginal students enroled than have been identified by this study. One of the reasons for this is due to coding choices made by the research team, where those who stated that they 'don't know' if they have status were coded as 'not Aboriginal'. In reality, some of these individuals may be of Indigenous decent but may have simply not filed for status with the Canadian government. A second concern is that individuals who live on reserves are not included in the SLID. It is possible that individuals may be living on a reserve while attending a postsecondary institution, yet they

would not be included in this survey. In order to accurately assess the number of students who are of Aboriginal descent careful consideration must be given to survey design, including who will be included in the sample.

These data were from 2011, therefore researchers may wish to use more recent data. With the return of the long-form census, high quality data on schooling will be available in the next few years and are recommended for use. Given what we know about mature students' non-traditional paths in education, a longitudinal approach would be helpful to gain insight into the specific behaviours of low-income mature students.

Policies related to education have significant impacts on enrolment in education. This research study only began to scratch the surface of the Ontario policy context, and left much to be discovered. As such, a more in-depth provincial policy analysis would be a helpful next step. Further to this, a national policy analysis would be very useful to ascertain how policies might be impacting student enrolment in different provinces, and how these provinces compare with Ontario.

Conclusions

Low-income mature students are themselves a unique group of students, and although they may share traits of both low-income students, and mature students, they differ in many ways. This study represents a first look at this unique group and contributes to the literature on low-income mature students by examining provincial enrolment statistics, creating a profile of low-income mature students using individual, family and institutional characteristics, and by exploring these characteristics based on gender and institution type. This study found a majority of low-income mature students to be male, between 25-29, and employed while in school. The majority of students were attending universities full-time and were not partnered. A minority of

low-income mature students in this study had children. Most students in this study were between 10 and 50% below the LICO.

This study also provided some insight into institutional and gender differences among low-income mature students. Maternal education was found to be a significant factor in both institution type and gender analysis. Low-income mature students in college were more likely to have younger children, had significantly more children, and had larger household sizes than low-income mature students in university. Age, average number of children, and average household size were all found to be significantly higher for female low-income mature students than for male low-income mature students. With numbers of traditional-age students declining (Berger, 2008), postsecondary institutions should look to novel groups of students to mitigate this decline. Low-income mature students should be considered in our efforts to diversify enrolment at postsecondary institutions, as they are indeed a unique and significant group.

Implications

This research provides a foundation for many important implications both for policy makers and institutions. As previously stated, low-income mature students were found to be a unique group of students and should be treated as such. It is integral for institutions and policy makers to acknowledge the unique needs of this group of students and develop supports that will encourage these students to attend postsecondary study and to succeed in their studies. As previously discussed in van Rhijn et al's (2015) paper, mature students often follow a non-traditional, or non-linear, path through education. More specifically, mature students were more likely to withdraw from study then re-enroll in subsequent semesters (van Rhijn et al, 2015). These students may have been counted as 'withdrawal' statistics according to individual institutions, then as 'new students' upon re-enrolment. However, these statistics are not accurate

given that it is the same student who is re-enroling. It is highly probable that low-income mature students will follow a similar non-linear path through education given their additional financial constraints when compared to their non-low-income counterparts. It is therefore very important for institutions to acknowledge the non-linear paths taken by these students, in order to best support them through study.

Secondly, it would be highly beneficial for institutions and policy makers to develop one consistent definition for ‘mature’ students, ‘low-income’ students, and ‘low-income mature’ students. A consistent definition would provide clarity in future research and allow comparisons to be made across institutions nationally. Further, data regarding students should be collected consistently. Both longitudinal and cross-sectional data are needed, however they are not currently being collected nationally on a constant-basis. It may be of benefit for institutions to collect standardized information about all of their students, and applicants, and for this data to be collected over a number of years. Both clear definitions and consistent data would vastly strengthen the ability of researchers, policy makers, and institutional employees to understand these unique groups of students and develop supports that will enhance the success of these students.

Finally, in light of changing demographics on Canadian campuses, it is perhaps time for institutions, policy makers, and researchers alike to re-consider their perceptions of what a ‘traditional’ student is in order to allow for a new era of education to begin especially given changing demographics, the shift towards knowledge-based economies, and increasing need for lifelong learning.

References

Anisef, P., Brown, R., & Robson, K. (2013). *Non-traditional postsecondary education pathways of adult learners in the Toronto District School Board: evaluating the influence of individual and neighbourhood characteristics*. Toronto, ON: Higher Education Quality Council of Ontario.

Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of Educational Research*, *55*(4), 485-540.

Becker, G. S. (1975). *Human capital: A theoretical and empirical analysis, with special reference to education* (2nd ed). New York, NY: Columbia Unversity Press.

Belley, P., Frenette, M., & Lochner, L. (2014). Postsecondary attendance by parental income in the U.S. and Canada: do financial aid policies explain the differences? *Canadian Journal of Economics*, *47*(2), 664-696.

Berger, J. (2008). *"Why access matters" revisited: a review of the latest research*. Montreal, QC: The Canada Millenium Scholarship Foundation.

Berger, J., & Motte, A. (2007). *Mind the access gap: breaking down barriers to postsecondary education*. Montreal, QC: Policy Options (Options Politiques).

Berger, J., Motte, A., & Parkin, A. (2009). *The price of knowledge access and student finance in Canada*. Montreal, QC: The Canada Millenium Scholarship Foundation.

Bergman, M., Gross, J. P. K., Berry, M., & Shuck, B. (2014). If life happened but a degree didn't: examining factors that impact adult student persistence. *The Journal of Continuing Higher Education*, *62*(2), 90-101. doi:10.1080/07377363.2014.915445

Bettinger, E. P., Long, B. T., & Oreopoulos, P. (2009). Increasing postsecondary enrolment among low-income families: a project to improve access to college information and financial aid: the FAFSA H&R block experiment. Cambridge, MA: Harvard University.

Buchmann, C., DiPrete, T. A., & McDaniel, A. (2008). Gender inequalities in education. *Annual Review of Sociology, 34*, 319-337. doi: 10.1146/annurev.soc.34.040507.134719

Cairney, J. (1998). Gender differences in the prevalence of depression among Canadian adolescents. *Canadian Journal of Public Health, 89*(3), 181-182.

Cairney, J., Boyle, M., Offord, D. R., & Racine, Y. (2003). Stress, social support and depression in single and married mothers. *Social psychiatry and psychiatric epidemiology*, *38*(8), 442-449.

Callender, C., & Jackson, J. (2005). Does the fear of debt deter students from higher education? *Journal of Social Policy, 34*(04), 509. doi:10.1017/s004727940500913x

Campbell, M. (2005). Low-income adult students: a special challenge. *The Hispanic Outlook in Higher Education, 15*(12), 22.

Carneiro, P., & Heckman, J. J. (2002). The evidence on credit constraints in postsecondary schooling *NBER Working Papers*. Cambridge, MA: National Bureau of Economic Research.

Carney-Crompton, S., & Tan, J. (2002). Support systems, psychological functioning, and academic performance of nontraditional female students. *Adult Education Quarterly, 52*(2), 140-154. doi: 10.1177/074171360205200200 5

Coelli, M. B. (2009). Tuition fees and equality of university enrolment. *Canadian Journal of Economics, 42*(3), 1072-1099.

Compton, J. I., Cox, E., & Laanan, F. S. (2006). Adult learners in transition. *New Directions for Student Services,* (114), 73-80. doi:10.1002/ss.208

Corrigan, M. E. (2003). Beyond access persistence challenges and the diversity of low-income students. *New Directions for Higher Education, 121*, 25-34.

Crocker, R. (2006). *Human capital development and education.* Ottawa, ON: Canadian Policy Research Networks.

Davidson, J. C., & Holbrook, W. T. (2014). Predicting persistence for first-time undergraduate adult students at four-year institutions using first-term academic behaviors and outcomes. *The Journal of Continuing Higher Education, 62*(2), 78-89. doi:10.1080/07377363.2014.915447

Davies, P., Mangan, J., & Hughes, A. (2009). Participation, financial support and the marginal student. *Higher Education, 58*(193-204).

Davies, S., & Quirke, L. (2002). The new entrepreneurship in higher education: the impact of tuition increases at an Ontario university. *The Canadian Journal of Higher Education, 32*(3).

de Brouker, P. (2005). Getting there and staying there: low-income students and postsecondary education. Ottawa, ON: Canadian Policy Research Networks.

Dooley, M. D., Payne, A. A., & Robb, A. L. (2009). University participation and income differences: an analysis of applications by Ontario secondary school students. Toronto, ON: Higher Education Quality Council of Ontario.

Dooley, M. D., Payne, A. A., & Robb, A. L. (2012). The impact of cost on the choice of university: evidence from Ontario. *Canadian Journal of Economics, 45*(2), 755-783.

Dooley, M. D., Payne, A. A., & Robb, A. L. (2013). The impact of scholarships and bursaries on persistence and academic success in university. Toronto, ON: Higher Education Quality Council of Ontario.

Ely, E. E. (1997). The non-traditional student *Paper presented at the American Association of Community Colleges annual conference*. Anaheim, CA.

Employment and Social Development Canada. (2013). *Canada Student Loans Program Annual Report 2012-2013*. Available from http://www12.hrsdc.gc.ca

Engberg, M. E., & Allen, D. J. (2011). Uncontrolled destinies: improving opportunity for low-income students in American higher education. *Research in Higher Education, 52*(8), 786-807. doi:10.1007/s11162-011-9222-7

Finnie, R. (2012). Access to postsecondary education: the importance of culture. Ottawa, ON: Education Policy Research Initiative.

Finnie, R., Childs, S., & Wismer, A. (2011). Access to postsecondary education: how Ontario compares. Toronto, ON: Higher Education Quality Council of Ontario.

Finnie, R., Mueller, R., Sweetman, A., & Usher, A. (2010). New perspectives on access to postsecondary education. *Queen's Policy Studies Series*. Montreal, QC Kingston, ON: McGill-Queen's University Press.

Fragoso, A., Goncalves, T., Ribeiro, C. M., Monteiro, R., Quintas, H., Bago, J., . . . Santos, L. (2013). The transition of mature students to higher education: Challenging traditional concepts? *Studies in the Higher Education of Adults, 45*(1), 67-81.

Frempong, G., Ma, X., & Mensah, J. (2011). Access to postsecondary education: can schools compensate for socioeconomic disadvantage? *Higher Education, 63*(1), 19-32. doi:10.1007/s10734-011-9422-2

Frenette, M. (2004). Access to college and university: does distance to school matter? *Canadian Public Policy, 30*(4), 427-443.

Gault, B., Reichlin, L., & Román, S. (2014). College affordability for low-income adults: improving returns on investment for families and society. Washington, D.C.: Institute for Women's Policy Research.

Grant, P. R. (2008). The protest intentions of skilled immigrants with credentialing problems: A test of a model integrating relative deprivation theory with social identity theory. *British Journal of Social Psychology, 47*(4), 687-705.

Green, D. A. & Foley, K. (2016). Why more education will not solve rising inequality (and may make it worse). In D.A. Green, W. C. Riddell and F. St-Hilaire's *Income Inequality the Canadian Story: Volume V of art of the state.* Kingston, ON: McGill-Queen's Univeristy Press.

Hahs-Vaughn, D. L. (2005). A primer for using and understanding weights with national datasets. *The Journal of Experimental Education, 73*(3), 221-248.

Hoy, M., Christofides, L. N., & Cirello, J. (2001). Family income and postsecondary education in Canada. *The Canadian Journal of Higher Education, 31*(1), 177-208.

Jepsen, C., & Montgomery, M. (2012). Back to school: An application of human capital theory for mature workers. *Economics of Education Review, 31*(1), 168-178. doi:10.1016/j.econedurev.2011.10.005

Junor, S., & Usher, A. (2004). *The price of knowledge 2004. Access and student finance in Canada*. Montreal, QC: Canada Millennium Scholarship Foundation.

Kerr, A. (2011). Adult learners in Ontario postsecondary institutions. Toronto, ON: Higher Education Quality Council of Ontario.

Lumley, T., Diehr, P., Emerson, S., & Chen, L. (2002). The importance of the normality assumption in large public health data sets. *Annual review of public health, 23*(1), 151-169.

MacFadgen, L. (2008). *Mature students in the persistence puzzle: an exploration of the factors that contribute to mature students' health, learning, and retention in postsecondary education*. Retrieved from Canadian Council on Learning Website: http://www.ccl-cca.ca/NR/rdonlyres/65C42165-C7AA-431F-841F-1B1513BF272A/0/MacFadgenFinalAL2006.pdf

Mincer, J. (1974). *Schooling, experience, and earnings.* New York, NY: Columbia Univeristy Press.

Ministry of Colleges, Training and Universities. (2012). *Improving Ontario's postsecondary education and creating jobs.* Retrieved from http://www.tcu.gov.on.ca/eng/document/nr/12.02/bg0201.html

Mueller, R. E. (2008). *Access and persistence of students from low-income backgrounds in Canadian post-secondary education: a review of the literature*. Toronto, ON: Educational Policy Institute.

ODESI (n.d.). http://odesi2.scholarsportal.info/webview/index/en/Odesi/ODESI-Click-to-View-Categories-.d.6/Labour-and-Employment.d.24/CANADA.d.25/Survey-of-Labour-and-Income-Dynamics-SLID-.d.358/2011.d.1419/Survey-of-Labour-and-Income-Dynamics-2011-Canada-Person-File/fStudy/slid-75M0010XCB-E-2011pr

Ontario (2015). *2015 Ontario Budget. Chapter I: Implementing the plan.* Retrieved from http://www.fin.gov.on.ca/en/budget/ontariobudgets/2015/ch1a.html#ch1a_5

Ontario (2015a). *Ontario universities.* Retrieved from http://www.ontario.ca/page/ontario-

Universities

Ontario (2015b). *Ontario colleges.* Retrieved from http://www.ontario.ca/page/ontario-colleges

Ontario (2016). 30% Off Ontario Tuition Grant. Retrieved from: http://www.ontario.ca/education-and-training/30-off-ontario-tuition

Ontario (2016a). *Jobs for today and tomorrow: 2016 Ontario Budget*. Retrieved from: http://www.fin.gov.on.ca/en/budget/ontariobudgets/2016/bk1.pdf

Oreopoulos, P., & Salvanes, K. G. (2011). Priceless: the nonpecuniary benefits of schooling. *Journal of Economic Perspectives*, *25*(1), 159-184. doi:10.1257/jep.25.1.159

Osborne, M., Marks, A., & Turner, E. (2004). Becoming a mature student: How adult appplicants weigh the advantages and disadvantages of higher education. *Higher Education, 48,* 291-315.

Palameta, B., & Voyer, J.-P. (2010). Willingness to pay for Postsecondary Education Among Under-represented Groups. Toronto, ON: Higher Education Quality Council of Ontario.

Reay, D. (2002). Class, authenticity and the transition to higher education for mature students. *The Sociological Review, 50*(3), 398-418.

Richards, J. (2008). Backgrounder: Closing the Aboriginal/non-Aboriginal education gaps. Toronto, ON: CD Howe Institute.

Richardson, J. T. E. (1994). Mature students in higher education: academic performance and intellectual ability. *Higher Education, 23,* 373-386.

Schatzel, K., Strandholm, K. & Callahan, T. (2012) An educational option for those facing lay-off: a human capital perspective. *Human Resource Development International, 15*(3), 303-319, DOI: 10.1080/13678868.2012.689215

Schuetze, H. G., & Slowey, M. (2002). Participation and exclusion: a comparative analysis of non-tradtional students and lifelong learners in higher education. *Higher Education, 44*, 309-327.

Social Research and Demonstration Corporation. (2009). Report on the data-readiness of postsecondary access and retention programs for under-represented groups. Montreal, QC: Canada Millennium Scholarship Foundation.

Statistics Canada. (2013). Low income cut-offs. Retrieved from: http://www.statcan.gc.ca/pub/75f0002m/2012002/lico-sfr-eng.htm

Statistics Canada (2013a). Survey of labour and income dynamics (SLID). Retrieved from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3889&lang=fr&db=imdb&adm=8&dis=2

Statistics Canada. (2013b). Methodology. Retrieved from http://www.statcan.gc.ca/pub/75f0011x/2012001/method-eng.htm

Statistics Canada. (2015a). Univeristy Tuition Fees, 2015/2016. Retrieved from http://www.statcan.gc.ca/daily-quotidien/150909/dq150909b-eng.htm?cmp=mstatcan

Statistics Canada. (2015b). Postsecondary enrolments by institution type, registration status, province and sex. Retrieved from http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/educ71a-eng.htm

Stone, C. (2008). Listening to individual voices and stories – the mature-age student experience. *Australian Journal of Adult Learning, 48*(2), 263-290.

SLID Electronic Data Dictionary (2015). Retrieved from: http://www.statcan.gc.ca/pub/75f0026x/2013000/alpha-eng.htm

Swail, W. S. (2014). A different viewpoint on student retention. *Higher Learning Research Communications, 4*(2), 18-25.

Swain, J., & Hammond, C. (2011). The motivations and outcomes of studying for part-time mature students in higher education. *International Journal of Lifelong Education, 30*(5), 591-612. doi:10.1080/02601370.2011.579736

Sweetland, S. R. (1996). Human capital theory: foundations of a field of inquiry. *Review of Educational Research, 66*(3), 341-359.

Tan, E. (2014). Human Capital Theory: A Holistic Criticism. *Review of Educational Research, 84*(3), 411-445.

Thomas, L. (2002). Student retention in higher education: the role of institutional habitus. *Journal of Education Policy, 17*(4), 423-442. doi:10.1080/02680930210140257

Tones, M., Fraser, J., Elder, R., & White, K. M. (2009). Supporting mature-aged students from a low socioeconomic background. *Higher Education, 58*(4), 505-529. doi:10.1007/s10734-009-9208-y

Trueman, M., & Hartley, J. (1996). A comparison between the time-management skills and academic performance of mature and traditional-entry university students. *Higher Education, 32,* 199-215.

Usher, A. (2005). A little knowledge is a dangerous thing: how perceptions of costs and benefits affect access to education. Toronto, ON: Educational Policy Institute.

Usher, A. & Cervenan, A. (2005). Global Higher Education Rankings 2005. Toronto, ON: Educational Policy Institute.

van der Merwe, A. (2010). Does human capital theory account for individual higher education choice? *The International Business & Economics Research Journal, 9*(6), 81-93.

van Rhijn, T., Bridge, K., Lero, D. S., & Fritz, V. (2016). Unmet needs: Challenges to success from the perspectives of mature university students. *Canadian Journal for the Study of Adult Education, 29*(1), 29-47

van Rhijn, T. & Lero, D. (2014). The influence of self-efficacy beliefs for student parents attending university. *International Journal of Lifelong Education, 33*(4), 541-555.

van Rhijn, T., Lero, D. S., & Burke, T. (2016). Why go back to school? Investigating the motivations of student parents to pursue postsecondary education. *New Horizons for Adult Education and Human Resource Development, (28)*2, 14-26. doi: 10.1002/nha3.20135

van Rhijn, T., Lero, D. S. , Dawczyk, A., de Guzman, J., Pericak, S., Fritz, V., Closs, J. & Osborne, C. (2015). *Student pathways and supports: Investigating retention and attrition in mature university students*. Submitted to Ministry of Training, Colleges, and Universities. Available from https://dspace.lib.uoguelph.ca/xmlui/handle/10214/8732

van Rhijn, T., Smit Quosai, T. & Lero, D. (2011). A profile of undergraduate student parents in Canada. *Canadian Journal of Higher Education, 43(*3), 59-80.

Weingarten, H. P., Hicks, M., Jonker, L., Smith, C., & Arnold, H. (2015). Canadian postsecondary performance: IMPACT 2015. Toronto, ON: Higher Education Quality Council of Ontario.

Appendix A: Copy of Signed Letter Approving Access to the BRDC

SSHRC CRSH

350 Albert Street, P.O. Box 1610
Ottawa ON K1P 6G4

350, rue Albert, C.P. 1610
Ottawa ON K1P 6G4

RESEARCH GRANTS & PARTNERSHIPS DIVISION
DIVISION DES SUBVENTIONS DE RECHERCHE ET DES PARTENARIATS

January 22, 2016

Ms. Victoria A. Fritz
401 – 2 Colonial Drive
GUELPH ON
N1L 0K8

FILE: CISS-RDC-880375

Dear Ms. Fritz:

Thank you for submitting an application to the CISS-Access to the RDC Program, a joint initiative between Statistics Canada, the Social Sciences and Humanities Research Council and the Canadian Institutes of Health Research. The RDC-Access Granting Committee has now completed the review of your project proposal and has approved it. Before you are granted access to the RDC to begin your project proposal you will need to complete the following steps (http://www.statcan.gc.ca/rdc-cdr/process-eng.htm):

1) Complete the security screening process
2) Sign the Oath of Office and Secrecy
3) Participate in an RDC Orientation session
4) Sign a Microdata Research Contract with Statistics Canada.

Your RDC analyst can be found at the centre listed on the following web page: http://www.statcan.gc.ca/rdc-cdr/network-reseau-eng.htm.

You have 1 year from the date of approval of your project proposal in order to initiate access to the RDC. If you are unable to commence your project proposal within the first 12 months after your project proposal has been approved for RDC access, please contact the RDC analyst to make special arrangements. If you have not contacted your RDC analyst within the first 12 months after your project proposal has been approved, you will need to re-apply to SSHRC in order to re-gain access to the RDC.

The reviews of the project proposal were based on SSHRC peer review procedures. Each project proposal was evaluated on the basis of four main criteria: scientific merit and viability of the proposed research; the viability of the methods to be applied given the data on which the analysis will be performed; a demonstrated need for access to detailed micro data; and, the expertise and ability of the researchers to carry out the work.

.../2

Enclosed is a copy of the evaluation results from the SSHRC peer review procedures for your information. If you need to discuss these results please contact your RDC analyst.

Should you have further questions, please feel free to contact the officer responsible for the administration of the CISS-Access to the RDC Program, Mika Oehling, at (613) 992-4227 or by email at zresearchdata@sshrc.ca.

Sincerely,

Tim Wilson, PhD.
Executive Director

cc: Beverley Hunt, Research Data Centres Headquarters Operations

Encl. 1

Appendix B: Variables used in the study

What variable?	Variable name in SLID	Re-coding (if applicable)
Main defining variables		
Age	age26	Re-coded into age groups
Income	adsain27	
Individual Characteristics		
Gender	sex99	
Aboriginal status	abortg15	Re-coded as 'yes' or 'no' 'don't know' → 'no'
Age at Immigration	agrimm15	Re-coded into age groupings
Employment (full-time or part-time)	fllprt1	
Previous education	hleved18	Re-coded into groupings: some non-university postsecondary, some university, postsecondary diploma, or university degree.
Amount owing on student loan	slowe18	
Family Characteristics		
Parental Education (maternal)	edmoth21	Recoded into two groups: 'high school diploma or less' and 'postsecondary degree/diploma'
Parental Education (paternal)	edfath21	Recoded into two groups: 'high school diploma or less' and 'postsecondary degree/diploma'
Partnered	marsd26	Recoded into 'partnered' and 'not partnered'
Children/dependents	chdbar16	
Household size	hhsz25	
Age of youngest person in economic family	agyfm27	Recoded into age groupings
Ratio of family after-tax income to the LICO	licoga27	
Institutional Characteristics		
Type of institution (university)	atuniv20	All of these variables were used to determine if the individual was in school: in school = (at university) or (at college) or (at CEGEP)
Type if institution (college)	atcc20	

What variable?	Variable name in SLID	Re-coding (if applicable)
Type of institution (CEGEP)	atcegp20	
F/T or P/T	fllprt20	
Province (of study)	pvres25	Recoded: Atlantic provinces, Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia.

Appendix C: Comparison of Categorical Characteristics by Gender

		n (% of total)[a]		**Statistics**	
Variable	**Variable Subcategory**	Male	Female	χ^2	df
Aboriginal Status	Yes	9 (12.2)	9 (15.0)		
	No	65 (87.8)	51 (85.0)	0.23	1
Employment Status	Full-time	23 (45.1)	16 (57.1)		
	Part-time	28 (54.9)	12 (42.9)	1.05	1
Maternal Education	High School or below	20 (29.0)	31 (57.4)		
	Postsecondary degree/diploma	49 (71.0)	23 (42.6)	10.08**	1
Paternal Education	High School or below	26 (36.6)	20 (40.8)		
	Postsecondary degree/diploma	45 (63.4)	29 (59.2)	0.22	1
Partnered	Yes	24 (32.0)	21 (35.0)		
	No	51 (68.0)	39 (65.0)	0.14	1
Ratio to LICO	More than 50% below	30 (40.5)	23 (38.3)		
	10 – 50% below	33 (44.6)	30 (50.0)		
	Less than 10% below	11 (14.9)	7 (11.7)	0.50	2
Institution Type	University	47 (68.1)	32 (55.2)		
	College	22 (31.9)	26 (44.8)	2.25	1
Enrolment Status	Full-time	51 (70.8)	45 (76.3)		
	Part-time	21 (29.2)	14 (23.7)	0.49	1

Note: *denotes $p<0.05$, **denotes $p<0.01$

[a] % of total of the variable

Appendix D: Comparison of Institutional Characteristics by Gender

Variable	Group						Statistics[a]		
	Male			Female					
	M	SD	n	M	SD	n	95% CI	t	df
Age	31.47	7.77	75	35.54	10.99	60	-7.39 (lower) -0.74 (upper)	-2.43*	103.58
After-tax income	8978.49	5989.15	75		5345.06	60	-2057.32 1852.37	-0.10	133
Age at immigration	30.22	7.22	16	28.68	11.00	17	-5.10 8.17	0.47	31
Amount owing on loan	19183.17	26503.50	24	33381.39	26583.42	22	-30099.96 1703.51	-1.80	43
Number of children	0.35	0.80	73	1.24	1.45	58	-1.31 -0.47	-4.18**	83.77
Age youngest person in family	25.24	11.03	75	21.24	15.71	60	-0.74 8.75	1.68	103.14
Household size	2.11	1.27	75	2.74	1.55	60	-1.12 -0.16	-2.63**	133

Note: *denotes p<0.05, **denotes p<0.01

[a] % of total of the variable

Appendix E: Comparison of Categorical Characteristics by Institution

		N (% of total)[a]		**Statistics**	
Variable	**Variable Subcategory**	University	College	χ^2	df
Sex	Male	47 (59.5)	22 (45.8)		
	Female	32 (40.5)	26 (54.2)	2.25	1
Aboriginal Status	Yes	11 (14.1)	6 (12.5)		
	No	67 (85.9)	42 (87.5)	0.07	1
Employment Status	Full-time	21 (42.9)	14 (56.0)		
	Part-time	28 (57.1)	11 (44.0)	1.15	1
Maternal Education	High School or below	22 (29.3)	23 (57.5)		
	Postsecondary degree/diploma	53 (70.7)	17 (42.5)	8.69**	1
Paternal Education	High School or below	23 (31.5)	17 (44.7)		
	Postsecondary degree/diploma	50 (68.5)	21 (55.3)	1.90	1
Partnered	Yes	23 (29.1)	19 (39.6)		
	No	56 (70.9)	29 (60.4)	1.48	1
Ratio to LICO	More than 50% below	36 (45.6)	15 (31.3)		
	10 – 50% below	36 (45.6)	22 (45.8)		
	Less than 10% below	7 (8.9)	11 (22.9)	5.69	2
Enrolment Status	Full-time	56 (71.8)	32 (71.1)		
	Part-time	22 (28.2)	13 (28.9)	0.007	1

Note: *denotes $p<0.05$, **denotes $p<0.01$
[a]% of total of the variable

Appendix F: Comparison of Interval Characteristics by Institution

Variable	Group						Statistics[a]		
	University			College					
	M	SD	n	M	SD	n	95% CI	t	df
Age	32.14	8.34	79	34.11	10.27	48	-5.47 (lower) 1.51 (upper)	-1.13	84.32
After-tax income	8285.10	5963.86	79	10214.85	5495.93	48	-4028.77 169.26	-1.82	125
Age at immigration	30.40	6.27	14	27.32	11.36	16	-3.83 9.99	0.91	28
Amount owing on loan	31349.86	31338.57	29	19682.69	15527.74	12	-3279.23 26613.57	1.58	37.29
Number of children	.47	1.04	79	1.17	1.41	45	-1.18 -0.22	-2.92*	70.77
Age youngest person in family	25.24	12.78	79	19.50	13.14	48	1.06 10.42	2.43**	125
Household size	2.14	1.35	79	2.87	1.52	48	-1.24 -0.21	-2.78**	125

Note: *denotes p<0.05, **denotes p<0.01

[a]% of total of the variable