TRANSITIONS

Note 7

EDUCATIONAL PATHWAYS AND PAID WORK

A Longitudinal Approach

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Research Note 7
Educational Pathways and Paid Work:
A Longitudinal Approach

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Introduction

Educational pathways consist of a series of decisions, events or milestones; as such, their progress is subject to bifurcation. Unforeseen events may lead to a reassessment of the initial study plan, bringing about changes in priorities — and in direction. This proposal is an expansion of Tinto's (1993) thesis, in which the transition periods from secondary to postsecondary education, and the entry into a postsecondary institution, are fundamental for understanding what he calls "institutional departures."[1] For this author, social and intellectual integration is a crucial phase in determining what will follow, since difficulties in integration can lead to institutional departures. Thus, the factors that shape the educational experience play an essential role in how educational pathways unfold.

In a previous note, we showed how variables related to social or cultural background and high school academic achievement were less apt to influence postsecondary persistence than they were access to higher education.[2] These factors, which appear to influence the likelihood of entering postsecondary education, weigh less heavily in our understanding of what causes students to persist in their studies. Conversely, we believe that an analysis of the student's ongoing experience may be able to account for both phenomena.

This note aims to examine this question in detail. We will look at how extracurricular events influence educational pathways, giving specific consideration to certain events that occur outside of the educational sphere but that can significantly impact education. If educational pathways can be said to be shaped and defined by the relationship between academic and non-academic experience (Doray et al., 2009), then biographical incidents certainly influence the course of an individual's education. For instance, consider how a road accident and the ensuing convalescent period would interrupt studies. Other, less random experiences are equally liable to cause paths to diverge. In this note, we will examine the effect of one such experience: namely, students' undertaking of paid work.

Researchers interested in postsecondary persistence were quick to turn their attention to paid work, identified by educational stakeholders as a source of academic disengagement that led students to drop out. However, findings indicate that paid work has varying effects on academic persistence and departures. While both not working at all and working long hours (i.e. a higher than average number) appear to negatively impact postsecondary persistence, working between 8 and 20 hours seems to have no such effect.

Drawn mainly from cross-sectional surveys, the data typically used by researchers do not allow any correlations to be made between persistence in study and variations in the relative amounts of time spent working versus studying, since there is no way of tracking such variations. One might surmise that students cut back on working hours or even stop working altogether to cope with academic difficulties. From this perspective, the higher exit rate among non-working students can be attributed to the fact that academic difficulties caused some students to stop working to devote more time to school.

Working with a longitudinal study, on the other hand, enabled us to focus precisely on this question — the relationship between amounts of time spent working and studying — and to identify situations of adjustment within educational pathways.

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1 The expression "institutional departure" refers to a student's departure from an educational institution without excluding the possibility that the same student may subsequently study at another institution, a non-negligible phenomenon (Bujold et al., 1997).

2 Kamanzi, Pierre Canisius et al. (2009). *The Influence of Social and Cultural Determinants on Post-Secondary Pathways and Transitions* (Transitions Project Research Note 6). Montreal, Canada Millennium Scholarship Foundation.

1. Theoretical signposts: paid work and studies

The term "educational pathway" denotes the full array of decisions and events that guide a student's progress through the education system. These decisions and events stem not just from the educational structure, but also from students' career choices, their educational experience to that point (across a range of institutions and regimes), and their living conditions while at school, which may vary. Four specific variables allow us to chart the course of educational pathways.[3]

1. Pathways, which emerge at the juncture of individual biography and institution, result from a series of socially constructed choices made by individuals who must take into consideration institutional characteristics (e.g. a given program's entrance requirements) that determine the range of available options.

2. The relationship between events and their meaning is our second analytical dimension. Events can serve as triggers and influence individual choices. However, it should be noted that the same event might hold different meanings for different individuals. Academic failure, for instance, may spur one student to work harder at studies and another to leave school.

3. The relationship between academic and extracurricular activities highlights the fact that students have lives beyond the classroom, and that events that occur or decisions that are made outside of school are liable to affect schooling. Here, we must consider life events as well as the work/school (or work/family/school) balance. Other personal transitions — for example, entering adulthood, starting a profession or leaving the parental home — may also influence

educational pathways. In effect, such pathways must be considered in light of the interdependencies between different social spheres.

4. Inserting the educational experience into a broader timeframe allows us to take an individual's past, social and cultural heritage and academic achievements into account. Attention must also be paid to the aspirations, expectations and projects that provide the basis for action. The relationship between different timeframes is not necessarily linear, as demonstrated by the existence of "improbable" pathways — such as those of "privileged" students who fail academically, or disadvantaged youth (often considered "at risk") who go on to have long and successful academic careers.

By studying the relationship between postsecondary studies and paid employment, we can address a third dimension. More specifically, we seek to better understand the relationships between educational pathways and one aspect of extracurricular experience.

1.1 Working while studying: the situation in Europe and North America

Over the past three decades, students in many countries have increased the amount of time they devote to paid work. They no longer restrict their work to summer or school breaks, but instead work throughout the year. While fairly common, this phenomenon of overlapping work and studies is unevenly distributed among the developed nations. In comparing four European nations — France,

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3 For a more in-depth look at these questions, see Doray, Pierre, France Picard, Claude Trottier and Amélie Groleau (2009), *Educational Pathways: Some Key Concepts* (Transitions Project Research Note 3). Montreal, Canada Millennium Scholarship Foundation (No. 44).

Denmark, the United Kingdom and Spain — Van de Velde (2008) identified significant differences in how the work/study relationship is articulated. Each country defined the transition to adulthood differently, according to their respective models of government intervention and family culture.

In Denmark, youth pathways are part of a quest for personal development ("to find oneself"). Danish youth tend to engage in lengthy studies combined with employment and interspersed with periods of professional activity. Marked by alternation and combination, these pathways are a reflection both of government policy (which enables young people to return to school at a later age through universal and flexible student financing) and family culture (where a high value is placed upon individual autonomy).

In France, youth pathways are part of the logic of social integration ("to find one's position"). Accordingly, French youth tend to focus more or less exclusively on their studies before entering the workforce. These sequential and exclusive pathways result from government policy (whose actions seem to imply that a student is a "young person" who is not yet supposed to work) and a republican emphasis on the importance of academic credentials.

In Spain, youth pathways fall under a paradigm of family belonging ("to settle in") characterized by parental expectations. The tendency to postpone independence can be explained both by the cultural enshrinement of family ties and the lack of public support for independence in a context of high unemployment.

Lastly, in the United Kingdom, youth pathways are based in the logic of individual emancipation ("to be self-sufficient"), which leads to shorter studies that include employment. The educational pathways of British youth respond to the liberal emphasis on individual accountability as an ideological norm, and cultural values that stigmatize post-adolescent financial dependency.

Positing the liberal mindset as the primary motive for the combinatory logic that underpins individual emancipation, Van de Velde (2008: 16) applies a similar logic to North America: "Beyond a normative invitation to 'be an adult,' the liberal outlook deeply affects the early trajectories of British youth. Presumably, young Americans and Canadians also adopt the same short, employment-oriented pathways."

Indeed, researchers in Canada and the United States have identified a dominant social logic of individual emancipation that prizes autonomy and leads young people to combine work and studies early on in the educational pathway. Young Americans started worked their way through school in the post-War era, with the work/study combination becoming the norm by the 1970s (Greenberger and Steinberg, 1986). Similarly, some two-thirds of Canadian students work during postsecondary studies (Bushnik, 2003). In Quebec as in other provinces, the combination is seen as "the educational norm today" (Conseil supérieur de l'éducation 1995: 68).

Nonetheless, if Canada is generally identified as liberal within the typology of welfare state governments (Esping-Andersen, 1990), provincial differences eventually blur the typological categorization, Alberta being more liberal and Quebec showing social-democratic leanings (Bernard, 2004). Certainly, job insecurity is strong in Quebec, where it has increased since the mid-1990s; however, the commodification of education is far more pronounced elsewhere in Canada than in Quebec, where the government finances the CEGEP system and more tightly controls university tuition fees.

A lower rate of commodification notwithstanding, the practice of working while studying spread quickly among Quebec students in the 1980s, to the point of being presented as "a radical change... a real change" (Conseil supérieur de l'éducation, 1995: 47). Youth participation in full-time studies has increased considerably since the 1970s (Gauthier, 1997). While in 1977 approximately 20% of students were employed during the school year, the proportion increased to 70% by the early 2000s (Roy, 2006). In 1978, 33% of full-time students worked during the school year (Dandurand et al., 1979: 117) — a figure that by 1986, or less than a decade later, had reached 65% (BSQ, 1986: 159, cited in Dandurand, 1991).

In Quebec, the phenomenon of combining work and studies shows the emergence of new representations and practices among young Quebecers from the early 1980s onward (Bourdon and Vultur, 2007). The shift has transformed the lifestyles of CEGEP students by acting as a powerful socialization force promoting consumerism (Bourdon, 1994) and empowerment within a context of delayed departure from the parental home (Charbonneau, 2004). Accordingly, as the transition from academia to professional life becomes more progressive and reversible (Bourdon, 2001; Sandra, 2003; Charbonneau, 2006), the line between educational pathway and workforce entry becomes blurred. The position of paid work with regard to education has undergone a conclusive shift. Charbonneau (2006: 117) suggests that it is

> ...as if Quebec society were trying to reconcile two previously incompatible cultural norms: early job experience on the one hand, and a prolonged education on the other. The increased flexibility of the Quebec school system, particularly as of the 1990s, has made it increasingly feasible to reconcile the two.

In this framework, the influence of economic conditions must also be taken into account. The employment crisis of the 1980s may well have impelled many young people to join the labour force. At the time, work experience was perceived as a means of coping with an increasingly difficult economic situation (Dandurand, 1991) and of facilitating job market entry. Since then, students — in particular, the generation born in the early 1980s — attend school in a context of much less intense unemployment (Gauthier, 1997), where it is relatively easy to find work. Student employment today aligns with the need for a flexible workforce willing to accept part-time work and split shifts.

In sum, the relationship between education and employment differs greatly from country to country. Three factors play into these differences: the existence of a welfare state; family culture; and prevailing economic conditions. In Canada, the combination of liberal policies, family values that emphasize autonomy and an economy with a strong demand for a flexible workforce has led young people to combine work and study at a relatively early stage, and more intensively than elsewhere. It is this very intensity that we will now examine in more detail.

1.2 Work intensity during studies

In Canada, students' lives are marked by a high degree of workforce participation. After graduating from high school, some two-thirds of young people hold down a paid job during their studies (Bushnik, 2003). This work is typically on a part-time basis during the school year, regardless of the level of education. Approximately two-thirds of these working students have a moderate workload (between 1 and 19 hours of paid work per week); over one quarter have a moderate-to-significant workload (between 20 and 29 hours per week); and about 10% have a heavy workload (over 30 hours) (Bushnik, 2003; Bowlby and McMullen, 2002).

The percentage of full-time students who have paid work during the school year varies with age: low before age 15, it quickly escalates between the ages of 15 and 18, increasing from 40% to 70%, and finally stabilizes at around age 19 (Eckert, 2009). The proportion of working students and the number of hours worked differ from one level of education to the next.

High school students

By the end of high school, nearly two-thirds of Canadian students have a job during their studies (Bushnik, 2003). This percentage increases with their age during the final year of high school, ranging from 43% at ages 16 and under to 70% at ages 18 and older.

This topic was also addressed by a number of Quebec studies. In 1991, almost half (40%) of high school students had jobs (Dumas and Beauchesne, 1993). The percentage of working students increased with every year: in 1991, less than 30% of Secondary I students were employed during the school year, while 55% of Secondary V students were (Audet,

1995). In most studies, the median age for the first job was around 13–14 (Belleau and Bayard, 2002). Of the 40% of working high school students in 1991, 13% spent from 1 to 5 hours per week working, 11.5% from 6 to 10 hours, 6.6% from 11 to 15 hours, 4.5% from 11 to 15 hours, and 4.5% from 16 to 20 hours, with 4.3% spending 21 hours or more (Dumas and Beauchesne, 1993).

Bushnik (2003) shows that the majority of Canadian students, both male and female, worked during their last year of high school. Indeed, the employment rate was identical across both genders (64%). Male students, however, logged more hours than their female cohorts: about 28% of male students worked more than 20 hours per week, compared to 21% of female students. This result contrasts with Eckert's 2009 study, which shows that in Quebec, young women (particularly 15-year-old high school students) are consistently more likely than young men of the same age to combine work and study. This difference may be explained by the age gap between males and females at the end of the last year of high school. If male students worked as much as their female counterparts by the end of their studies, this is quite likely because they finished high school later.

Work intensity varies greatly from province to province. Consider that, compared to the average student employment rate of 64%, the number of students who worked during their last year of high school was relatively low in Newfoundland and Labrador (39%) and Quebec (49%), but very high in Ontario (73%), Manitoba (73%), Saskatchewan (76%) and Alberta (72%). The same contrasts mark work intensity: in Alberta and Saskatchewan, 30% of young people in their final year of high school worked 20 hours or more per week, as opposed to just 13% in Quebec (Bushnik, 2003). Quebec's relatively social-democratic education system may partially explain the sizeable gap between it and other provinces.

Lastly, Bushnik (2003) identifies factors other than age and gender that determine labour market participation at the end of high school in Canada. Anglophones were more likely than non-Anglophones to combine work and study (71%

compared to 52%). Young parents were less likely to combine work and studies (35%), as were students with no siblings (53%). While parental education capital did not seem to affect this participation, young people whose parents had never worked were less likely to combine work and studies (46% in the case of the father, 57% in the case of the mother, compared to 64% in the sample). Lastly, the work/study combination was less common among Aboriginal youth (54%) and members of visible minorities (48%).

CEGEP students

According to Roy (2008a), some 70% of college students had jobs during the school year and worked an average of 17.2 hours per week. This indicates an increase to the average number of hours worked, reported at 15 hours per week in 2006 (Roy, 2006). One-quarter of the college students surveyed by Roy reported working 20 hours or more during the school year. These same students averaged 11.2 hours per week on homework — generally six hours less than the time allocated to paid work (Roy, 2008a). The same determinants that affected high school students also played into college student patterns: among students of equal ages, women were more likely to combine work and study (though the gap narrows at the postsecondary level), while older students worked comparatively more often (Eckert, 2009).

Undergraduate students

Based on Quebec government statistics (1995), 60% of students who obtained their bachelor's degree in 1990 were employed during their studies. Of this percentage, 68% worked part-time as against the 20% who worked full-time. The remaining 12% worked only occasionally, and for a minimal number of hours. Nearly 42% of students worked between 13 and 24 hours per week; 29% worked 12 hours or less; and 9% worked 36 hours or more. According to Bonin (2007), whose study focuses on Université du Québec students, 71% of undergraduate students were employed during their first semester in 2006, compared to 58% in 1996. Bonin's findings also show that, in 2006,

undergraduate students worked on average 25 hours per week. Of the 71% total, 59% worked 20 hours or more per week. 62% of full-time students had a job, working on average 16 hours per week; 90% of part-time students reported an average of 34 hours of work per week.

Graduate students

In 1990, 70.1% of master's graduates had been employed during their studies. The proportion of master's students who worked full-time was significantly higher than the corresponding number of undergraduate students (45% compared to 20%), as was the number of hours spent in paid employment: 27% of master's students worked 36 hours or more per week (MEQ, 1995). By 2006, 69% of new master's students were employed; they worked on average 30 hours per week. Marked differences were again observed between full- and part-time students. The percentage of employed full-time students was around 53% (with 22 hours worked per week on average) compared to 89% of part-time students (who worked 37 hours per week on average) (Bonin, 2007). Bonin (2007) also reports that 62% of new master's students combined work and studies, working 18 hours per week on average. Her data for PhD students do not indicate whether the students are full-time or part-time.

An ever-increasing workload

To summarize, we can see that the proportion of students who worked while studying increased from the end of high school to the start of postsecondary studies, and subsequently stabilized at around 70%. However, work intensity continued to increase thereafter, with more and more young master's students taking full-time jobs. The time spent on paid work also tended to increase with the level of education. Work intensity during studies varied primarily according to province of residence, and secondarily based on family environment (whether or not the student had children, siblings and/or working parents).

1.3 Types of work

The fact that so many students work while at school undeniably indicates the presence of a labour market (Dumas and Beauchesne, 1991). The growth of the service industry has had a decisive influence on the availability of the types of jobs held by students (Jetté, 2001). However, job types vary greatly depending on the level of education.

High school students

Dumas and Beauchesne (1991) identified four occupational categories for high school students who work during the school year: "traditional" jobs (babysitting, delivering newspapers — 39%); retail jobs (cashier, gas station attendant, etc. — 21%); service jobs (packing, office work, socio-cultural or sports activity leadership, etc. — 26%); and production-related jobs (construction, farm work, etc. — 11%). Gender played significantly into occupational variations: for example, high school girls were more often employed in childcare than were boys (Audet, 1995).

CEGEP students

In Roy's 2008 study on CEGEP students, more than 90% of the jobs reported fell into one of two employment sectors, namely, sales and hospitality — clerks, cashiers, waiters, cooks, maintenance, salespeople, gas station attendants, etc. (Roy, 2008a). Working hours were generally restricted to weekday evenings and weekend days. 82% of students felt that these positions had little relation to their field of study (Roy, 2008).

University students

Fewer university students felt that their work was unrelated to their field of study. Indeed, the vast majority of graduate students occupied jobs that were directly related to their fields of study (Sales et al., 1996). Poirier notes the same phenomenon among older students: those aged 30 were more likely to find work in their field than students aged 20 or less (Poirier, 1990). Job types varied between the first, second and third university cycles. At the undergraduate level, most jobs were in the area of

sales and service; few were in education and research. However, these proportions reversed when students reached graduate level (Sales et al. 1996). Finally, female undergraduate students were more likely than their male cohorts to occupy sales positions (Sales et al., 1996).

To summarize, job types changed dramatically throughout the educational pathway. High school students largely held "traditional" types of low-paid work like babysitting (especially common among young women) and newspaper delivery. At the start of their postsecondary studies, students worked mainly in the areas of sales and catering; but by the time they had reached the graduate level, their jobs were mainly in education and research.

1.4   Reasons for working during studies

The literature presents many reasons for undertaking paid work while studying. Inadequate sources of funding to cope with the massification of education may account for the relatively low purchasing power of most students. In this context, financial need would appear to be the primary motivation for seeking paid work. Nonetheless, the authors do cite other reasons: students also work to gain financial independence, better living conditions, more money for leisure pursuits, or work experience that will count toward future employability. We have grouped these reasons into three categories: economic, socio-cultural and professional.

Economic reasons

Economic reasons fall into three sub-categories: the need to make a living; the logic of consumerism (Bourdon, 1994; Roy, 2006); and the quest for financial autonomy (Roy, 2006). According to Roy (2008a) and Eckert (2009), financial independence is central to the motivation to work during school: 95% of the college students surveyed considered it an "important" reason, while 45% saw it as their "main" reason. While relatively few students cited the need to make a living as their primary reason, it was nonetheless reported as such by 22%, thus placing it second among the reasons mentioned. Findings by Gingras and Terril (2006), whose study covered 20,143 students from 31 Montreal-region colleges, converge with those of Roy (2008), only diverging in the overall levels of the responses given (Table 1).

We can therefore conclude that the primary reasons for working while studying are economic in nature, although for most college students, financial autonomy took precedence over the need to make a living. However, this reverses once they leave the parental home: at this time, just 27% cited financial independence as their main reason, while 53% cited the need to make a living (Eckert, 2009). In this light, it is interesting to consider Jetté's distinction (2001) between the chosen balance and the imposed balance.

Table 1.1

Main reasons cited by CEGEP students for working

	Roy (2006)		Gingras and Terril (2006)
QUESTION	IMPORTANT REASON	MAIN REASON	IMPORTANT REASON
To increase my financial independence	95%	45%	79%
To develop my sense of responsibility	81%	10%	61%
To enjoy a greater level of comfort	74%	10%	50%
To gain job market experience	73%	12%	52%
To make a living	47%	20%	25%
To have something to do in my free time	24%	1%	14%
To be with my friends	12%	1%	3%
N	939		20143

Unlike college students, the main reason given by university students for working while studying was that their income was insufficient to allow them to stay in school (Audet, 1995). Half of the 1990 bachelor's graduates surveyed stated that they needed to work to stay in school; one-quarter said that work represented additional income (i.e. was not a necessity for them to continue studying); and just over one-quarter said they worked to retain a current position or to accumulate experience (Government of Quebec, 1995). Sales et al. (1996) found that, overall, university students took on paid work to meet basic needs, although here too, the findings vary according to educational level. For example, 36% of undergraduates used their employment earnings to fund recreation and outings, compared to 7% of graduate students. In contrast, 59% of graduate students used their employment income for housing and food, against 27% of undergraduates.

Socio-cultural reasons

The socio-cultural reasons for working cited include personal development and social networking. For students, paid work was both a means of integration (the opportunity to meet new people, make new contacts, and be part of a group) and a source of self-fulfilment and motivation (a way of gaining a sense of personal accomplishment) (Jetté, 2001). According to Roy (2008a), for college students, paid work enhanced personal comfort and leisure time; it was not seen as an alternative to school, but rather as a complement. Drawing on the work of Mercure (2007), he argues, "we cannot dissociate the significance of work for young people whose ethos is anchored in personal development, autonomy and the importance of social networking" (Roy, 2008a: 504). If socio-cultural reasons are infrequently evoked as a primary reason for working while studying, they do accompany the desire to participate in the workforce, and may indeed strengthen such participation.

Professional reasons

According to Roberge (1997), students saw working while studying as an opportunity to enhance their curriculum vitae. Education alone did not appear to be considered a sufficient guarantee of employability: all students surveyed believed it was also important to list jobs held during studies on their CVs, along with any volunteer work (Vultur, 2007). It should be mentioned that various empirical

data counter students' perceptions regarding the employability benefits of working while studying. According to the Quebec government (1995), working during studies does not necessarily promote access to better jobs thereafter, since varied work experience is not a useful distinguishing trait. Moreover, some students may have already experienced a school-to-work transition: one of the reasons cited by graduate students for working while studying was the need to retain a currently held position (Audet, 1995).

In sum, students' main reasons for working were either to increase their financial autonomy (if still living at home) or to support themselves (once they had left home). However, working was also seen as a way of preparing for the school-to-work transition. Other socially oriented reasons also emerged. It should be noted that paid work was not perceived as being in competition with studies. For Roy (2008, 2008a), 77% of college students regarded their studies as more important than their work, and 82% of them would "never" miss classes for a job-related reason. In addition, young people reported little attachment to the particular jobs they held during their studies, and little connection to the organization for which they worked. The relative lack of connection to their work made it easy to leave these jobs without much remorse (Roy, 2008).

1.5   Effects on educational pathways

Student jobs have been frequently interpreted by educational stakeholders as distractions from studies and factors that tend to weaken persistence. Accordingly, recent statistical research has tried to establish a relationship between transversal work intensity (number of hours of paid work at any given time) and academic achievement (measured through access, persistence or grades). According to the most recent studies, by the end of high school, students who work more than 30 hours/week are almost four times as likely to abandon their studies than are students who work 1-20 hours/week (Bushnik, 2003; Bowlby and McMullen, 2002). These differences remain significant even after socio-

demographic and academic factors are taken into account (Bushnik et al, 2004). According to Finnie et al. (2005), working over 20 hours per week reduced the probability of accessing postsecondary education by 5%, and of going to university by 10%. More recent studies also negatively correlate work intensity with grades (DeSimone, 2008) and persistence (Motte and Schwartz, 2009).

The links between excessive hours of work and academic achievement are also apparent in studies focused more specifically on CEGEP students in Quebec. Next to Secondary IV and V grade averages, the time devoted to paid work and to studies are two of the most significant factors in predicting and accounting for college success and persistence (ibid: 276, cited by Roberge 1997:110). Moreover, work intensity has a significant impact on the grades themselves, which in turn affects persistence. Roberge (2007), drawing on the work of Vigneault (1993), emphasizes that working throughout most of Secondary V has a marked influence on grade averages and level of interest in school. He also cites the degree of success as the dominant factor, in itself able to account for "up to 46% of the grades variance in the first college semester" (Terril et al. 1994: 275, cited by Roberge, 2007). Indeed, according to other studies, paid work appears to have a particularly noticeable effect on the weakest students, and almost none on the strongest (Terrill and Ducharme, 1994; Roy and Mainguy, 2005).

While working during studies may affect grades, access or perseverance, it may also influence other aspects of the educational pathway, such as length of schooling. Further to this last point, Roy (2008) noted a tendency to prolong studies among certain college students. The extension may have ensued from a desire to hold onto a given position, or, equally, from a wish to improve academic performance by cutting back on work hours. However, Audet (1995) argues that working during studies has little influence on their final duration, provided that the weekly workload amounts to less than 25 hours at the undergraduate level or less than 13 hours at the master's level.

Dumas and Beauchesne (1993) observed a range of behaviours among working students that are

detrimental to academic performance. These include falling asleep in class, failing to do homework or assignments, losing the will to attend school, and being unable to concentrate during classes. The percentage of students in whom this behaviour was observed increased with the number of hours worked. Students who combine work and studies maintain that it is their social relationships, sleep, and leisure activities that are affected (Roberge, 1997, cited in Roy, 2008). Paid work was seen to generate stress and fatigue (Jetté, 2001).

Research on CEGEP students has largely focused on one central issue, namely, identifying a critical threshold for hours of paid work beyond which negative effects start to appear. This threshold has tended to rise over time: the hazard of academic failure, which in the early 1990s appeared at around the 15-hour mark (Vigneault, 1993; Roberge, 1997), is currently at around 25 hours/week (Roy et al., 2005). According to Roy (2008a), given equivalent course time, college students only begin cutting back on study time after 20 hours of paid work per week. Employment was only seen to have a negative impact on grades after 25 hours: students working 15–19 hours/week had an average grade of 76%, while those working 20–24 hours had an average of 74%. Only after 25 hours did the average drop to 71.5%. Academic difficulties are also reflected in negotiations to amend schedules, change assignment submission deadlines, or alleviate requirements and evaluation criteria (Roberge, 1997). One wonders if this trend is due to greater adaptability on the part of the educational institutions, the students, or both. The authors do not seem to agree; Roy (2008) accredited this adaptability to the students.

Nonetheless, the relationship is less straightforward than it might appear. First, the impact of paid work is not linear; ambivalences can be shown empirically. Indeed, the same studies correlate working during studies with academic success, provided the hours spent working do not bypass a certain threshold. Thus in Canada, non-working students were over twice as likely to drop out as students who worked 1–20 hours/week (Bushnik, 2003; Bowlby and McMullen, 2002). In Quebec, the CEGEP students most likely to succeed were those who worked 15–19 hours/week (Roy et al., 2005, 2008a). Sales et al. (1996) found that the amount of time devoted to studies dropped among working university students, but also found that, paradoxically, their grades were not necessarily lower than those of non-working students. Jetté (2001: 66) argues that working students are better able to orient their studies and clarify their career goals. Moreover, the argument that jobs related to the field of study would appear to foster persistence (Jetté, 2001; Conseil supérieur de l'éducation, 2000) suggests that working while studying can have a variable effect, depending on the nature of the job.

Successful students are therefore those who manage to balance school and work. According to Jetté (2001), the work/study balance is easier to achieve in college, where it appears to have comparatively little effect. Various factors affect this balance: living with one's parents, choosing a program (achieving balance appears more difficult in health sciences programs), and clearly defining personal goals. Jetté notes the reciprocal benefits of having a job in the same field as one's studies: education provides work tools, while work informs the educational process. In other respects, working in a given job for a prolonged period can translate into more readily granted time off, making it easier to meet the demands of studies. Lastly, the employment sector itself may also impact the work-study balance. As Jetté (2001) points out, peak periods in retail can correspond to end-of-semester periods, with exams and work submission deadlines.

Working while studying can be embraced as a challenge that sets a stimulating pace; it can also be seen as a tool for testing the waters of employability (Conseil supérieur de l'éducation, 1995:68). Roy and Mainguy (2005) argue that "paid work is integrated into the logic of academic success, itself the guarantor of a richer existence that promotes a better quality of life." It should be remembered that, from a student's standpoint, the yardstick of success is an individual affair: "Success is first and foremost personal growth in light of personal goals, and in a setting that extends beyond the classroom" (Conseil supérieur de l'éducation, 1995: 30).

In addition, a logical, cause-and-effect interpretation is difficult to implement. Indeed, a considerable number of working hours may be the effect rather than the cause of dropping out: students on the verge of dropping out or uninterested in their studies may opt to work longer hours (Bushnik, 2003; Bushnik et al 2004). In this case, the logic of working may take precedence over the logic of studying, and academic failure can be turned into workplace success. Dagenais, Montmarquette et al. (1999: 31) remark that "the causal connection between work and academic performance is a complex issue" and that, even if a correlation can be drawn between a certain number of hours worked and academic success, "it is equally plausible that students who decide to work more than 15 hours [their empirical threshold] are precisely those who are less successful on average and that, in fact, working more than 15 hours per week does not bring about a decline in academic effectiveness." Lastly, attempts to assess the causal relationship between the amount of time spent working and academic success are hindered by the possibility that both are related to factors difficult to quantify, such as personal motivation and confidence (Stinebrickner and Stinebrickner, 2003; Motte and Schwartz, 2009).

Despite such interpretative difficulties, this type of negative, non-linear correlation between the number of hours spent working and academic achievement has also been shown elsewhere than in Canada. Using American data, Dundes and Marx (2006) show that working during studies tends to force students to become more effective, even as it creates stress by obliging them to devote fewer hours to assignments and exam preparation. In France, according Bérail (2007), while paid work may well affect academic achievement, the effect does not constitute a linear correlation with the number of hours worked. Furthermore, negative effects were seen to occur only at a fairly high threshold, that of at least 15–20 hours of work per week (Bérail, 2007). Other studies conducted in France demonstrate that the quality of the job as well as its connection with the student's field of study affect the situation (Bérail, 2007; Beaupère et al., 2007).

1.6 Paid work and studies: analytical guidelines

The effects of paid work on educational pathways are mixed. Overall, they are not strongly associated with dropping out, except for students who work very long hours. These conclusions are based on cross-sectional surveys that examine student situations across a relatively short timespan. But what about analyzing the links between work and study on a more long-term basis, such as several years? This question is central to the present research note, which aims to better understand the impact of paid employment on one aspect of the educational pathway, namely, the tendency to leave university studies.

On a purely descriptive basis, we can see that the statistical weight of paid work is significant for youth born between 1979 and 1981, but varies over time.[4] The timing chart in Chart 1.1, which covers a five-year period (January 2000 to December 2005), illustrates the high rates at which young Canadians born between 1979 and 1981 worked during their studies:

- In January 2000, 58% of high school students (21% of the sample) had a job.

- In January 2000, 56% of postsecondary students (42% of the sample) had a job.

- The employment rate for postsecondary students initially rose (from 56% in January 2000 to 68% in October 2000), then stabilized (despite fluctuations around the 68% mark) until December 2005, when it reached 70%.

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4 We used survey data from Statistics Canada's Youth in Transition Survey (YITS), which tracks the educational pathways of a sample of respondents born between 1979 and 1981 until December 2005. Using the survey, we reconstructed a monthly schedule of education and job status. For each month between January 2000 and December 2004, monthly variables indicated whether or not high school students were at school full-time. Unlike high school students, postsecondary students are able to study part-time. Taking into account both the start and end dates of studies in postsecondary programs allowed us to identify all postsecondary students, regardless of registration status. It was also possible to reconstruct a monthly work status schedule, using variables that indicated whether or not the youth were in paid employment in a given month.

Chart 1.1: Work and studies, Cohort B
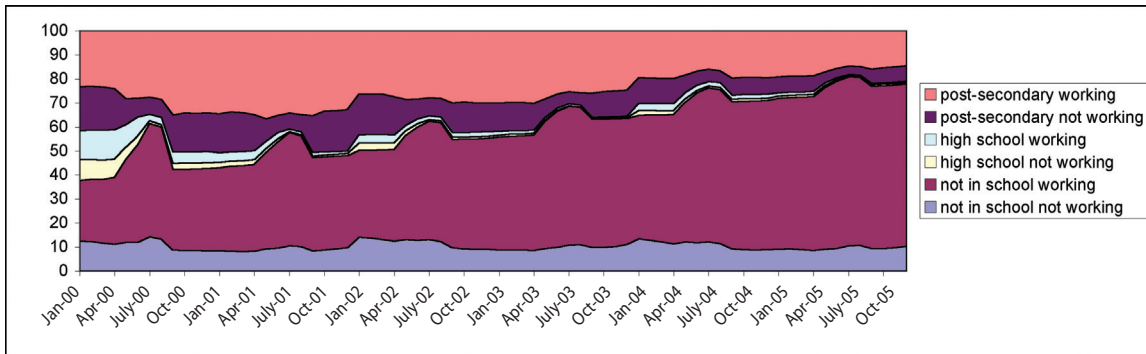
More specifically, we aimed to examine whether paid employment had any effect on the tendency to drop out of a first-time university program among the cohort studied, while also taking into consideration social background and living conditions. From this line of inquiry emerged three sub-queries:

- Does having paid work during studies affect the tendency to leave a university program?

- Does the effect persist when social factors (gender, social class, ethnicity) are taken into account?

- Does the effect persist when certain living conditions are taken into account?

The originality of our research lies in the fact that this is the first time (to the best of our knowledge) that the statistical analysis of longitudinal data has been used to examine the work/study relationship.

2. Methodology

This chapter describes the methodological choices that informed our empirical analysis. At the outset, we opted to conduct a longitudinal analysis of the relationship between paid employment and university attendance. We should point out that certain variables identified in the literature had to be discarded, since the YITS had not investigated them (i.e. the information had not been colligated in the survey). Moreover, as ours is the first longitudinal analysis conducted in Canada on this question, we judged it prudent to limit the number of variables to avoid complicating the model unnecessarily and to bring out the force of the variables under consideration.

2.1 About the YITS and the sample

Our analysis used data from the *Youth in Transition Survey* (YITS), a longitudinal survey undertaken jointly by Statistics Canada and Human Resources and Skills Development Canada. The YITS used questionnaires to gather information on certain aspects of the lives of young people, particularly regarding education, training and work. The data were used to study a number of major transitions normally associated with this time of life, such as finishing high school, commencing postsecondary studies, entering the workforce, leaving the parental home, and so on. The questionnaires also collected data on the factors that were liable to influence these transitions, some of which (including family background and previous school experiences) were deemed "objective", others of which (including personal goals and expectations) were considered "subjective" (Statistics Canada, 2007: 83).

The YITS began in 1999 and the questionnaires used in Cycle 1 gathered information on that year. The questionnaires in subsequent cycles collected data over two-year periods. Thus, Cycle 2 gathered information on the years 2000 and 2001, Cycle 3 on 2002 and 2003, and Cycle 4 on 2004 and 2005 (Table 2.1). In total, the YITS traced respondents' lives over seven years.

The survey excluded populations living in Canada's three territories, as well as First Nations reserves, Canadian Forces Bases and certain remote areas. Our panel consisted of youth born between 1979 and 1981 inclusively who were aged 18–20 on December 31, 1999. In our analysis, we focused on respondents living in the ten Canadian provinces who had participated in each of the four YITS cycles.

Table 2.1

Reference years and respondent ages for each YITS cycle, Canada, Cohort B

YITS cycle	Reference year	Respondents' ages in each year		
Cycle 1	1999	18	19	20
Cycle 2	2000	19	20	21
	2001	20	21	22
Cycle 3	2002	21	22	23
	2003	22	23	24
Cycle 4	2004	23	24	25
	2005	24	25	26

Given our research interests, we focused our analyses on the length of time students who had enrolled between 1999 and 2005 stayed in their first university program.

2.2   The cross-sectional approach, the longitudinal approach and hazard models

The cross-sectional approach is by far the most common in the social sciences; we mention it here only as a means of introducing the longitudinal approach. In the former, a sample is drawn from a population at a single point in time, and the resulting data are used to describe the population at that time — providing what is sometimes described as a "snapshot" of that population. The frequency distribution permits the sample to be described using a range of characteristics such as gender, age, school attendance, highest level of schooling or highest grade, degree or certification. If the sample is probabilistic, we consider that the distribution of a characteristic among that sample provides a fairly accurate portrayal of that same characteristic's distribution in the population, and that the only source of inaccuracy is sampling error. We are generally interested in the frequency distribution, since it shows the proportional representation in the sample (and, by extension, in the population) of each category of a given characteristic — for instance, the percentages of men and women, or the proportion of the population that did not go beyond primary or secondary school, that only completed non-university/college-equivalent postsecondary studies, that attended university, and so on.

One might, for example, examine the highest level of schooling in each age group of adults, knowing that the resulting table might have been different had the sample been taken some years earlier or later (when the combination of prolonged studies and an aging cohort would have increased the percentage figure of the adult population that had reached university). However, examining the data from a single sample, taken at one time only, does not allow this change to be seen.

The approach we have just described is typical of the cross-sectional approach. As stated above, it uses data collected at a single point in time to describe the population at that time; changes only appear when a sequence of similar samples drawn at successive moments are juxtaposed.

Conversely, a longitudinal study does not describe the population at a particular moment, nor does it show changes by juxtaposing a succession of "snapshots." Rather, it aims to make explicit the movement via which changes take place. To conduct a longitudinal study in the sense that it is understood here, the data must include biographical information about each individual who is part of the study population.

Conducting a longitudinal analysis means distinguishing fixed characteristics from those that vary over time. Gender is one such fixed characteristic, as are first language, place of birth and social origin, no matter how they are assessed. Attending school, highest level of schooling and employment status are characteristics that vary over time. More subtly, date of birth is a fixed characteristic, while age varies in direct proportion to time.

The categories of these characteristics correspond to as many different states. The full range of states of a given characteristic form what is called the "state space" .Over time, individuals can move from one state to another within a given characteristic. Thus, attending school and not attending school are the two states that comprise the state space of a characteristic that varies over time. In principle, one can move freely between states in a given state space: for example, one can begin or cease attending school at any age. The highest level of schooling at a given point also defines a state space within whose states it is possible to move freely — for instance, undertaking vocational training after completing university studies.

Completing only primary or secondary school, completing a postsecondary non-university program and completing a university program are the three states of the state space associated with the characteristic of the *highest level of schooling*. In principle, one cannot move freely between the

states of this space. It is common to move from the first to the second state by going from high school to college, or from the first to the third by entering university straight from high school; it is much less common to move from the third to the second or first state, although we know such passages do occur. Nonetheless, it should be remembered that attending a vocational training school after earning a university degree does not change the fact that the highest level of schooling attained by that individual is university.

Longitudinal analysis is used to study transitions from one state to another within a given state space. Within the context of the present study, we are interested in examining university students' transitions to the dropped-out state.

As a first approximation, we can describe the sample using frequency distributions at different periods, e.g. every year or every two years, as one would do when juxtaposing frequency tables obtained from a series of successive samples. If proportions are interpreted as probabilities (as is often done), we see that the cumulative probability of having left the program increases over time. By cross-tabulating data — for instance, calculating these proportions by gender — we will be able to see whether or not men and women drop out at the same rate.

In the context of a longitudinal analysis, the use of cross-tabulation quickly reaches its limit, just as it does in cross-sectional analysis. To study the links between multiple characteristics, it is necessary to use statistical models similar to multiple regression.

To study the relationship between student status at a given time (considered in terms of two states, in school or dropped out) and a number of other characteristics, we postulate that this characteristic is the realization of a random variable (which we will now call the dependent variable). We use a statistical model to estimate the net effects of a range of other characteristics (which we will now call the independent variables) to calculate the probability of being in either of the dependent variable's two possible states at the moment of the survey.[5]

This reasoning does not directly apply when considering the transition from one state to another, rather than the state at any given moment, since the probability of being in one or the other state varies over time. To study links between passages from the first state (in school) to the second state (dropped out), we must replace the probability of being in one or the other state *at a given time* with that of being in a particular state *at any given moment*.

For technical reasons, the models built on this basis are not generally expressed using instantaneous cumulative probability as the dependent variable, but rather using an algebraic transformation of this quantity: the proportion of the population who move between states at each instant, divided by the proportion of the population who have not yet passed from the first state to the second at that time. The term for this value varies by discipline; in the social sciences and in epidemiology, it is generally called the "instantaneous hazard rate", or more simply the "hazard rate." The hazard rate is not a proportion, cannot be less than zero, and in principle has no upper limit.

The interpretation of coefficients associated with independent variables of a hazard model is analogous to the interpretation of logistic regression coefficients. The logistic regression coefficient expresses the relationship between two probabilities. If gender is used as the independent variable in a logistic regression whose dependent variable is status in a program (reduced to two possible states), a reference must be chosen. If men are selected as the reference and we obtain a coefficient greater than one, we then know that the relationship between the two probabilities — that of having dropped out versus that of still attending school — is higher for women than men; and that, on average, women drop out more often than men. Similarly, the hazard model coefficient represents the ratio between two rates. Suppose that gender is used as the independent variable in a hazard model whose dependent variable is moving to the state of having dropped out of a university program and we once again choose men as the reference. If we then

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5   If we set the prediction error to follow a logistic distribution, we will use logistic regression; if we set it to follow a normal distribution, we use the probit model.

obtain a coefficient greater than one, it can be seen that the hazard of moving from the state of attending school to that of having dropped out is higher among women, and therefore that women, on average, drop out earlier or more often than men.

The instantaneous hazard rate described above can also be interpreted as a rate (in the demographic sense of the term), which is to say the relationship between the number of state changes that took place during a given interval – potentially infinitesimal – and the amount of time during which individuals who could potentially have changed states were at risk of doing so. This allows us to describe a sample studied over a given period of time by distributing the time spent at risk for time-varying states and by calculating proportions.

2.3   The event under study and the at-risk group

In this section, we will examine operational definitions of the event under study and the group at risk of experiencing it.

Postsecondary programs

The YITS collected dated information on each respondent's periods of postsecondary studies between January 1999 and December 2005. For the purposes of the YITS, an eligible postsecondary program "is one that is above the high school level; is towards a diploma, certificate or degree; [and] would take someone three months or more to complete." The program must have begun before December 31 of the previous year's reference period (Statistics Canada, 2007: 13).

University programs

We were particularly focused on the length of stay in a first university-level program. The data collected through the YITS questionnaires cannot, in all cases, directly determine whether or not the "eligible postsecondary program" is a university program. To identify university programs, we combined the collected data related to program "level" with those pertaining to the institution's "type" and name, the time required to complete the

program (as a full-time student), and the province where the institution was located. The question is more complex with regard to studies in Quebec, since the YITS questionnaires did not accurately distinguish vocational training from the pre-university programs offered through the CEGEPs. For our purposes, we considered as "university level" any program that met at least one of the following criteria:

- Programs offered in what was clearly a university-type institution in Quebec or the rest of Canada

- Bachelor's-level programs in Quebec or the rest of Canada; or bachelor's-level programs offered in Quebec and preceded by a pre-university CEGEP program (to the extent we were able to identify such programs)

- College-level programs offered elsewhere in Canada, of at least four years' duration (full-time studies)

Student status in the university program

The YITS recorded the date at which respondents began a program as well as their final date of registration in that program. The database also contains a derived variable that indicates whether, at the time of the interview, respondents were still enrolled in their program, had completed their program or had dropped out.[6] We selected programs for which such information had been obtained. With the exception of Cycle 1, each YITS cycle covered two years; however, it is normal to spend more than two years in a program. In the database, each program of study was associated with an identifier that singled out data related to that program from one cycle to the next.[7] This allowed us to determine individuals' month-by-month status in the program from the start date until the date of final registration.[8]

First university program

We chronologically ordered all postsecondary programs for which each individual was eligible between 1999 and 2005. This allowed us to identify the first university program followed by a given

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6   In YITS terminology, an individual still enrolled in a program was a "continuer"; one who had completed a program, a "graduate"; and one who had dropped out, a "leaver."

student. When an individual enrolled in more than one program at the same time, we chose the one with the highest "level."

The at-risk group

Our investigation focused on the phenomenon of *dropping out from a first university program*. We used the sub-sample of 4,149 individuals who attended university for the first time while part of the YITS sample and were still part of the survey sample at the end of YITS Cycle 4.

In methodological terms, young people become "at risk" of dropping out of a university program when they enrol for the first time. They are no longer "at risk" once they leave, graduate or cease being under observation while still at school (i.e. at the end of the period covered by Cycle 4). An individual who stops being at risk by dropping out leaves the at-risk group by changing his or her status from student to dropout. Conversely, one who stops being at risk by graduating or ceasing to be observed (while still in school) is considered to have left the at-risk group without dropping out: in our methodology, such individuals do not change status, since they never dropped out. At the end of the period covered by the fourth cycle, 1,361 students had dropped out and 2,163 had graduated.

2.4 Operationalizing independent variables

2.4.1 About the variables

Through the YITS data, we examined how four aspects of the lives of young people influenced their educational pathways:

- Labour market participation: having a job or not, as well as the characteristics of the jobs held during periods of employment

- Social/cultural background: gender, parental educational capital, first language, visible minority status

- Living conditions: living in the parental home (or not), being a parent (or not), needing to take out a student loan (or not)

- Registration status: whether the student was registered part-time or full-time

The independent variables used in a life-course analysis like the one undertaken here should use the same logic as dependent variables. It is expected that most independent variables under study are those whose categories can change throughout the duration of studies, making them variables that change over time. We need to determine the percentage of time at risk between two categories in a given independent variable. To do so, we need information related to the dates of state changes within that independent variable. For example, using the job start and end dates, we can construct an independent variable that changes over time, whose state space is defined by the shift from the state of non-working to the state of working (and vice versa) throughout an individual's educational pathway. Each individual's at-risk time can thus be divided among the categories he or she occupied while at risk of dropping out.

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7   The identifier was a four-digit code that identified the following: the cycle in which the respondent had begun the program, the program's rank and the institution's rank during the cycle in which the respondent had begun the program. Programs retained the same longitudinal identifier throughout the YITS cycles.

8   For graduates, this was the date of graduation. For continuers, this corresponded to December 2005, the last month of observation. For leavers, this was the date of last enrolment in the program.

We classed YITS variables into three groups, according to the precision with which data on changes to value had been recorded.

1) Independent variables that change over time, whose categories were assessed monthly and yearly (e.g. employment status, number of jobs)

   • Using these variables, we derived the month-by-month value of employment period characteristics whose monthly values during this period were unknown: for instance, income and number of hours worked (assessed at the job start and end dates); or class of worker, work pattern and occupational skill level (assessed at the start of employment only).

2) Independent variables that change over time, whose categories were assessed every two years (e.g. living arrangements and educational funding)

3) Fixed independent variables, whose categories do not change over time (e.g. gender or visible minority status)

The following inserts define the independent variables used for all three groups.

Insert 2.1

Description of independent variables that change over time (each month between 1999 and 2005)

Variable	Definition and operationalization	Categories
Employment status		- working - not working - not stated
Number of jobs	Number of jobs held during the month	- one job - more than one job - not working - not stated
Class of worker**	Type of contractual relationship in the jobs held during a given month. Unpaid workers were classified in the "not working" category due to their low numbers and the fact that their work is not a source of income. The "class of worker" variable describes the situation at the start of employment.	- salaried worker - self-employed - salaried and other - self-employed and other - not working - not stated
Class of worker and job permanency**	Whether jobs held during the month were permanent (of no predetermined duration) or temporary (of limited duration). The "job permanency" variable represents the situation at the start of employment. These data were only available for paid employees.	- salaried worker, no permanent job - salaried worker, at least one permanent job - self-employed - not working - not stated
Employment income**	Total monthly income received from all jobs during the month. Compensation or salary is calculated before taxes and deductions. This variable was derived by comparing monthly earnings recorded at the start of employment and when last employed.	- low income (up to $850) - medium income ($850 to $2,400) - high income (over $2,400) - not working - not stated
Average number of hours worked per week**	Average hours worked per week in all jobs during the month. This figure was derived by comparing the number of hours worked per month at the start of employment and when last employed.	- Up to 8 hours - 9 to 16 hours - 17 to 24 hours - 25 hours or more - not working - not stated

Variable	Definition and operationalization	Categories
Occupational skill level**	This variable is used to describe jobs held during the month, taking into consideration the length and type of schooling required to access the position. We selected the job whose skill level was highest in a given month. In the YITS, eligible jobs were coded using the National Occupational Classification (1991) developed by Human Resources and Social Development Canada. We grouped them into five categories (HRSDC, 2006: viii): - Managerial: including senior and middle managers - Professional: university degree (bachelor's, master's or doctorate) required - Technical, paraprofessional and skilled: 2–3 years postsecondary non-university training, 2- to 5-year apprenticeship training, or 3–4 years of high school along with over two years' on-the-job training, occupation-specific training or specific work experience - Intermediate positions: 1–4 years secondary school training, 2 years of on-the-job training, training courses or occupation-specific work experience - Unskilled/labourer positions: short work demonstration or on-the-job training; no formal educational requirements	- managerial positions - professional positions - technical, paraprofessional or skilled positions - intermediate positions - unskilled or labourer positions - not working - not stated
Registration status	Status in a postsecondary program during the month	- full-time - part-time
Being a parent	Whether or not the respondent had biological children. This variable was derived by considering the dates of birth (month/year) of biological children born since 1999.	- yes - no
Province of residence	Respondent's province of residence during the month. This is taken to mean the province where the respondent's job was located if the respondent had worked during the month, or where the respondent's postsecondary institution was located when the respondent attended postsecondary studies during the month. We grouped the Maritime provinces (Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick) as well as the Prairie provinces (Manitoba, Saskatchewan and Alberta). Respondents who lived outside of Canada were excluded from the analysis during their period(s) of stay outside Canada.	- Maritime provinces - Ontario - Quebec - Prairie provinces - British Columbia - outside of Canada - not stated

** In Cycles 1 to 3, these data were collected from individuals who had jobs and had worked. In Cycle 4, the data were collected from individuals who had jobs.

Insert 2.2

Definition of independent variables that change over time (every two years between 1999 and 2005)

Variable	Definition and operationalization	Categories
Debt	Whether or not the respondent had received money through a loan (including government student loans, family loans or loans obtained directly from a financial institution). This information corresponds to a two-year period. The situation did not change within a single cycle.	- no loan money received after 1999 - currently in debt - previously in debt
Living arrangements	This variable indicates whether or not the respondent was living at the parental home without a partner in December the first year of each cycle. The situation did not change within a single cycle.	- lives in parental home, no partner - doesn't live in parental home

Insert 2.3

Definition of fixed independent variables

Variable	Definition and operationalization	Categories
Gender	Respondent's gender	- male - female
Parents' educational capital	This variable describes the highest level of schooling attained by one or both parents. For YITS Cycle 1, each parent was asked to specify his or her highest level of schooling attained. By definition, a first-generation student (FGS) is one whose parents have not gone beyond high school.	- FGS (neither parent had postsecondary experience) - non-university postsecondary - university - not stated
First language	The language first learned/spoken by the respondent during childhood and still understood	- English - French - other - not stated
Visible minority status	Whether or not the respondent was part of a visible minority	- yes - no - not stated

2.4.2 Methodological issues

In our analysis of the relationship between educational pathways and paid work, we encountered three issues that should be mentioned prior to the statistical analysis in subsequent sections.

The first is related to the definition of "employment." Young Canadians are somewhat prompted by the questionnaire to declare any gainful employment as "work," including odd jobs, babysitting, tutoring, distributing leaflets or snow shovelling. Moreover, for young people, the symbolic importance of being recognized as "working" may lead them to adopt an extremely broad definition of what constitutes employment (Bourdon, 2001). Accordingly, this definition is highly likely to differ from one respondent to the next.

The second issue relates to the statistical interpretation of work intensity. Being employed in a given month can entail a varying number of actual hours worked: students may be just as likely to work one hour as 50. However, the YITS yielded no monthly cross-sectional data on work intensity; the only available information came from the Job Details Roster and covered the regular number of hours worked at the start and end of each employment phase. That being said, many working students do not work a set number of hours per week. Moreover, student schedules are very different during school terms and outside of school terms. A further consideration is that student jobs are primarily in service industries, which are subject to massive fluctuations in activity. Consequently, it's impossible to tell, for instance, whether a student who reported 30 regular hours of work at the start of a job that began in April 2002 and ended in September 2003 actually worked 30 hours *as of* April 2002, or only *during* summer 2002. In sum, establishing equivalences with regard to employment status and work intensity is extremely problematic.

The third issue relates to retrospective information loss, a classic issue in longitudinal studies. The timing diagram in Chart 2.1 shows a degree of discontinuity between the cycles: the proportion of youth who reported working dropped significantly from 72% in December 2001 (end of Cycle 2) to 66% in January 2002 (beginning of Cycle 3). This percentage also fell, though to a somewhat lesser degree, from 78% at the end of Cycle 3 to 74% at the beginning of Cycle 4. These sudden drops cannot be explained by circumstance, since they do not appear at the midpoint of either cycle. They are probably best explained by respondents' conscious or unconscious failure to report jobs previously held. Monthly data on student employment between January 2000 and December 2001 were collected all at once at the start of 2002; those collected regarding the period from January 2002 to December 2003 were collected in early 2004. The jobs held at the start of each cycle are almost certainly the ones that were either unintentionally omitted through forgetfulness or intentionally omitted to shorten the time spent responding to the questionnaire.

Chart 2.1: Employment rate, Cohort B
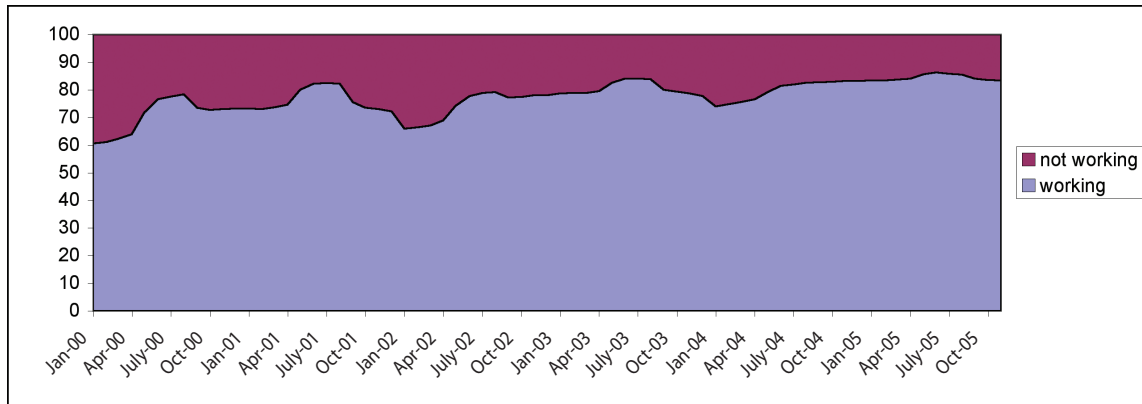
2.5 Description of the at-risk group

As mentioned above, the at-risk group consisted of 4,149 individuals who were attending university for the first time while part of the YITS sample, and who were still part of the sample at the end of YITS Cycle 4. Table 2.2 shows the distribution of male and female students in relation to fixed variables: parents' educational capital, visible minority status and first language.

Women outnumbered men among first-generation students (23%, compared to 17%). However, over half of male students (56%) as well as a large proportion of female students (40%) came from families where at least one parent held a university degree. A higher proportion of male students came from a visible minority (21%, compared to 17% of female students). About seven in ten students reported English as their first language.

Table 2.2

Distribution of first-time university students between 1999 and 2005, based on fixed variables

	Men		Women	
	TIME AT RISK (PERSON-MONTHS)	%	TIME AT RISK (PERSON-MONTHS)	%
Total	5330021	**100**	6259913	**100**
PARENTS' EDUCATIONAL CAPITAL				
High school or below	897454	16.8	1415006	22.6
Non-university postsecondary	1051313	19.7	1826282	29.2
University	2986945	56.0	2700457	43.1
Not stated	394309	7.4	318167	5.1
VISIBLE MINORITY STATUS				
Yes	1121804	21.1	1069834	17.1
No	4207221	78.9	5169476	82.6
Not stated	996	0.0	20602	0.3
FIRST LANGUAGE				
English	3851212	72.3	4300077	68.7
French	580473	10.9	921860	14.7
Other	897340	16.8	1026474	16.4
Not stated	996	0.0	11501	0.2

Source: authors' extrapolation based on YITS data, cycles 1 to 4

Table 2.3 shows the distribution of male and female students across each time-varying independent variable. Given that the estimated effects of these variables are based on the amount of time spent in each of their categories, we base our description on the amount and percentage of time at risk spent in each category, rather than on absolute and relative frequency at the start of the survey or within a specific time period (e.g. one year later). The data in Table 2.3 must be interpreted as the amount or proportion of time respondents spent in each category of the variable while they were at risk of experiencing the event under study.

We observed that respondents were for the most part employed during the at-risk period (66% of male students and 73% of female students). However, few reported holding multiple jobs. Most respondents (50% of male students and 52% of female students) held only one job throughout the period.

Employment was for the most part paid work. Female students spent more time in permanent jobs (45% compared to 35%), while male students spent more time in full-time jobs (37% compared to 32%). Regarding occupational skill levels, female students were more likely to occupy intermediate positions, while more male students tended to occupy professional or managerial positions. Concerning income, a near-equal proportion of male and female students had middle-income jobs (permanent and non-permanent); however, a higher percentage of female students had low-wage permanent jobs (24% and 14% respectively).

Taking into account the fact that 67% of respondents were full-time students who spent most of their time at school, we can assume that a large majority of university students work during their studies.

Regarding residential situations, the majority of respondents lived outside the parental home during their studies. A small minority (0.8%) became parents during their studies.

Table 2.3

Distribution of first-time university students between 1999 and 2005, based on time-dependent variables

	Men		Women	
	TIME AT RISK (PERSON-MONTHS)	%	TIME AT RISK (PERSON-MONTHS)	%
Total	5330021	100	6259913	100
Province of residence				
Maritime provinces	455545	8.6	645779	10.3
Ontario	2536703	47.6	2621452	41.9
Quebec	573962	10.8	843167	13.5
Prairie provinces	897532	16.8	937830	15.0
British Columbia	726346	13.6	994899	15.9
Outside of Canada	35005	0.7	41481	0.7
Not stated	104927	2.0	175305	2.8
Employment status				
Working	3495312	65.6	4557678	72.8
Not working	1473789	27.7	1466378	23.4
Not stated	360920	6.8	235857	3.8
Number of jobs				
One job	2658214	49.9	3283915	52.5
More than one job	837097	15.7	1273763	20.4
Not working	1473789	27.7	1466378	23.4
Not stated	360920	6.8	235857	3.8
Class of worker				
Salaried worker	2768051	51.9	3700759	59.1
Self-employed	218262	4.1	220019	3.5
Salaried worker and other	263285	4.9	361287	5.8
Self-employed and other	8647	0.2	4881	0.1
Not working	1710386	32.1	1736932	27.8
Not stated	361390	6.8	236035	3.8
Class of worker and job permanency				
Salaried worker, no permanent job	1110011	20.8	1212310	19.4
Salaried worker, at least one permanent job	1873658	35.2	2811887	44.9
Self-employed	226909	4.3	224900	3.6
Not working	1710386	32.1	1736931	27.8
Not stated	409056	7.7	273884	4.4
Average no. of hrs. worked per week				
Up to 8 hours	363749	6.8	532986	8.5
9 to 16 hours	443849	8.3	930958	14.9
17 to 24 hours	463052	8.7	802557	12.8
25 hours or more	1982296	37.2	2008167	32.1

	Men		Women	
	TIME AT RISK (PERSON-MONTHS)	%	TIME AT RISK (PERSON-MONTHS)	%
Not working	1710386	32.1	1736932	27.8
Not stated	366688	6.9	248313	4.0
Occupational skill level				
Managerial position	94611	1.8	81363	1.3
Professional position	614471	11.5	562103	9.0
Technical, paraprofessional or skilled position	957533	18.0	1152459	18.4
Intermediate position	951469	17.9	1857042	29.7
Elemental/labourer position	601394	11.3	600058	9.6
Not working	1710386	32.1	1736932	27.8
Not stated	400156	7.5	269955	4.3
Class of worker, job permanency and employment income				
salaried worker, permanent position, low income	729031	13.7	1524636	24.4
salaried worker, permanent position, middle income	900842	16.9	1107789	17.7
salaried worker permanent position, high income	243784	4.6	179461	2.9
salaried worker, non-permanent position, low income	253408	4.8	451125	7.2
salaried worker, non-permanent position, middle income	555935	10.4	644241	10.3
salaried worker, non-permanent position, high income	300669	5.6	116944	1.9
Self-employed	226909	4.3	224900	3.6
Not working	1710386	32.1	1736932	27.8
Not stated	409056	7.7	273884	4.4
Registration status				
Full-time	3592372	67.4	4247908	67.9
Part-time	1737649	32.6	2012005	32.1
Debt				
No loans contracted after 1999	2871145	53.9	3271624	52.3
Currently in debt	2149091	40.3	2684949	42.9
Previously in debt	309784	5.8	303340	4.9
Living arrangements				
Lives in parental home (no partner)	2475480	46.4	2749891	43.9
Doesn't live in parental home	2854541	53.6	3510022	56.1
Being a parent				
Yes	44506	0.8	47349	0.8
No	5285514	99.2	6212564	99.2

Source: authors' extrapolation based on YITS data, cycles 1 to 4.

2.6 The statistical model

We estimated the effect of each independent variable on the hazard of dropping out using Cox's proportional hazards model. This type of model considers the effects of independent variables based on the assumptions that the hazard rate can change over time — the effects of other independent variables being controlled — and that the effect of each independent variable is constant. To provide a simple example, we might find that the risk of leaving the program decreases each month during the first three years, then begins to increase; and that being employed increases the hazard of dropping out. The variation in hazard over the months would be the same for all individuals, but the hazard among working students would remain higher than among non-working students, while the gap between the two groups would remain constant.

The coefficients associated with the independent variable are present in the form of "hazard ratios" or "relative risks" and are interpreted as they would be in logistic regression — except that, here, we are measuring the state change, i.e. the rate at which students drop out without completing the program. A coefficient greater than 1 indicates a higher hazard and earlier dropping out; a coefficient less than 1 indicates a lower hazard and later dropping out.

YITS uses a complex survey design that includes strata and clusters. The "conventional" standard error estimator produces an unbiased estimate when data are collected from a simple random sample, but underestimates the standard error when using data collected from a sample that includes clusters. Statistics Canada offers researchers a set of 1,000 bootstrap weights that, in principle, allows us to obtain unbiased estimates of standard errors through re-estimation, even if the YITS data were not collected through simple random sampling. We used this method to calculate standard errors that are used to determine the significance level associated with our equations' coefficients.

3. Findings

3.1 The impact of region of residence

Figures 3.1 and 3.2 present gross "exit" or "dropout" rates from first university programs, based on time elapsed since the program start date, and sorted by province of residence. We analyzed male and female students separately, since it appeared untenable to posit that the mechanisms governing dropping out — i.e. the effects of independent variables — would be the same for both genders. The exit rate varied over time: the hazard of dropping out was highest shortly after studies commenced, decreased gradually as students advanced through their programs, then tended to stabilize or even increase some 40 months after the program began.

Comparing observed behaviours across different regions, it is clear that the hazard of dropping out early on in the program was lower among students of both genders in Ontario, but that it was also slower to decrease. In Quebec, the hazard of dropping out was highest at the start of the program, but decreased more rapidly over time, and at a more pronounced rate among female students.

The hazard of dropping out was 1.5 to 2 times higher in the Maritimes and the Prairies. Among male students living in the Maritimes, the hazard continued to decrease with time; among those living in the Prairies, it decreased at first, but rose toward the end of the program. Among female students in all regions, the hazard initially fell then increased slightly.

In British Columbia, the hazard of dropping out increased after the first year and declined thereafter, though at a slower pace than in other regions. Female students showed a higher dropout rate here than in other regions, which also decreased at a slower pace.

It is unsurprising to note that the hazard of dropping out decreases over time, since students who persist in their programs tend to succeed rather than leave. A second salient fact is that, while the hazard varied over time at different rates in the various regions, regional differences tended to diminish as time spent in programs increased. Lastly, we noted a significant difference between the genders: by and large, male students were at greater hazard of dropping out than their female counterparts.

Figure 3.1
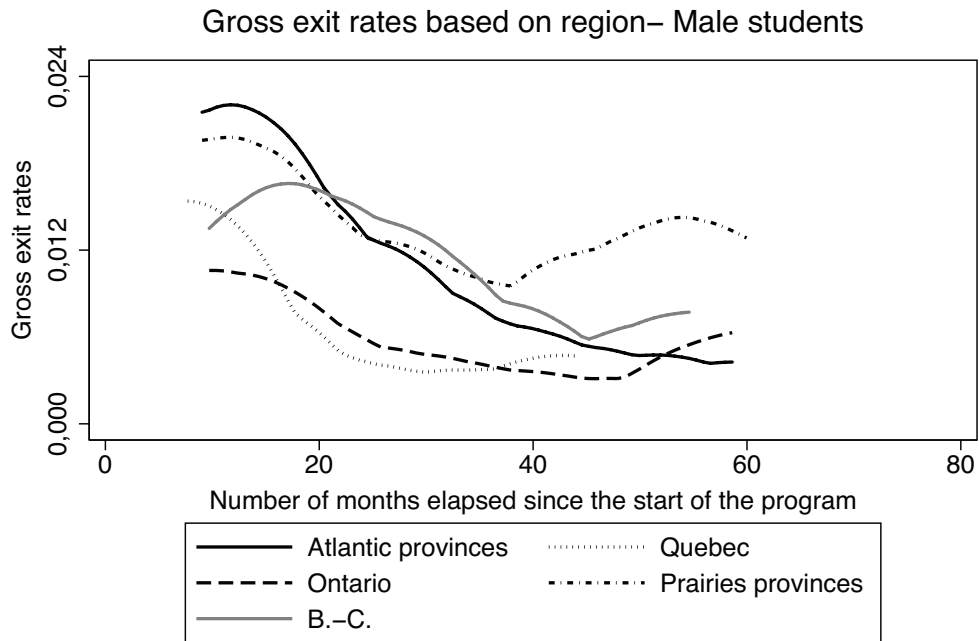
Gross exit rates based on region– Male students

Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

Figure 3.2

Gross exit rates based on region– Female students
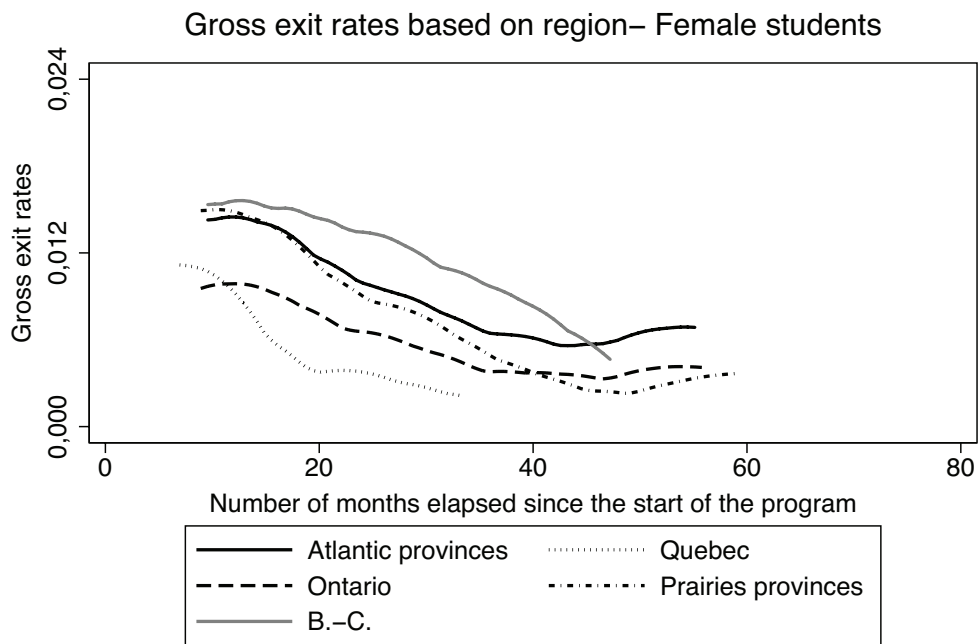
Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

3.2 The effect of relationships to employment and studies

We will now examine six different aspects of the relationship to employment and how these affected the hazard of dropping out. The six aspects are:

- Working or not
- Number of jobs
- Class of worker
- Class of worker and job permanency
- Average number of hours worked per week
- Occupational skill level

We estimated the effect of each aspect by controlling the effect of a series of variables that we have good reason to believe could also affect the hazard of dropping out:

- Current month
- Parents' educational capital
- Registration status
- First language
- Visible minority status
- Debt
- Living arrangements
- Being a parent or not

We used Cox's model to gauge how independent variables affected the hazard of dropping out. Estimates for the effects on male and female students were treated separately. The effects of all independent variables were estimated based on the assumption that they were identical in all regions, but that their effect on the net hazard of dropping out (the "baseline hazard rate") varied by region. This allowed us to control differences in hazard arising from variations across provincial education systems. Using the current month as an independent variable allowed us to control the fact that the school calendar is a factor in dropping out: it is reasonable to assume that the phenomenon is more common at key moments of the academic year.

The estimation results are presented in Tables 3.1 to 3.7. All of these tables share the same structure, including the same set of control variables; they differ only in how they address the relationship to employment, the effect of which we seek to gauge. The effects of different variables for male and female students are presented separately; for each gender, the gross effects are presented in the left-hand column and the net effects to the right. In each table, the most significant results are the net effects of the variable corresponding to that table's particular focus on the relationship to employment.

The fact that dropping out occurs regularly at key moments of the academic year can be seen as a form of seasonality. To control it, we used a variable that represents the current month. Monthly variations in the hazard of dropping out are more clearly demonstrable in chart form (see Figure 3.3). We can see that the hazard of dropping out is 2 to 3 times higher in April and December than in May (where the hazard rate is set to 1, making it the reference value). The coefficients for other months are below this value, indicating that the hazard is lower during these periods. The timing of dropping out is closely associated with the school calendar, since for the YITS, the moment of dropping out corresponds to the last date of registration in the program.

Figure 3.3: Hazard ratios of dropping the program based on month – male and female students
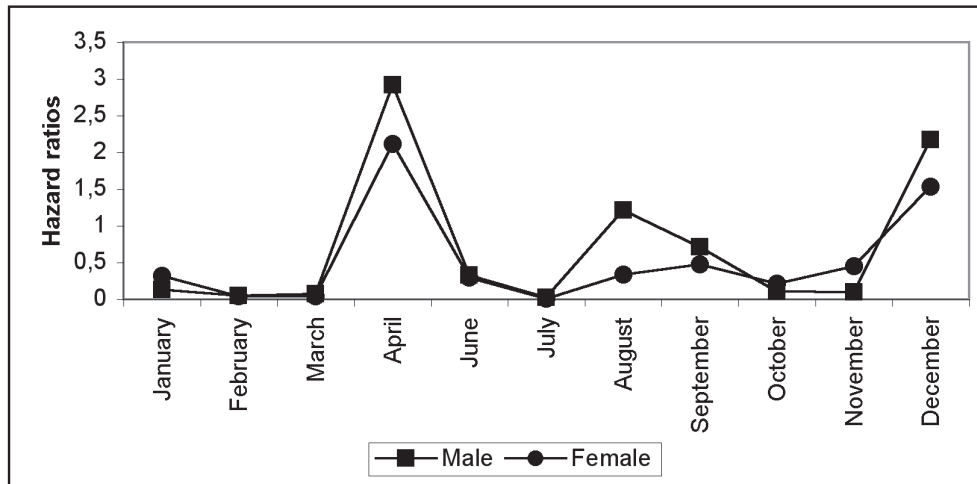
Before interpreting the coefficients of the variables used to measure respondents' relationship to employment, we must bear in mind that the effects of these variables are estimated based on the time spent by the respondent in each category while at risk of leaving the program. An individual's time at risk is therefore distributed between the categories of each independent variable in proportion to the time spent in each category. This logic applies to all time-dependent variables, such as registration status, being in debt, residential situation and whether or not the respondent has children.

Table 3.1 shows that having a job increases the hazard of dropping out among male students: the hazard is 1.37 times higher among employed male students than among those who did not work. Table 3.2 also shows the hazard of dropping out to be higher among male students who have only one job.

Table 3.1

Hazard ratios of dropping out of the first university program without obtaining a degree between 1999 and 2005. Gross and net effects of employment status.

Independent variables	MEN		WOMEN	
	GROSS EFFECT	NET EFFECT	GROSS EFFECT	NET EFFECT
Current month [May]				
January	0.131***	0.132***	0.321*	0.367†
February	0.046*	0.042*	0.038	0.045
March	0.077***	0.067***	0.038**	0.052**
April	2.916**	2.546*	2.117	2.354
June	0.324	0.334	0.299	0.270
July	0.027	0.030	0.009	0.008
August	1.216	1.255	0.333†	0.311†
September	0.715	0.645	0.473	0.502
October	0.109*	0.094*	0.215†	0.251
November	0.101**	0.095**	0.454	0.429
December	2.170†	2.048†	1.529	1.782
Working [Not working]				
Has a job	1.375*	1.368*	0.922	0.967
Not stated	1.271	1.421	0.861	1.202
Parents' educational capital [High school or below]				
Non-university postsecondary	1.038	1.031	0.893	0.886
University	0.824	0.872	0.715*	0.760†
Not stated	0.705	0.796	1.298	1.323
Registration status [Full-time]				
Part-time	0.673*	0.663*	1.462†	1.393
First language [English]				
French	0.983	0.976	0.653†	0.652†
Other	0.950	1.189	0.717	0.718
Visible minority status [No]				
Yes	0.638*	0.553*	0.702†	0.734
Debt level [No loan contracted after 1999]				
Currently in debt	1.346*	1.385*	1.160	1.176
Previously in debt	0.835	0.837	1.490	1.375
Residential situation [Not living at parental home]				
Living at parental home, no partner	1.146	1.262†	1.269*	1.432**
Is a parent [Not a parent]				
Yes	0.526	0.646	2.325†	2.120

† p < 0.100 * p < 0.050 ** p < 0.010 *** p < 0.000
Source: YITS, Cycles 1 to 4

Table 3.2

Hazard ratios of dropping out of the first university program without obtaining a degree between 1999 and 2005. Gross and net effects of number of jobs.

Independent variables	Men		Women	
	GROSS EFFECT	NET EFFECT	GROSS EFFECT	NET EFFECT
Current month [May]				
January	0.131***	0.132***	0.321*	0.367†
February	0.046*	0.042*	0.038	0.045
March	0.077***	0.067***	0.038**	0.052**
April	2.916**	2.553*	2.117	2.338
June	0.324	0.335	0.299	0.267
July	0.027	0.030	0.009	0.008
August	1.216	1.255	0.333†	0.307†
September	0.715	0.646	0.473	0.501
October	0.109*	0.095*	0.215†	0.250
November	0.101**	0.095**	0.454	0.424
December	2.170†	2.048†	1.529	1.775
Number of jobs [Not working]				
One job	1.386*	1.381*	1.062	0.946
More than one job	1.340†	1.325	1.143	1.027
Not stated	1.271	1.420	1.318	1.199
Parents' educational capital [High school or below]				
Non-university postsecondary	1.038	1.034	0.893	0.885
University	0.824	0.872	0.715*	0.758†
Not stated	0.705	0.798	1.298	1.327
Registration status [Full-time]				
Part-time	0.673*	0.664*	1.462†	1.392
First language [English]				
French	0.983	0.974	0.653†	0.652†
Other	0.950	1.188	0.717	0.719
Visible minority status [No]				
Yes	0.638*	0.553*	0.702†	0.735
Debt level [No loan contracted after 1999]				
Currently in debt	1.346*	1.386*	1.160	1.180
Previously in debt	0.835	0.839	1.490	1.376
Residential situation [Not living at home]				
Living at home, no partner	1.146	1.264†	1.269*	1.432**
Is a parent [Not a parent]				
Yes	0.526	0.646	2.325†	2.130

† p < 0.100 * p < 0.050 ** p < 0.010 ***p < 0.000
Source: YITS, Cycles 1 to 4

In contrast, neither having a job nor the number of jobs held seem to have had any effect on female students: the coefficients are not statistically significant, even after being controlled by other characteristics. As we shall see further on, the *type* of job has more of an impact on the hazard of dropping out of the first program than does the *number* of jobs.

To characterize respondents' employment periods, we considered other data collected by YITS: whether or not the work was paid (Table 3.3); permanent (Table 3.4); average number of hours worked per week (Table 3.5); occupational skill level based on job requirements (Table 3.6); and level of income according to work pattern and class of worker (Table 3.7).

Overall, having a job appeared to more decisively impact the educational pathways of male students: it multiplied their hazard of leaving the program prior to completion by a factor of 1.37 compared to non-working male students. When a paid job was permanent, the hazard was multiplied by a factor of 1.58. The hazard for female students showed no variation related to either type of contractual relationship or work pattern.

However, we found that working a certain number of hours per week was not necessarily detrimental to studying. Students who worked up to 8 hours, or between 9 and 16 hours per week, did not show an increased hazard of dropping out. Indeed, among female students, working less than 9 hours reduced the dropout rate (0.69). Conversely, working

more than 16 hours per week increased the hazard of dropping out for male students: 1.41 times higher among those working 17 to 24 hours per week, and 1.61 times higher if working 25 hours or more. The effect of working long hours was also statistically significant among female students, but disappeared when other individual characteristics were taken into account.

The skill level required to access a given position casts further light on the link between employment and education. Once again, our findings show a stronger influence among male students. The hazard of dropping out was significantly higher among male students with managerial positions (2.77), which may entail heavier responsibilities and constraints. It also rose among students working in the least skilled positions, where working conditions were possibly less flexible (1.74), as well as in the intermediate or technical positions (1.37). The hazard was lower among male students working in professional positions, presumably because job skills were more directly aligned with the students' fields of study.

Looking at income levels in relation to job permanency, we observed that the hazard of dropping out was 1.9 to 2.3 times higher among workers with relatively well-paid permanent jobs than among non-workers (a finding that applied to both genders); and 1.8 times higher among male students with middle-income permanent jobs.

Table 3.3

Hazard ratios of dropping out of the first university program without obtaining a degree between 1999 and 2005. Gross and net effects of class of worker.

Independent variables	Men		Women	
	GROSS EFFECT	NET EFFECT	GROSS EFFECT	NET EFFECT
Current month [May]				
January	0.131***	0.130***	0.321*	0.366†
February	0.046*	0.041*	0.038	0.045
March	0.077***	0.067***	0.038**	0.050**
April	2.916**	2.553*	2.117	2.352
June	0.324	0.335	0.299	0.260
July	0.027	0.030	0.009	0.008
August	1.216	1.238	0.333†	0.307†
September	0.715	0.647	0.473	0.502
October	0.109*	0.094*	0.215†	0.250
November	0.101**	0.095**	0.454	0.426
December	2.170†	2.044†	1.529	1.776
Class of worker [Not working]				
Salaried employee	1.369*	1.366*	1.074	0.965
Self-employed	1.358	1.354	1.178	1.092
Salaried employee and other	1.417	1.406	1.493	1.295
Self-employed and other situations	1.375	1.339	1.548	1.406
Not stated	1.247	1.396	1.349	1.231
Parents' educational capital [High school or below]				
Non-university postsecondary	1.038	1.036	0.893	0.887
University	0.824	0.874	0.715*	0.760†
Not stated	0.705	0.800	1.298	1.327
Registration status [Full-time]				
Part-time	0.673*	0.664*	1.462†	1.391
First language [English]				
French	0.983	0.974	0.653†	0.657†
Other	0.950	1.190	0.717	0.726
Visible minority status [No]				
Yes	0.638*	0.551*	0.702†	0.740
Debt level [No loan contracted after 1999]				
Currently in debt	1.346*	1.387*	1.160	1.182
Previously in debt	0.835	0.836	1.490	1.361
Residential situation [Not living in parental home]				
Living in parental home, no partner	1.146	1.251†	1.269*	1.426**
Is a parent [Not a parent]				
Yes	0.526	0.642	2.325†	2.149

† $p < 0.100$ * $p < 0.050$ ** $p < 0.010$ *** $p < 0.000$
Source: YITS, Cycles 1 to 4

Table 3.4

Hazard ratios of dropping out of the first university program without obtaining a degree between 1999 and 2005. Gross and net effects of class of worker and job permanency.

Independent variables	Men		Women	
	GROSS EFFECT	NET EFFECT	GROSS EFFECT	NET EFFECT
Current month [May]				
January	0.131***	0.124***	0.321*	0.367†
February	0.046*	0.042*	0.038	0.045
March	0.077***	0.067***	0.038**	0.052**
April	2.916**	2.428*	2.117	2.359
June	0.324	0.341	0.299	0.271
July	0.027	0.033	0.009	0.008
August	1.216	1.191	0.333†	0.312†
September	0.715	0.623	0.473	0.505
October	0.109*	0.092*	0.215†	0.251
November	0.101**	0.096**	0.454	0.419
December	2.170†	1.863	1.529	1.779
Class of worker and job permanency [Not working]				
Employee, no permanent job	0.907	0.913	0.984	0.893
Employee, at least one permanent job	1.568**	1.579**	1.146	1.018
Self-employed	1.355	1.353	1.187	1.098
Not stated	1.219	1.362	1.470	1.388
Parents' educational capital [High school or below]				
Non-university postsecondary	1.038	1.023	0.893	0.885
University	0.824	0.895	0.715*	0.759†
Not stated	0.705	0.786	1.298	1.314
Registration status [Full-time]				
Part-time	0.673*	0.650*	1.462†	1.397
First language [English]				
French	0.983	0.956	0.653†	0.651†
Other	0.950	1.191	0.717	0.707
Visible minority status [No]				
Yes	0.638*	0.557*	0.702†	0.732
Debt level [No loan contracted after 1999]				
Currently in debt	1.346*	1.394*	1.160	1.172
Previously in debt	0.835	0.824	1.490	1.367
Residential situation [Not living in parental home]				
Living in parental home, no partner	1.146	1.212	1.269*	1.422**
Is a parent [Not a parent]				
Yes	0.526	0.680	2.325†	2.006

† p < 0.100 * p < 0.050 ** p < 0.010 *** p < 0.000
Source: YITS, Cycles 1 to 4

Table 3.5

Hazard ratios of dropping out of the first university program without obtaining a degree between 1999 and 2005. Gross and net effects of number of hours worked per week.

Independent variables	Men		Women	
	GROSS EFFECT	NET EFFECT	GROSS EFFECT	NET EFFECT
Current month [May]				
January	0.131***	0.133***	0.321*	0.375†
February	0.046*	0.042*	0.038	0.048
March	0.077***	0.069***	0.038**	0.058**
April	2.916**	2.527*	2.117	2.331
June	0.324	0.337	0.299	0.271
July	0.027	0.029	0.009	0.009
August	1.216	1.164	0.333†	0.306†
September	0.715	0.642	0.473	0.504
October	0.109*	0.096*	0.215†	0.259
November	0.101**	0.101**	0.454	0.446
December	2.170†	2.092†	1.529	1.849
Average no. of hours worked [Not working]				
Up to 8 hours per week	1.006	1.007	0.744	0.690†
9 to 16 hours per week	0.967	0.937	0.950	0.856
17 to 24 hours per week	1.483*	1.409†	0.992	0.870
25 hours or more per week	1.580**	1.609**	1.457*	1.300
Not stated	1.245	1.385	1.329	1.205
Parents' educational capital [High school or below]				
Non-university postsecondary	1.038	1.041	0.893	0.903
University	0.824	0.880	0.715*	0.774†
Not stated	0.705	0.804	1.298	1.378
Registration status [Full-time]				
Part-time	0.673*	0.643*	1.462†	1.321
First language [English]				
French	0.983	0.957	0.653†	0.637†
Other	0.950	1.193	0.717	0.742
Visible minority status [No]				
Yes	0.638*	0.558*	0.702†	0.735
Debt level [No loan contracted after 1999]				
Currently in debt	1.346*	1.390*	1.160	1.183
Previously in debt	0.835	0.809	1.490	1.364
Residential situation [Not living in parental home]				
Living in parental home, no partner	1.146	1.282*	1.269*	1.460**
Is a parent [Not a parent]				
Yes	0.526	0.661	2.325†	2.166

† $p < 0.100$ * $p < 0.050$ ** $p < 0.010$ *** $p < 0.000$
Source: YITS, Cycles 1 to 4

Table 3.6

Hazard ratios of dropping out of the first university program without obtaining a degree between 1999 and 2005. Gross and net effects of occupational skill level.

Independent variables	Men		Women	
	GROSS EFFECT	NET EFFECT	GROSS EFFECT	NET EFFECT
Current month [May]				
January	0.131***	0.126***	0.321*	0.373*
February	0.046*	0.040*	0.038	0.046
March	0.077***	0.065***	0.038**	0.053**
April	2.916**	2.474*	2.117	2.355
June	0.324	0.338	0.299	0.266
July	0.027	0.030	0.009	0.008
August	1.216	1.258	0.333†	0.313†
September	0.715	0.637	0.473	0.501
October	0.109*	0.094**	0.215†	0.254
November	0.101**	0.096*	0.454	0.445
December	2.170†	1.964	1.529	1.800
Occupational skill level [Not working]				
Managerial positions	2.713**	2.777**	0.897	0.830
Professional positions	0.599†	0.601	0.691	0.641
Technical, paraprofessional and skilled positions	1.387*	1.387*	1.126	0.990
Intermediate positions	1.357†	1.373*	1.163	1.055
Elemental/labourer positions	1.742**	1.739**	1.281	1.143
Not stated	1.150	1.282	1.259	1.159
Parents' educational capital [High school or below]				
Non-university postsecondary	1.038	1.045	0.893	0.889
University	0.824	0.893	0.715*	0.770†
Not stated	0.705	0.824	1.298	1.359
Registration status [Full-time]				
Part-time	0.673*	0.640*	1.462†	1.397
First language [English]				
French	0.983	0.993	0.653†	0.665†
Other	0.950	1.204	0.717	0.725
Visible minority status [No]				
Yes	0.638*	0.556**	0.702†	0.740
Debt level [No loan contracted after 1999]				
Currently in debt	1.346*	1.377*	1.160	1.169
Previously in debt	0.835	0.841	1.490	1.406
Residential situation [Not living in parental home]				
Living in parental home, no partner	1.146	1.223	1.269*	1.406**
Is a parent [Not a parent]				
Yes	0.526	0.673	2.325†	2.233†

† p < 0.100 * p < 0.050 ** p < 0.010 *** p < 0.000
Source: YITS, Cycles 1 to 4

Table 3.7

Hazard ratios of dropping out of the first university program without obtaining a degree between 1999 and 2005. Gross and net effects of income level based on class of worker and job permanency.

Independent variables	Men		Women	
	GROSS EFFECT	NET EFFECT	GROSS EFFECT	NET EFFECT
Current month [May]				
January	0.131***	0.123***	0.321*	0.362†
February	0.046*	0.038*	0.038	0.045
March	0.077***	0.068***	0.038**	0.055**
April	2.916**	2.301*	2.117	2.341
June	0.324	0.330	0.299	0.293
July	0.027	0.033	0.009	0.009
August	1.216	1.079	0.333†	0.328†
September	0.715	0.569	0.473	0.504
October	0.109*	0.085**	0.215†	0.261
November	0.101**	0.103**	0.454	0.441
December	2.170†	1.838	1.529	1.844
Class of worker, job permanency and income [Not working]				
Employee, permanent, low income	1.227	1.199	0.922	0.817
Employee, permanent, middle income	1.822**	1.876**	1.430*	1.265
Employee, permanent, high income	2.246**	2.315**	2.140*	1.934†
Employee, non-permanent, low income	1.017	0.992	1.148	1.035
Employee, non-permanent, middle income	1.031	1.048	0.930	0.839
Employee, non-permanent, high income	0.527	0.542	0.480	0.477
Self-employed	1.360	1.359	1.194	1.107
Not stated	1.232	1.374	1.494†	1.391
Parents' educational capital [High school or below]				
Non-university postsecondary	1.038	1.045	0.893	0.882
University	0.824	0.921	0.715*	0.753†
Not stated	0.705	0.801	1.298	1.352
Registration status [Full-time]				
Part-time	0.673*	0.622*	1.462†	1.344
First language [English]				
French	0.983	0.934	0.653†	0.648†
Other	0.950	1.204	0.717	0.713
Visible minority status [No]				
Yes	0.638*	0.557*	0.702†	0.744
Debt level [No loan contracted after 1999]				
Currently in debt	1.346*	1.402**	1.160	1.178
Previously in debt	0.835	0.862	1.490	1.379
Residential situation [Not living in parental home]				
Living in parental home, no partner	1.146	1.256†	1.269*	1.453**
Is a parent [Not a parent]				
Yes	0.526	0.707	2.325†	1.983

† p < 0.100 * p < 0.050 ** p < 0.010 *** p < 0.000
Source: YITS, Cycles 1 to 4

3.3 The effects of social background and living conditions

Tables 3.1 to 3.7 also show the gross and net effects of parental educational capital, visible minority status, first language, residential situation (whether or not respondents lived with their parents) and parenthood (whether or not respondents had children).

At first glance, there are clear differences between male and female students. Parental educational capital had no significant effect on the hazard of dropping out among male students. Conversely, female students who had at least one parent with a university degree were less likely to drop out than first-generation students (0.76).

Belonging to a visible minority seems to have positively affected persistence. The hazard of dropping out among visible minority male students was 0.55 compared to non-visible minority students. Among female students, the hazard was 0.70; however, the effect disappeared when controlled by other characteristics, including first language. Thus, for example, Francophone female students were found to drop out less often (0.65) than their English-speaking counterparts.

Living arrangements (whether or not students still lived in parental home) and becoming a parent were prime considerations among the living conditions most liable to influence respondents' educational pathways. Regarding the former, the hazard of dropping out was found to be higher among students who lived with their parents (approximately 1.25 among male students and 1.45 among female students). In contrast, becoming a parent did not appear to affect persistence. However, with regard to this latter point, having children during university is not a widespread phenomenon among young Canadians aged under 30; indeed, this situation is virtually absent from the sample.

Registration status and debt were found to affect the educational pathways of male students. Part-time students were at lower hazard of leaving their programs than full-time students (0.56), while indebted students also dropped out more frequently than those who had never received a loan to finance their studies.

3.4 Variations over time

The model we used considers the effect of each independent variable based on the assumption that this effect is proportional. This means that the effect is estimated by assuming that the gap between the hazards associated with each category of a variable is the same at any time during the period studied. For example, if studying part-time rather than full-time reduces the hazard of dropping out, this means that the hazard is reduced by the same proportion, regardless of whether the student is at the start, middle or end of the program.

Analyses that take into account the effect of region on the hazard of dropping out (Figures 3.1 and 3.2) showed that the hazard varies depending on the amount of time elapsed since the student entered the program, and that regional differences also vary over time. Accordingly, we formulated equations that would allow us to analyze hazard variations over time without stipulating that regional differences remained constant.

Another preliminary remark is called for. We cannot assume *a priori* that the net effects of other variables on the hazard of dropping out are proportional, i.e. that the differences between the categories of a given variable are constant over time. We can, however, verify whether this is indeed the case by conducting tests based on the model's residuals.[9] The results of these tests show the effects of certain variables to be non-proportional. Such effects therefore vary depending on the amount of time elapsed since

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9   Proportionality tests were made without correcting for the design effect, since we had no means of doing so and were unable to conceive of one that could be realistically applied. The coefficient of the proportionality test follows Chi-square distribution, while the resampling method that enables correcting for the design effect assumes that we are estimating a parameter that follows normal distribution or student's t-distribution. As a result, it is highly possible that the test we used overestimates the number of non-proportional effects.
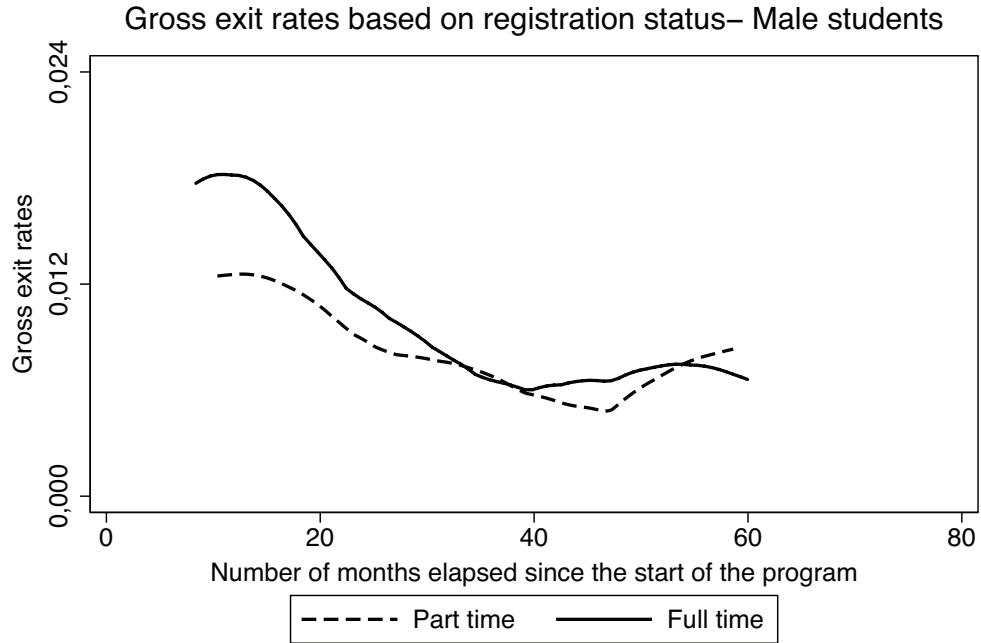
the start of the program. The "control" variables with non-proportional effects (0.05 threshold) are:

- registration status among male students

- indebtedness among male students

- living arrangements among both male and female students

- visible minority status among both male and female students

- first language among female students

- being a parent among male students

Time-dependent variables can be examined individually. In most cases, we can construct a chart that examines the variation in hazard based on the time elapsed since the program began. Figure 3.4 interprets the non-proportional effect of registration status for male students. This shows that, when studying full-time, the hazard of
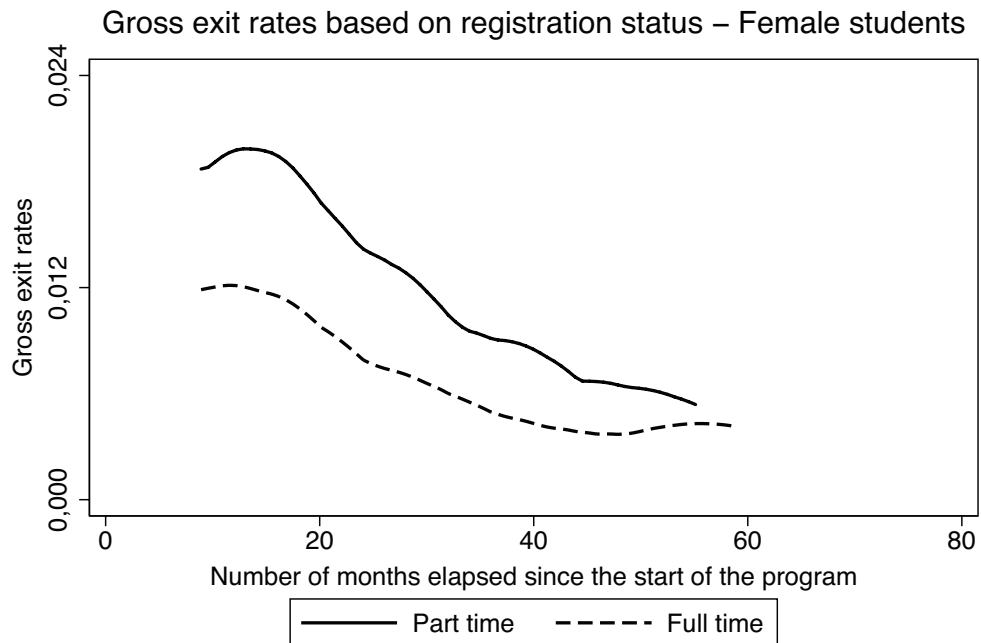
dropping out diminished from the start of the program and continued to do so for a period roughly corresponding to the average program length, after which it began to increase. We see a similar pattern regarding part-time studies, with the exception that the trend reverses at a later stage, most likely because the average or mean duration of a program followed on a part-time basis is longer. To complicate matters further, the differences in hazard noted between full- and part-time studies also varies based on the time elapsed since the start of the program: the hazard of dropping out is far higher among full-time students, but the gap narrows between the start of the program and the point where the trend reverses. We can thus reasonably conclude that, on average, studying part-time rather than full-time reduces the hazard of dropping out by one-third, while stipulating that this difference does not remain at one-third at all times.

Figure 3.4

Gross exit rates based on registration status– Male students

Number of months elapsed since the start of the program

- - - - - Part time   ———— Full time

Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

Figure 3.5

Gross exit rates based on registration status – Female students

Number of months elapsed since the start of the program

———— Part time   - - - - - Full time

Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

We can interpret the effects of other variables similarly, in particular that of debt. As shown in Figure 3.5, accumulating student debt from the start of a program increases the hazard of dropping out, whereas accumulating debt later in a program has no net effect. Loan recipients are at slightly higher hazard than non-recipients during the first 40 months, but the hazard greatly increases after 40 months. Again, the coefficients associated with this variable in our tables should be interpreted as average effects.

Figure 3.6 illustrates how the hazard of dropping out develops among female students from the start of a program, based on whether or not the student is living at home. Living at home increases the hazard of dropping out early on in the program, but has no effect thereafter. We may assume that living at home makes it easier to drop one program in favour of another, thus facilitating academic reorientation. Here, too, the coefficient in our tables should be interpreted as a mean (and not a constant) deviation.
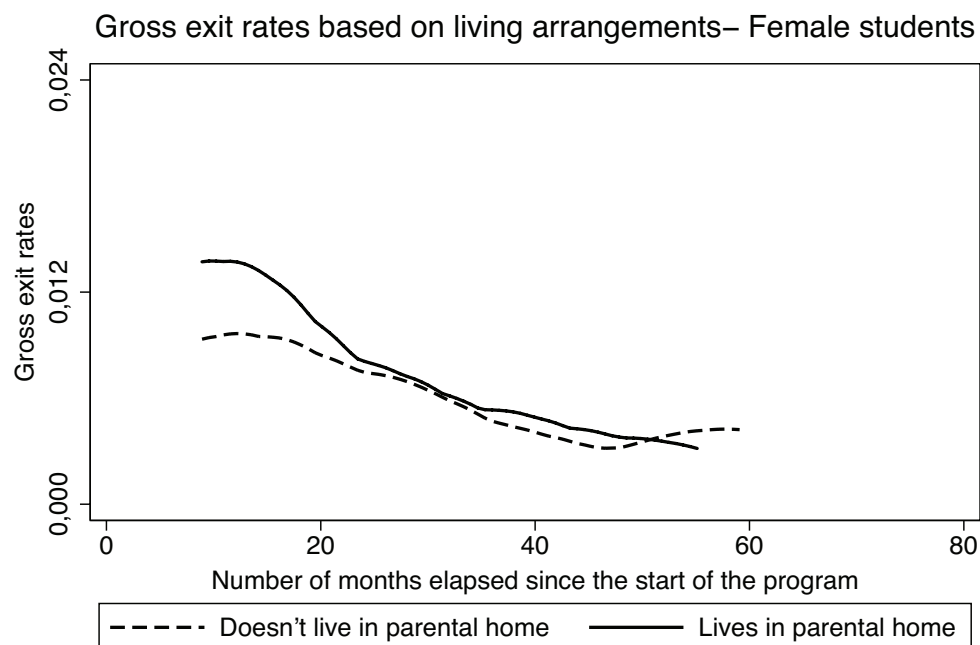
Figures 3.8 and 3.9 show the non-proportional effects of visible minority status. Youth who belong to a visible minority are less likely to drop out than those who do not; the hazard remains fairly constant over time. Conversely, the hazard among those who do not belong to a visible minority is higher, decreasing only once the student has advanced in the program. Among female students, it becomes even lower than that of visible minorities toward the end of the program.

The work-related variables with non-proportional effects (0.05 threshold) are:

- Classes of worker and job permanency among both male and female students

- Number of jobs among male students

- Number of working hours among male students

- Occupational skill levels among both male and female students

Figure 3.6

Gross exit rates based on living arrangements– Female students

Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

Figure 3.7

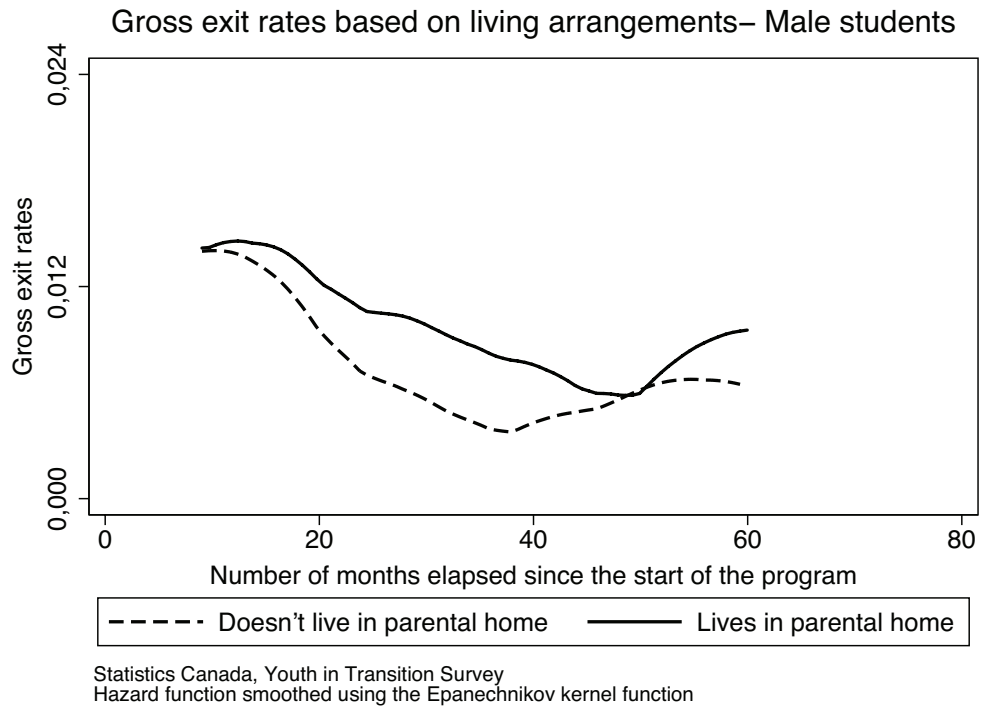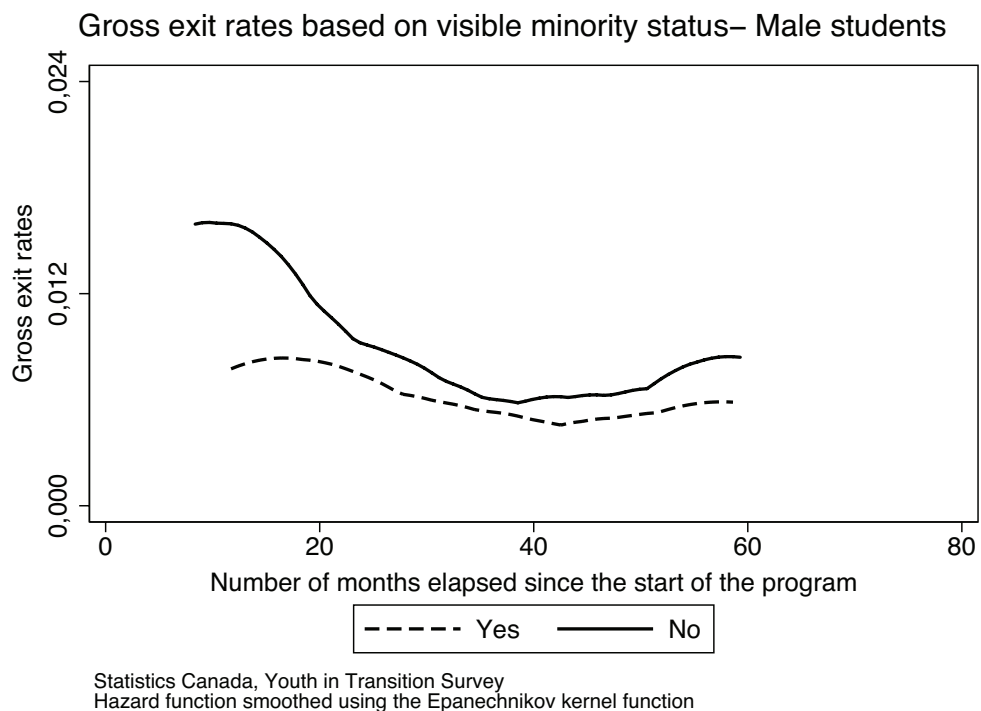### Gross exit rates based on living arrangements– Male students
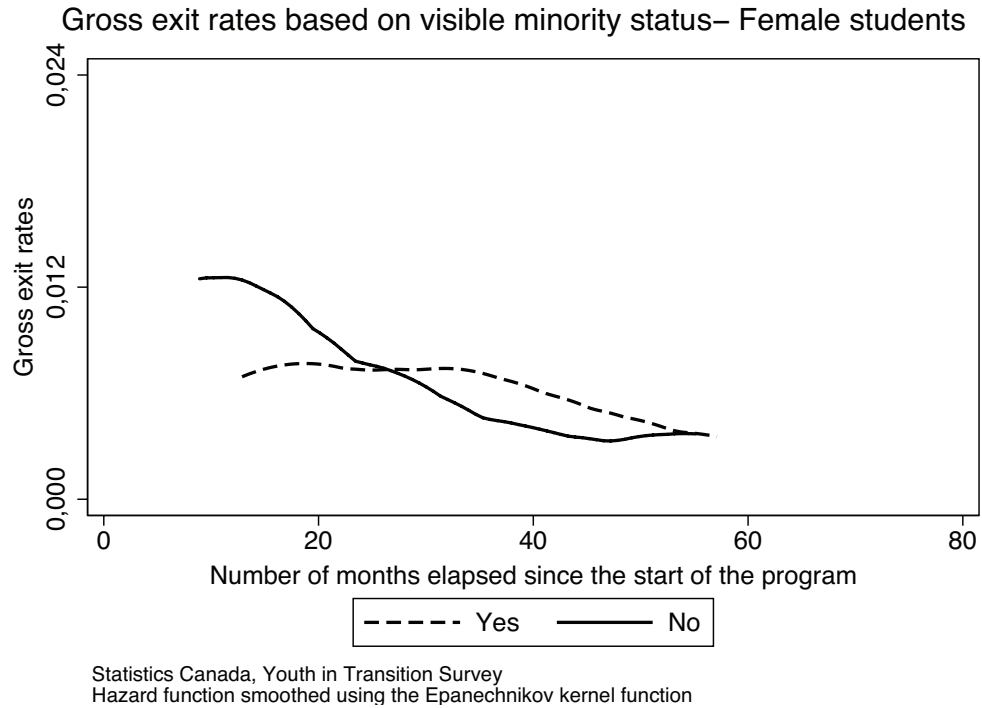

Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

Figure 3.8

Gross exit rates based on visible minority status– Male students

Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

Figure 3.9

Gross exit rates based on visible minority status– Female students
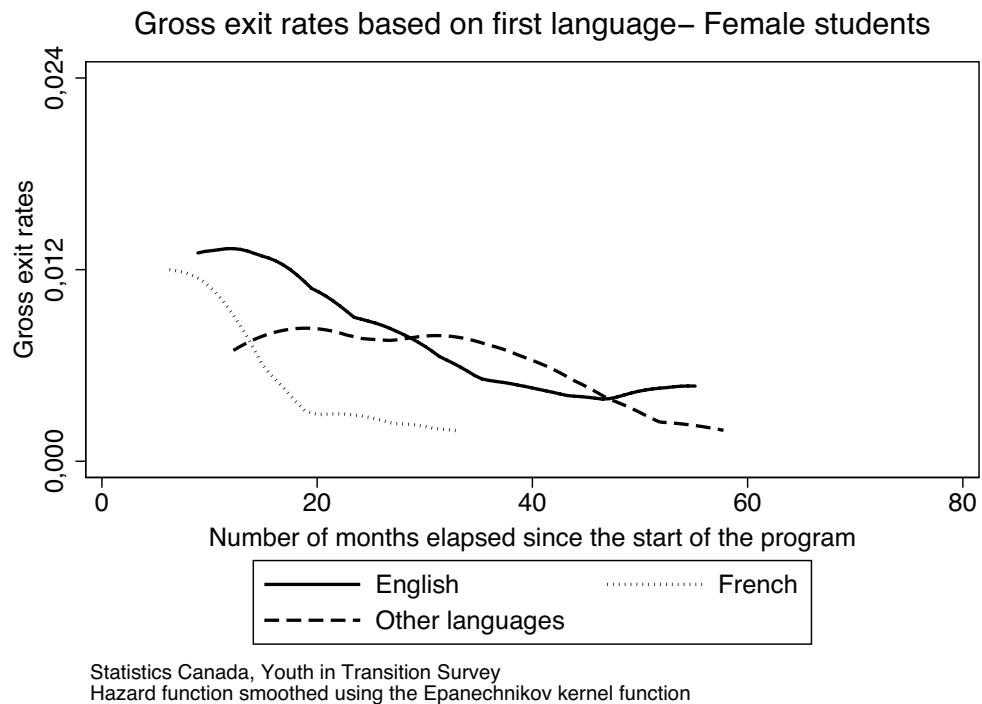

Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

Figure 3.10

Gross exit rates based on first language– Female students

Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

Figure 3.11

Gross exit rates based on number of children– Male students
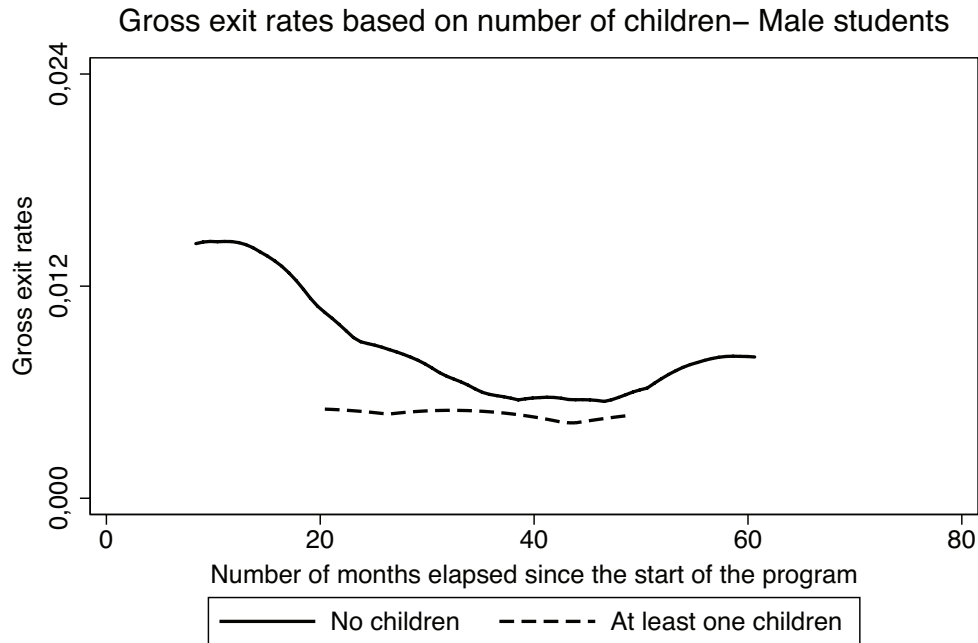

Statistics Canada, Youth in Transition Survey
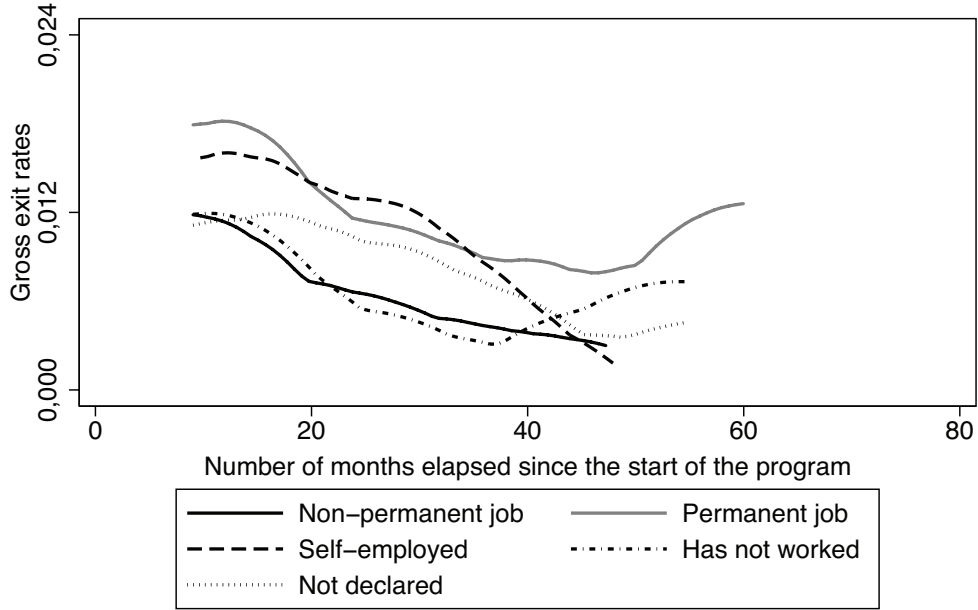Hazard function smoothed using the Epanechnikov kernel function

As can be observed in Figure 3.12, the effect of the class of worker and job permanency among male students varies with the time elapsed since the start of a program. During the first 40 months of study, the hazard initially decreases, but then starts to increase. Non-working male students and those with non-permanent jobs drop out at a slower rate than those with permanent jobs. The dropout rate among self-employed workers follows a different pattern: while at the start of a program it is similar to the rate of male students with permanent positions, it then decreases, and approaches the rate of non-working or temporarily employed male students shortly after the 40th month. (It appears not to rise thereafter, presumably because few self-employed students prolong their studies beyond this point.) The development of the dropout rate among male students with an unknown situation is also different:

while at the start of a program it is similar to that of male students who do not work or have non-permanent jobs, it then approaches the rate of students with full-time jobs, before once again realigning with the first category (non-working/temporarily employed male students).

Among female students (Figure 3.13), work pattern has limited effect on the dropout rate at the start of a program, but affects its development thereafter. The dropout rate among female students with full-time jobs diminishes at a near-constant rate. Among non-working female students, the decrease is more marked until about the 36th month, at which point it increases to surpass that of female students with permanent jobs. A decline, albeit much less marked, was also noted in the other work pattern categories.

Figure 3.12

Gross exit rates based on class of worker and job permanency– Male students

Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

Figure 3.13

Gross exit rates based on class of worker and job permanency– Female students
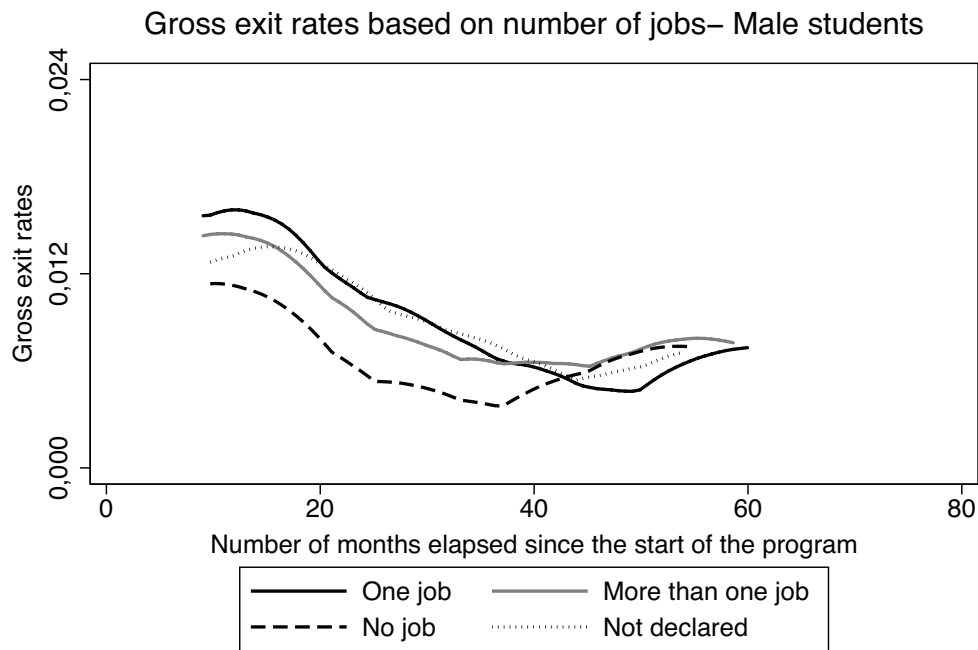

Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

At the start of a program, non-working male students had the lowest dropout rate, while those who were employed had the highest; the rate among students with more than one job was approximately equal to that of students with only one job (Figure 3.14). The dropout rates in all categories decreased until about the 40th month, after which the rate among non-working male students rose quickly to reach a level on par with the other categories.

Figure 3.15 shows that at the start of a program, the dropout rate was lowest among male students who worked 8 hours or less per week. This group's rate remained more or less constant throughout the program. Among other groups, the dropout rate was affected by the number of hours worked each week, diminishing in proportion to the amount of time elapsed since the start of the program. This trend continues until about the 40th month, after which the dropout rates among all groups (with the exception of students working 8 hours or less per week) began to increase.

Figure 3.14

Gross exit rates based on number of jobs– Male students

Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

Figure 3.15

Gross exit rates based on number of hours worked per week– Male students
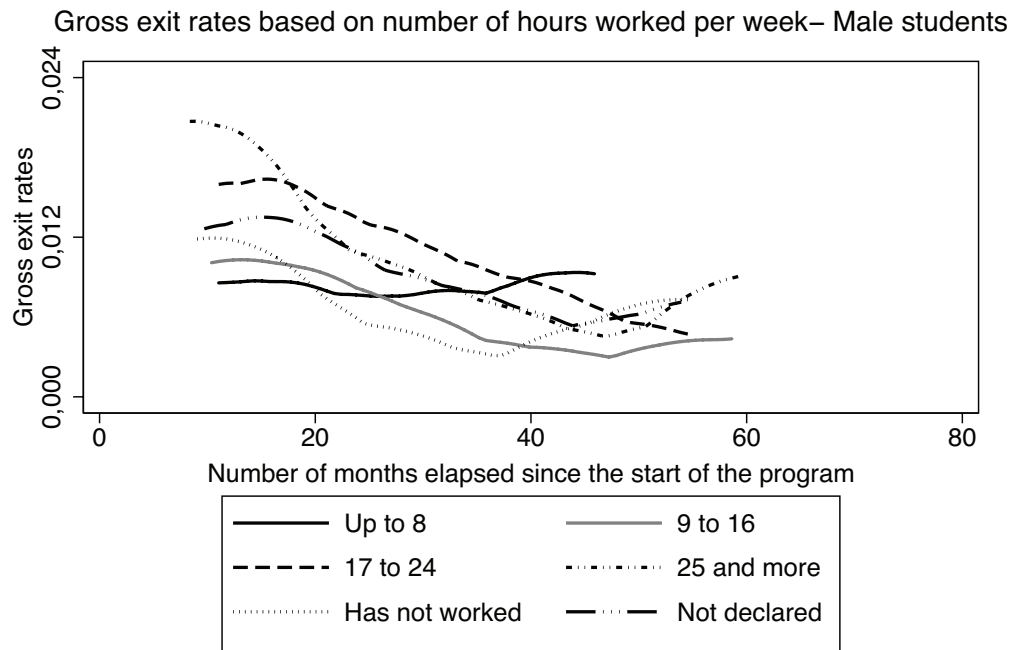
Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

The changes in dropout rates related to occupational skill level are somewhat more difficult to interpret (Figures 3.16 and 3.17). It is possible that the effect of one or more other work-related parameters, e.g. work pattern or number of hours worked per week, may bear on these findings.

To summarize, the non-proportional effects we have identified can be interpreted easily enough, but modelled only poorly. One can, however, conceive of an approach through which the majority of these effects might be modelled. It seems feasible to construct something reasonably elegant — which is to say, more or less accurate, and relatively simple — using cubic spline interpolation (Royston and Parmar, 2002) rather than Cox's model, and by modelling the non-proportional effects using linear splines and contingent relationships.

Furthermore, it is possible that changes in the effects of certain independent variables based on time elapsed since the start of the program are a reflection of the changing composition of the at-risk group over time: one can well imagine that students who drop out early on differ from those who drop out later or never in characteristics that our equations cannot control. Similarly, those who drop out later can be distinguished (again by characteristics that our equations cannot control) from those who extend their programs beyond the normal duration but still complete them.[10]

In conclusion, it is more realistic to simply admit that the coefficient associated with a variable that has non-proportional effects (as shown in our tables) represents only the mean effect of this variable, and interpret the development of this effect by approximating the amount of time elapsed since the start of a program. This is essentially how we have proceeded in this section.

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10 Using a Poisson model and fractional polynomials (Royston and Altman, 1994; Royston and Sauerbrei, 2008), it might be possible to parameterize the evolution of risk based on time elapsed since the start of a program, while controlling the effect of this unobserved heterogeneity, and limiting the use of linear splines and contingent relationships to non-proportional effects that could not be made to disappear through the explicit control of unobserved heterogeneity. However, modelling of this kind is rarely undertaken, making it difficult to estimate how long it would take to complete the process or to what extent the effects of the variables that interest us would be modified by these models.

Figure 3.16
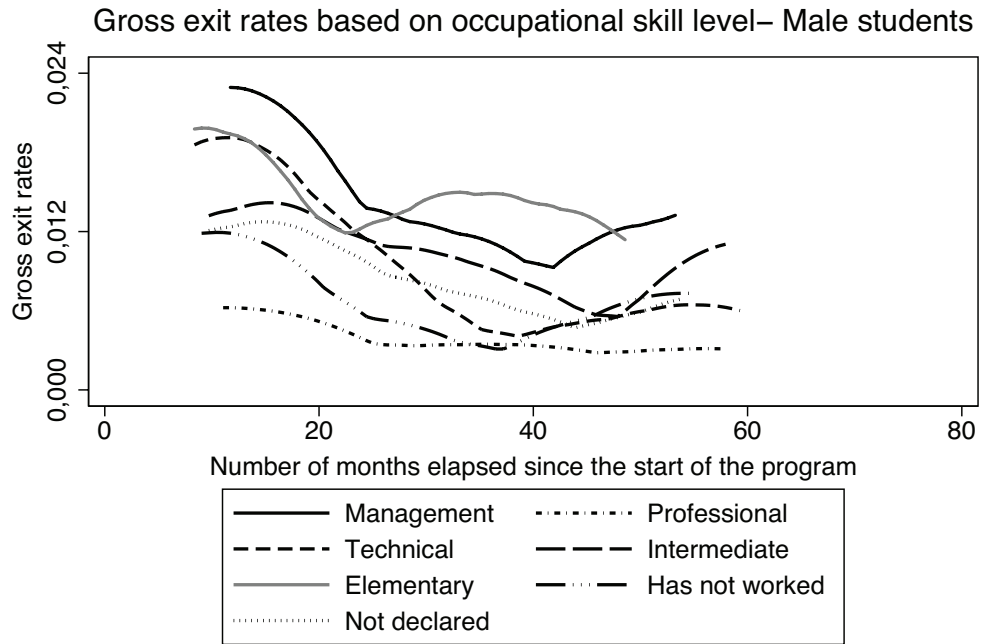
Gross exit rates based on occupational skill level– Male students

Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

Figure 3.17

Gross exit rates based on occupational skill level– Female students
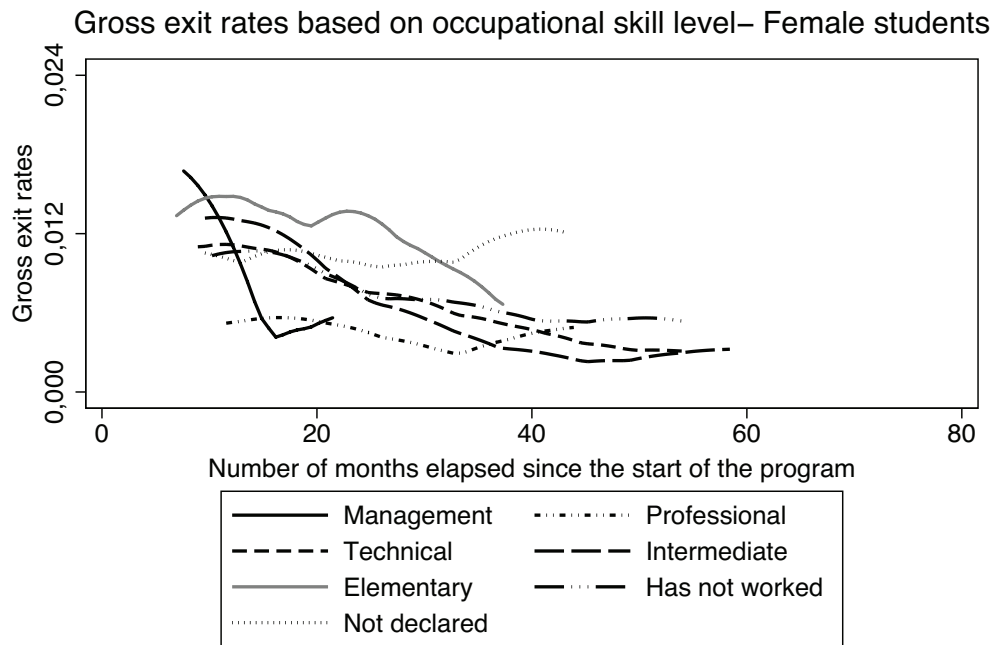
Statistics Canada, Youth in Transition Survey
Hazard function smoothed using the Epanechnikov kernel function

3.5   A synthesis of the results

A first finding confirms the importance of paid work among university students. During the period studied, more than two out of three students had a paid job while at school, with female students slightly outnumbering male students in this situation. The exit rate in a given year follows the academic calendar: students "decide" to leave their program at the end of one semester or before beginning another. From a longer-term perspective, we also noted that exits were higher at the beginning of a given program and tended to decrease with time, although we noted a renewed upsurge of the exit rate among certain student categories when studies were prolonged.

Paid work had an appreciable effect on the dropout rate: it significantly increased such rates among male students (Insert 3.1). However, if the effect on male students was constant throughout the study period, it was only appreciable among female students toward the end of the program (Insert 3.2). Furthermore, we noted that the same factors did not influence the hazard in the same way for both genders. These differences can be summarized as follows:

- Most job characteristics increased the hazard of dropping out among male students, whereas only two were significant among female students. Among male students, all characteristics of paid work increased the hazard of dropping out, with one exception: having a professional position, which actually reduced the hazard. Among female students, working no more than 8 hours/week reduced the hazard of dropping out, while having a permanent job and a high income increased it.

- Social background appeared to reduce the hazard of leaving. This was the case among male students who belonged to a visible minority, as well as among female students who were Francophone or whose parents (one or both) had completed a university program.

- Registration status only affected the hazard of dropping out among male students. Studying part-time slowed the hazard.

- Living conditions mainly affected male students. Recent loans (and the resulting feeling of indebtedness) and living in the parental home are two factors that accelerated the hazard of leaving. Among female students, only the latter had a significant effect.

Insert 3.1

Classification of variables based on whether they increase or decrease the hazard of dropping out of a program

	Increases hazard of dropping out	**Reduces the hazard of dropping out**
Men	• Having only one job • Being a salaried worker • Having a permanent job • Working long hours • Having a managerial, technical, intermediate or basic-level job • Having a high- or middle-income permanent job • Being in debt • Living in parental home	• Having a professional position • Studying part-time • Belonging to a visible minority
Women	• Having a high-income permanent job • Living in parental home	• Working up to 8 hours per week • Having parents (one or both) who hold a university degree • Being Francophone

The analysis also helped us identify how the exit rate evolved over time, and to understand the development of the effects of different variables (inserts 3.2 and 3.3):

The hazard of leaving a program varied over time: it was higher at the start of the program, subsequently decreased, and then once again increased under the effects of different variables.

A number of job characteristics had variable effects during the period studied. For male students, these consisted of the number of jobs, job permanency number of hours worked, income level and occupational skill level. Among female students, job permanency, number of hours worked and occupational skill level also had inconsistent effects.

Among the other parameters examined, registration status, belonging to a visible minority, being in debt, living at the parental home and having children had variable effects among male students. Among female students, three parameters had this kind of effect: belonging to a visible minority, being Francophone, and living at the parental home.

Among male students, the dropout rate was higher at the start of a program; being a part-time student reduced the hazard at the start of a program, but this effect was no longer present after several months.

Based on our findings, Insert 3.1 specifies whether the variables' effects served to increase or reduce the hazard of dropping out of a university program. Tables 3.9 and 3.10 indicate whether the effects of these variables vary or remain stable in relation to the time elapsed since the program began.

Insert 3.2

Classification of variables based on whether or not their effects vary over time — variables concerning the relationship to employment

	Effects that vary over time	Effects that are constant over time
Men	• Having more than one job • Having a permanent job • Working up to 8 hours or between 17 and 24 hours • Having a low-income job • Having a professional or intermediate position	• Having a job • Class of worker
Women	• Having a non-permanent job • Having a non permanent, middle-income job • Having a managerial position	• Having a job • Having more than one job • Class of worker • Number of hours worked

Insert 3.3

Classification of variables based on whether or not their effects vary over time — control variables

	Effects that vary over time	Effects that are constant over time
Men	• Studying full-time • Being in debt • Belonging to a visible minority • Living in the parental home • Being a parent	• First language • Parents' educational capital
Women	• Belonging to a visible minority • Being Francophone • Living in the parental home	• Registration status • Being in debt • Being a parent • Parents' educational capital

4. Conclusion: Avenues for further research

Our aim was to identify the links between educational pathways and extracurricular activities to better understand the courses of academic careers. To do so, we examined the effect of having paid work on the tendency to drop out of university studies, while controlling this effect with those produced by other factors. Our decision to examine this issue stemmed from the fact that it is a subject of some dispute in academia. Indeed, many educational stakeholders see paid work as a source of distraction for students. Conversely, several studies have indicated that this is not the case, unless the student works many hours. Such studies are based on cross-sectional studies that cannot take into account either the passage of time or changes in students' situations during their educational experiences. But what happens when we address this question through a longitudinal approach?

The specificity of our analytic approach was to consider state changes in paid employment between January 1999 and December 2005, in order to identify the overall effects on dropping out (defined as leaving a program during this period, without obtaining a degree and without re-enrolling). However, it should be noted that leaving a program could indicate a process of career transition as much as a desire to leave school. Also, we must bear in mind that individuals who leave may one day resume their studies. In this sense, we might wish to make a distinction between "leaving" and "dropping out," the latter of which is often defined as leaving school without returning for a given period (e.g. five years).

Our analysis indicates that working during studies affects the tendency to leave a first university program, and that this effect varies both according to job characteristics and with the passage of time.

The effect was seen to persist when different control variables were introduced into the analysis. In this regard, since a multitude of factors and reasons can impel a student to drop out, we needed to apply multiple interpretive approaches to fully understand the findings. These approaches referred to the educational experience itself, as well as lifestyle, social background and living conditions.

The first approach concerned the educational experience itself. The hazard of dropping out varied over time: it was highest at the start of the program, declined thereafter, and was liable to subsequently resurge. Students who dropped out early on in the program may have done so as a result of failure to integrate socially and/or intellectually. Entering a new program can create a conflict between the program's "image" (i.e. how the program is intellectually or professionally represented by educational agents) and the perspectives developed by the students as the program progresses. This conflict may in turn lead the student to feel he or she has made the right choice of program, or to experience disenchantment followed by reorientation or departure. A transition to postsecondary education also poses a challenge in terms of adapting to the educational system, which differs greatly from that of high school. New students must become more self-motivated as they absorb the pedagogical relations and the formal and informal rules that prevail in postsecondary institutions. Finally, as Tinto (1993) points out, social integration issues can also prompt students to drop out.

Why, then, do dropout rates rise after several months have elapsed? This is quite possibly due to students' discouragement: despite strategic efforts and adjustments (e.g. deciding not to work during the school year), they may feel they cannot succeed

and resign themselves to leaving. Fatigue may also set in after prolonged studies (e.g. of several years' duration), which would help to explain the increase in dropout rates of part-time students at the end of the period studied.

The second interpretative approach focused on lifestyles, particularly during the transition to adulthood. Paid employment during studies may be required to meet basic needs, ensure financial independence, provide more purchasing power or prepare for a profession. Whatever the reason, the combination of paid work and studies represents a typical lifestyle choice for the majority of young people and university students — a fact that our analysis corroborates.

Most research studies using cross-sectional analyses indicate that paid work has no effect upon studies unless students work a significant number of hours. This suggests that students who work full-time (or almost full-time) have more difficulty balancing work and school, and accordingly tend to drop out. Our findings are somewhat different, since we found employment to have a significant effect on the dropout rates of male students, for whom the mere fact of being employed increased their hazard of leaving the program prematurely. Our results also indicate that having professional attributes associated with "regular" work and being seen as part of the working population increase men's hazard of dropping out. In sum, being employed, having a permanent job, working over 24 hours per week and having middle to high income all serve to increase the hazard. These results can be interpreted using a theoretical opposition between two archetypal situations, which also underlines the inherent ambivalence in the transition from adolescence to adulthood (defined by many today as the "young adult situation"). These two social situations are working students and workers who study. In both cases, studies and work coexist, but their significance is somewhat different. In light of this distinction, previous results can be seen as follows: the more an individual's attributes can be associated with those of a worker who studies, the greater that individual's hazard of dropping out. Part-time study, a situation that tends

to alleviate the hazard (at least at the start of a program), is a strategy that allows for a measure of flexibility in balancing work and studies.

The situation is at once similar and different for women: similar, in that certain employment-related attributes lead to circumstances not unlike those described in the preceding paragraph (leading us to believe that the same dichotomy would also apply to women); different, in that the variables that influence the hazard of dropping out are not identical. The mere fact of having a job had no effect on the hazard for women, but having a high-income job did increase the hazard. Working a minimal number of hours, on the other hand, actually reduced the hazard. In sum, an attribute that can be assigned to workers who study increases the hazard of dropping out, while one associated with working students reduces it. This distinction may also arise from the relationship women have with education, different from that of men both in terms of the meanings women associate with studies and of the skills they gain through learning the "profession" of being a student.

Gender differences opened a third interpretative track, complementary to the analysis of paid work's effects, that casts light on the effect of variables associated with social origins. Recent research highlights the relationships between education and class, gender and culture (ethnocultural difference), three factors that can act independently or interdependently. Our analyses show that these factors do not exert their influences in isolation. The first effects of gender are manifested by the fact that different variables affected men's and women's hazards of dropping out. Visible minority status reduced the hazard for men only, while being a Francophone did the same for women.

Investment in studies occurred differently according to social background. Some groups tended to promote education, a trend associated with societal integration and social mobility. This valorization of education, based on belief in the advantages of formal education, promotes a strong engagement with the education process and the implementation of strategies designed to ensure perseverance. The outcome is a reduced hazard of

dropping out. Male students who were part of a visible minority constitute one example of this situation; Francophone women another. However, the growth of postsecondary education has also taken place during the rise of an opposing trend, namely, the persistence of social reproduction mechanisms. We find indications of this in women from families with high educational capital.

The fourth avenue for interpretation concerns living conditions. If parental status did not have a constant effect throughout the period studied, it was because too few students were in this category to have any significant effect. However, living in the family home accelerated the rate at which students left school before obtaining their degree, especially at the start of a program, which is somewhat surprising or counterintuitive. We surmised that young people who experienced academic failure could more easily leave their programs if they had "insurance policies" to facilitate their transition. Living at home might well constitute such a policy, and thus facilitate academic reorientation.

Debt is another relevant aspect of living conditions. Here, we were able to identify two situations: previous debt (students who had applied for a loan in the past) and current debt. The former appeared to affect the dropout rate early on in a program, while the latter only had a noticeable influence when studies were prolonged. These findings support research indicating that it is the feeling rather than the fact of being in debt that affects the hazard of dropping out. Previous debt thus has a greater impact at the start rather than at the end of the program, presumably since the imminence of workforce entry (and by extension, the possibility of paying back the loan) reduces debt-related anxieties. Similarly, current debt begins to weigh heavily if studies are prolonged, when the prospect of having to go deeper into debt may cause some students to drop out.

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This research note applied a novel methodological approach to study the connections between paid work and educational pathways. The introduction of control variables led us to broaden our analytical perspective, and to take into account additional factors that could affect the tendency to leave a university program prematurely. By highlighting the effects of different characteristics on the exit rate, our approach yielded findings that suggest a number of interesting research avenues. The first would be to distinguish between academic or professional reorientation and dropping out, which we have not done in this analysis. A second would be to examine the situations of students pursuing college educations in terms of the types of programs, which differ from province to province. A third would be to examine returns to school. Lastly, it may be worthwhile to consider the effect of paid work on educational pathways within different disciplinary fields and/or as part of different program types (for example, cooperative programs compared with so-called "traditional" programs).

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