

***Early Career Retention Among Undergraduate Degree Holders in Science and Technology:
A Five-year Follow-up of a National Canadian Sample***

Darlene A. Worth Gavin

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A thesis submitted to the School of Graduate Studies and Research of the University of Ottawa
as partial fulfilment of the requirements for the degree Doctor of Philosophy



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DEDICATION

To my parents, Norma and Harvey Worth

... who were there for me, whenever I needed them:

... who listened, without passing judgment:

... who always did their best to understand:

... who gave me encouragement, compassion, and support: and

... who shared in my challenges and in my dreams.

Thank you for always believing in me and for teaching me to believe in myself.

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ABSTRACT

Both government and private industry are concerned as to why young Canadians, particularly young women, hesitate to choose careers in the growing labour markets of science and technology (S&T). Aggregate data suggest that women not only enter into S&T-related endeavours in disproportionately lower numbers than men, but also *exit* from S&T careers at higher rates than do their male counterparts. This investigation's primary objective was to establish comparative rates of "loss" (non-retention) of highly trained young women and young men from the fields of S&T in Canada. Its secondary objective was to conduct a preliminary investigation into some potential social and psychological correlates of retention (and non-retention) in S&T careers. A national sample ($N=3158$) of Natural Science, Engineering, Life Science/Health Professions, and Mathematics/Computer Science (NELM) bachelor's degree holders participated. Statistics Canada surveyed 1212 women and 1946 men in NELM fields from the university graduating classes of 1986, two- and five-years after graduation (i.e., in 1988 and 1991). A set of four complementary hypotheses were tested in order to investigate the fundamental postulation that early career retention among undergraduate degree holders in S&T would be proportionately *lower* for young women than for young men. Findings at both the two- and five-year follow-ups showed highly similar retention-rates for women and men. Women had only slightly higher non-retention rates than men (~5%) among Natural Science and Mathematics graduates; rates were approximately equal among Engineering and Life Science graduates. In direct and sequential logistic regression analyses conducted to predict the probability of retention (vs. non-retention) in S&T at post-graduation year-5, the main predictor variable of interest--*sex*--consistently failed to reliably predict retention (vs. non-retention) in S&T, even after controlling for the effects of the following antecedent variables: level of mother's and father's education; respondents' age; marital status at 2-years; number of dependent children at 2-years; intrinsic and extrinsic motivation for originally having enrolled in an N, E, L, or M program of study, further education at 2-years; income at 2-years; job satisfaction at 2-years; and salary satisfaction at 2-years. Findings had two main policy implications, first with regard to the relative insignificance of *sex* in the prediction of persistence in S&T, and second with regard to the importance of *further education and training* in predicting this outcome. These are discussed in light of the inter-related issues of lessening the shortage of highly qualified S&T personnel in Canada and of eliminating the underrepresentation of women in Canada's S&T community.

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CHAPTER ONE
INTRODUCTION

Statement of the Problem

This investigation is concerned with the post-graduation career behaviour of Canadian young women and young men who graduated in 1986 with a bachelor's degree in one of the following four broad fields of study: Natural Science (N); Engineering (E); Life Science/Health Professions (L); Mathematics/Computer Science (M)¹. The study is timely, in light of recent federal, provincial, and private-sector initiatives aimed at encouraging young Canadians--particularly young women--to choose careers in scientific and technological domains (Industry, Science and Technology Canada [ISTC], 1991). Clearly, there is a need to monitor the occupational outcomes of these efforts, within a Canadian context. Prior to the present research, however, the actual post-baccalaureate educational pursuits and career outcomes of Canadian women and men graduating with bachelor's degrees in science and technology (S&T) has not been investigated in a longitudinal fashion.

In 1981, the Science Council of Canada (SCC) asked: "Who Turns The Wheel?", when it identified women as the "largest underdeveloped source of personnel" for the growing labour markets of science and technology in Canada (SCC, 1981, p. 2). Since that time, several research efforts have investigated the question of why, from the beginning, so few women are interested in, or seek to pursue, careers in S&T.

A number of stages of education must necessarily precede an individual's participation in the professional S&T realm. Such training is unquestionably cumulative in nature: decisions to forego optional secondary school courses in mathematics, chemistry, physics, and/or biology may mean that students fail to have the prerequisites for enrolment in mathematics- and science-based disciplines at the college or university level.

Research has shown that, compared with their male counterparts, young women enter into

¹A summary of the university programs of study comprising the N, E, L, and M, or NELM academic areas is presented in Appendix A.

S&T-related studies at disproportionately lower rates, at both the high school and university level (Scott, 1981; Statistics Canada, 1994). Similarly, research has consistently revealed women's rate of attrition from S&T-related studies to be greater than that of men, at several stages of preparation for a scientific career. This has been found to be the case for young women during secondary school (Matyas, 1985; Scott, 1981), undergraduate studies, both before and after declaring an science-related major (Seymour 1992a; Ware, Steckler, & Leserman, 1985), and even in the senior year of their pursuit of a S&T-related university degree (Nevitte, Gibbins, & Coddling, 1988).

Thus, at each stop along the academic "pathway" to a scientific/technological career, the tendency has been for women to "enter the path" in disproportionately fewer numbers than men and also "leave the path" in disproportionately greater numbers than men. "Pathways for women in the sciences" (Rayman & Brett, 1993), "Girls into math can go" (Burton, 1986), and the "National Research Council of Canada's training program for women in science and engineering" (National Research Council of Canada [NRCC], 1992) are just a small sampling of efforts aimed at rectifying the situation, that is, at bolstering women's recruitment *and* retention in the various phases of academic science training.

But what happens at the end of the academic pathway, when the necessary science-related training has been completed? Actually, among Canadian students earning a bachelor's degree in a NELM academic area, the proportion going on to become active members of Canada's scientific/technological community was, before the present research, essentially unknown.

The interaction between the education system and the labour market is complex. While some educational programs are directly linked to particular occupations, graduates of other fields of study are distributed across a wide range of occupations (Clark, Laing, & Rechnitzer, 1986). It is known that among 1986 bachelor's-degree recipients in all fields study, 17% reported holding jobs that were unrelated to their education, 2 years after graduation (McDowell, 1991).

Concerning "class of '86" graduates in S&T fields of study specifically, both engineering/applied science and mathematics/physical science graduates fared somewhat better (than the 17% overall-average) in obtaining education-related employment, with only 8% and 13%, respectively, reporting that they held jobs 2 years after graduation that were unrelated to

their program of study (McDowell, 1991). Similarly, graduates in the health professions fared better than the 17% overall-average, with only 6% reporting that they held 2 years after graduation that were unrelated to their program of study. In the case of "class of '86" agriculture/biological science graduates, however, the percentage was less favourable than average, with 25% reporting that they held jobs 2 years after graduation that were unrelated to their education (McDowell, 1991). Four years earlier, the figures for the graduating class of 1982 were practically identical—the only difference being that a smaller proportion of agriculture/biological science graduates (22%) reported holding jobs 2 years after graduation (i.e., in 1984) that were unrelated to their education (Clark et al., 1986).

Even though the above figures are known, a great many questions remain to be answered—even at the descriptive level—before a clear picture of the post-baccalaureate educational and occupational behaviour of these young men and young women will be complete. For example, what about those graduates who go on to higher education? What proportion of these graduates pursue further S&T-related studies and what proportion switch to educational pursuits in other, unrelated fields? With regard to potential sex differences, how do women graduates of S&T-related programs fare in obtaining employment that is related to their education in comparison with their male counterparts? Also, how do the outcomes compare among men and women graduating in specific subdisciplines of S&T?

The present investigation addressed all of these descriptive issues. A primary objective was to document the phenomenon of early-career retention in Canada's scientific/technological community by establishing comparative rates of persistence of highly trained young women and young men in scientific and technological sectors of employment (or post-baccalaureate study). A secondary objective was to conduct a preliminary investigation into some of the potential social and psychological correlates² of retention (and non-retention) in S&T-related pursuits.

As such, answers to the following questions were sought:

²These data were collected by Statistics Canada largely for other purposes; thus, the present preliminary investigation into "potential correlates" of retention (and non-retention) was necessarily limited to those that were available in the data.

1. What is the actual rate of retention (vs. non-retention) in NELM-related careers among Canadian women NELM bachelor's degree graduates, compared with men?
2. What is the influence of selected social and psychological correlates of retention (vs. non-retention) among women NELM graduates, compared with men?
Specifically: parents' levels of education; the respondents' own intrinsic and extrinsic motivation for originally having enrolled in a N, E, L, or M program of study; age; marital status; number of dependent children; further education; income; salary satisfaction; and, job satisfaction.

This longitudinal investigation is based on a national sample ($N = 3158$) of Natural Science, Engineering, Life Science/Health Professions, and Mathematics/Computer Science bachelor's degree holders. Statistics Canada surveyed 1,212 women and 1,946 men in NELM fields from the university graduating classes of 1986, two and five-years after graduation (i.e., in 1988 and 1991). All Canadian universities were represented.

The main hypothesis in this investigation was derived by extrapolation from the trend (noted above) toward higher attrition rates for women at the various stages of preparation for a scientific/technological career. It was hypothesized that, during the 5-year period subsequent to graduation, a lower proportion of women than men would be found to have pursued S&T-related careers (or further S&T-related studies). Additionally, it was hypothesized that among those graduates who were *not* engaged in S&T-related pursuits (i.e., further study or careers) at the 2-year post-graduation follow-up, a lower proportion of women than men graduates would be found to have *returned* to S&T-related pursuits at the 5-year post-graduation follow-up.

Stated another way, it was predicted that, in Canada, there is a substantial degree of "loss" of expertise from the S&T career sector within the 5 years following the receipt of an S&T-related bachelor's degree. Further, such loss (resulting from non-retention in S&T-related pursuits) was predicted to occur to a greater degree among women graduates--the specific target population at which Canadian initiatives to promote scientific and technological careers have been aimed.

In the evaluation of the study hypotheses, women and men bachelor's degree holders who had entered an S&T-related career (or undertaken further S&T-related studies), 2 and 5 years after graduating at the bachelor's level, were compared with those who had not done so. Given the dichotomy of retention versus non-retention in S&T-related pursuits as the outcome variable of interest, logistic regression analyses were conducted to assess the "gross" effect of sex in predicting retention status. These were followed-up by logistic regression analyses to assess the "net" effect of sex, that is, net of the influence of a number of control variables of interest.

As noted above, this project is quite timely, in light of recent federal, provincial, and private-sector initiatives aimed at encouraging young Canadians—particularly young women—to choose careers in scientific and technologically-oriented fields (ISTC, 1991). To place the present research more sharply into context, it needs to be emphasized that, to date, most of the pertinent North American research has tried to understand why relatively few women study science-related subjects or enroll in science-related academic programs, just as most concrete efforts to rectify the situation have been directed toward bolstering women's study of science and mathematics during the *early* phases of schooling. The present research had a different, albeit complementary focus—one that has been neglected up until now. It sought to study, in a systematic, longitudinal fashion, the retention (or lack thereof) of young women and young men who already have a bachelor's degree in an S&T domain, during the first 5 years after their university graduation.

The literature base for this investigation is large and rather fragmented. It spans theoretical and empirical research in a diverse number of areas, from sex differences and sex-role socialization, to higher education and achievement motivation, to the vocational psychology of women, self-efficacy expectations, employment equity, and job satisfaction.

Essentially, the literature bearing on this investigation is grounded in several *types* of prior research. These include: work in which current and future national shortfalls of highly qualified S&T personnel are highlighted; research advocating the development of the resource of women for participation in S&T; a large body of work aimed at documenting, explaining, and accounting for the comparatively low numbers of women found in S&T domains; and, a limited number of studies that have investigated aspects of women's decisions to leave S&T domains and

have attempted to suggest reasons for these decisions. Finally, there is also a large literature that compares and contrasts women engaged in nontraditional careers with two groups of individuals: men engaged in the *same* careers, and, women engaged in *traditionally female-dominated* careers.

In the remainder of this chapter, an attempt is made to synthesize previous theory and research that is pertinent to the specific issues impinging upon the present investigation. The remainder of this chapter, which is comprised of five main sections, is organized as follows:

First, the "crisis" in Canada's S&T industries is highlighted and work advocating the development of the resource of women for participation in S&T is presented. Detailed in this section are three compelling reasons for encouraging women to pursue studies that will prepare them for careers within the domains of S&T.

Next, a Canadian perspective on women's representation in S&T-related education and occupations is provided. Figures relating to women's and men's post-secondary enrolment and undergraduate degree attainment are summarized. Concluding this section is a review of research pertaining to Canadian women's representation in "male-dominated professions" and in S&T career domains.

In the third section, research bearing on the inter-related issues of women's *recruitment* and *retention* in S&T is isolated and reviewed. Although it is acknowledged that any attempt to divide this literature into separate segments dealing with entrance/recruitment versus exit/retention issues is somewhat artificial, the distinction is made, nevertheless, for the purpose of organizing the section.

Regarding recruitment, the large body of research aimed at explaining and accounting for the comparatively lower numbers of women entering into S&T domains is summarized. Reviewed are investigations relating to the following four factors that have been posited to influence women's recruitment into S&T-related pursuits: sex-role socialization and stereotyping; educational and extracurricular influences; self-efficacy expectations; and, biological arguments. This segment concludes with a summary of Eccles' (1987) model of achievement-related decisions, emphasizing the need to study women's educational and occupational choices from the woman's perspective.

Regarding retention, research relating to women's exit from S&T domains (i.e., attrition) is discussed. Presented first are investigations of women's decisions to forego/discontinue S&T-related educational pursuits. Next, the issues of discrimination and sex segregation in the workplace are examined. This segment concludes with a review of Jacob's (1989) explanation of the relationship between sex segregation in the workplace and women's career development, that is, the "revolving door" metaphor.

The fourth section presents findings from two types of "comparison" research. Reviewed are studies comparing/contrasting women in nontraditional careers with two target groups: their male colleagues in the *same* careers, and, women in *traditionally female-dominated* careers. In this literature, a large number of characteristics distinguishing women in pursuit of nontraditional careers have been identified; the research reviewed herein is confined to that which is germane to the present investigation. This summary is organized into the following four divisions: sex-role socialization/orientation factors; background and motivational variables; temporal marriage and childbearing patterns; and, the occupational variable of job satisfaction.

Finally--in a Canadian study reporting significant sex differences in the career *plans* of senior-science students (Nevitte et al., 1988)--the suggestion is noted that, in future investigations, it would be worthwhile to target individuals with advanced S&T-related training for study. The Nevitte et al. (1988) findings are presented as the impetus for the present longitudinal investigation into the post-baccalaureate career behaviour of Canadian NELM bachelor's degree holders. A suitable "first question" leading from the previous research is posed for study in the present investigation.

The Canadian Crisis: A Shortage of Highly Qualified Personnel

During the last decade it has become apparent that there is definitely a crisis in Canada within the industries of science and technology with regard to the limited supply of qualified personnel (ISTC, 1990; National Advisory Board on Science and Technology [NABST], 1988a, 1988b; Symons & Page, 1984). The shortage of highly qualified personnel "is occasioned not only by the decline in doctoral production, but also by the increasing need for people with such knowledge and skills" (Symons & Page, 1984, p. 172). Of particular concern is the supply of

potential scientists and engineers (ISTC, 1990; McKay, 1992).

Projections of supply and demand for highly-trained scientific and technological personnel have been subject to criticism on the grounds that a number of influential factors may well defy prediction. Nevertheless, the forecasts generated from a number of projection models have demonstrated striking consistency. The consensus across Canadian studies (discussed later) points to the conclusion that the majority of high-technology and research and development (R&D) firms presently have, or will experience, significant difficulties in hiring and retaining highly-qualified personnel (Warda, 1991; ISTC, 1990).

In a 1989 survey of 84 representative Canadian biotechnology companies, a majority projected that it would be a significant challenge over the next five years to find highly qualified personnel with the education and experience to meet their needs (ISTC, 1989). Similarly, in 1989, the Canadian Labour Market and Productivity Centre (CLMPC) surveyed 822 high-tech companies, 55% of whom reported experiencing current difficulties in recruiting and retaining professional scientific and technical staff. In the same report, employment demand for professional, scientific, and technical staff was projected to increase at a rate 5.3% each year from 1989 to 1991 (CLMPC, 1990). In the Economic Council of Canada's (ECC) 1987 projection of employment levels to 1995, occupations in the physical sciences were projected to increase by 19%, engineering by 24%, and mathematics, statistics, and systems analysis by 210% (Galbraith, 1987).

In the Conference Board of Canada's "R&D Outlook 1992", over 30% of responding companies reported difficulties in finding highly qualified R&D personnel; close to half (43%) projected labour shortages in the next five years (Warda, 1989). As well, in an Ernst and Young survey of 818 advanced-technology companies in Canada (cited in ISTC, 1990), 55% of respondents reported experiencing some or significant difficulty in recruiting and retaining highly qualified professional scientific/technical personnel in 1989. Finally, in March of 1992, the Canadian Engineering Human Resources Board (CEHRB) forecast that, by the year 2000, the demand for engineers would be 12% in excess of supply in Canada, leading to a shortfall of at least 15,000 engineering personnel (CEHRB, 1992).

The consistency of these findings supports the Economic Council of Canada's call for

Canada to produce more people with highly developed scientific and technological skills (ECC, 1991). With the country's future economic prosperity dependent upon its scientific progress and adaptability in the fields of science and technology (Social Science and Humanities Research Council [SSHRC], 1991), Canada will require an extensive pool of highly educated scientists and inventors in order to remain competitive within the global marketplace (NABST, 1988a). Clearly, the supply of such highly qualified personnel in this country has become limited and the situation is not likely to improve in the near future (ISTC, 1990; SSHRC, 1991).

Alleviating the Crisis: Developing the Resource of Women for Participation in S&T

For more than a decade, the Canadian government has asserted that one way to alleviate the crisis would be to develop the resource of women for participation in the industries of science and technology. Women have been identified as the "largest underdeveloped source of personnel" for the growing labour market of S&T (SCC, 1981, p. 2).

In 1982, the Science and Education Committee of the Science Council of Canada expressed concern about the scientific and economic health of the country in an age of advancing technology. It recognized that, in general, few girls study physics or mathematics in Canadian schools. With a basic understanding of these subjects being essential for the development of competence in all areas of science, including biology, girls who opt out of physics and mathematics before the age of fifteen deprive themselves of many career choices, including skilled scientific and technological occupations (SCC, 1982).

There are at least three compelling reasons for encouraging Canadian women to pursue studies that will prepare them for careers within the domains of S&T. The first of these concerns the scientific and economic health of the country as a whole. The second is the issue of equality of women in Canada. The third addresses the relations between the employment of Canadian women and their career and life development. Literature pertaining to each of these rationales is reviewed below.

Concerning the scientific and economic health of the country as a whole—as discussed above—the current demand for highly trained scientists and technologists in Canada is seriously outstripping the supply (SSHRC, 1991). This situation is expected to worsen in coming years.

In a report on the participation of women in science and technology (presented to the Prime Minister of Canada by NABST in 1988), it was noted that by the year 2000, one out of every two workers in the Canadian labour force will be a woman. In order to prevent labour shortages in the Canadian economy and to ensure that the science and technology sector has the most qualified citizens at its disposal, the scientific community will be required to draw upon the female component in the labour force to avoid a shortage in human resources (NABST, 1988a, p. 24).

Second is the issue of the equality of women in Canada. As noted by the Science Council of Canada (1982), the products of science and technology invade and shape the lives of all Canadians. Every innovation, from nuclear energy and computer technology to processed foods and microwave ovens, has massive social consequences. The subject matter of science provides many opportunities for the expression of cultural biases regarding women (Denmark, 1980; Leclerc, 1992; Savan, 1988). It has been argued that much of science is a socially-produced body of knowledge that reflects the dominant categories of cultural experience (i.e., white, male, middle/upper class, heterosexual) in its structure, theories, concepts, values, ideologies, and practices (Bleier, 1986). Without women's equal representation in decision-making processes, research priorities may ignore issues which are pertinent only to women (e.g., menopause) (Savan, 1988).

Pfafflin (1984) points out that those individuals who concentrate their research efforts on areas of importance to women (e.g., breast cancer) have reported funding to be more difficult to obtain and tenure more difficult to receive. At the present time, Canadian research is conducted, for the most part, with funds from granting agencies; the submission of research proposals for peer review is, therefore, a common practice (Leclerc, 1992). "The power vested in grant-giving committees clearly enables them to favour friends, mentors, and potential benefactors and to discriminate against competitors or advocates of theories that the committee members do not support" (Savan, 1988, p. 134). It has been suggested that, as long as the vast majority of scientific researchers remain male, peer review will continue to be a predominantly male undertaking in Canada (Savan, 1988).

Historically, advances in technology have not been consistently positive in their effects

on the lives of women. Pfafflin (1984) uses the example of genetic engineering and the prenatal treatment of infants through fetal surgery as one area of rapid technological innovation which has raised a number of ethical issues impacting primarily on women. Fetal surgery is a procedure that raises serious policy issues affecting women, given that the evolving procedures are becoming increasingly invasive, usually requiring both mother and fetus to undergo surgery. In some instances, courts have already required women to undergo such surgery, against their will.

In Canada, at present, few women hold positions of responsibility in science in universities, government, or industry. As a result, women seldom participate in decisions which direct the evolution of science and technology; many crucial decisions regarding science and technology--which, like those concerning fetal surgery, will profoundly affect women--are made by scientific/technological experts who are exclusively men. An under-representation of women in today's science classes can only lead to perpetuate the current absence of women from the professional science realm, tomorrow. Moreover, if Canadian women are to help mould the society in which they live, they must be well represented in the professional scientific and technological community. The current absence of women from science education is, therefore, of central importance to the status of women in Canada in the future (Symons & Page, 1984).

A third reason for encouraging young women to participate in S&T addresses the relations between the employment of Canadian women and their career and life development. Statistics suggest that Canadian women need to make a significant amount of progress before they will achieve employment equity, in most fields (Marshall, 1989). Despite their high educational attainment, about one in ten women who graduated in 1982 with either a bachelor's or first professional degree, across all fields of study, was still employed in a clerically-related position 2 years after the completion of her studies (Picot, Wannell, & Lynd, 1987). Furthermore, the situation does not appear to be improving, since this figure is equal to that reported in an earlier survey of the university graduating class of 1976 (Picot et al., 1987).

Recent technological advances have had a devastating impact in many areas of traditional female employment. With increasing automation, female workers are being rapidly displaced by machines. Occupations in banks, telephone exchanges, as well as clerical and secretarial fields are becoming increasingly scarce, leaving the women who occupy them to face the increasing

threat of unemployment, displacement, or degradation of the quality of work life (SCC, 1982). In the future, women without scientific or technical skills may face a higher risk of unemployment or unskilled jobs (SCC, 1982).

Moreover, the present situation (i.e., women's continued underrepresentation in S&T educational domains) is sowing the seeds for continued imbalances in the monetary rewards and personal accomplishments of women in the economy in the years ahead (NABST, 1988a, p.22). Although a university degree usually ensures certain employment advantages, these vary according to the field in which that degree was earned. As discussed above, employment opportunities in Canada within the fields of S&T are growing.

In "Jobs of the Future", a 1993 publication of Employment and Immigration Canada (EIC), an occupational outlook to the year 1995 is provided for 64 occupations. Among these, a total of 25 fall within NELM-related domains. Not surprisingly, the future prospects for the N, E, and M occupations are very encouraging, with employment in 14 of the 15 listed expected to grow at a rate that is above or well-above the average growth rate across all other occupations. Among L occupations, the outlook varies, with average or above-growth rates being anticipated in 10 of the 13 occupations listed (EIC, 1993).

Finally, graduates of scientific or technical programs generally fare better in the labour market than do those who have graduated from a cultural field of study (Wheeler, 1989). Data from the 1986 census show that mathematics/physical science graduates are not only more likely to be employed, but also have higher earnings than humanities graduates (Wheeler, 1989). Consequently, women in Canada should be offered encouragement at a level that is equal to the encouragement provided to their male counterparts to take advantage of the readily available employment and earnings opportunities within the expanding domains of S&T.

Women's Educational and Occupational Representation: A Canadian Perspective

To this point, much has been said about women's underrepresentation in S&T. To provide the reader with a clear perspective of the extent of the problem in Canada, the following review of patterns in university enrolments and bachelor's degrees granted--over the last two decades--to Canadian women and men in S&T-related fields of study (i.e., engineering/applied

science, mathematics/physical science, and, agriculture/biological science³), is presented. For comparison purposes, figures for the health professions are also presented. A discussion concerning Canadian women's representation in male-dominated "professions" and in S&T career domains follows.

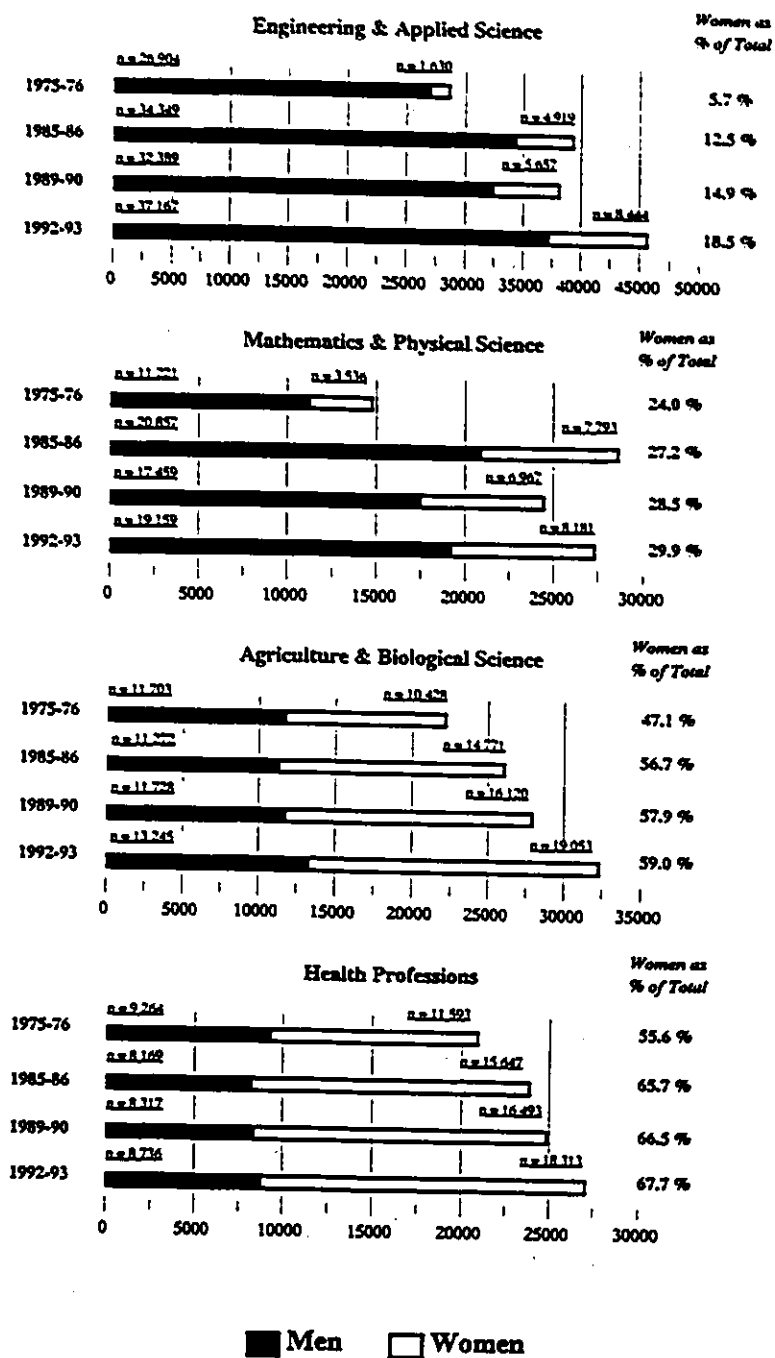
Post-secondary enrolments. Over the last forty years, the number of full-time post-secondary students has increased ninefold; since the early 1980's college enrolments have levelled off, whereas university enrolments have continued to grow (Secretary of State, 1991). Over the last decade, declining demographics among the 18- to 24-year-old segment of the population suggested that growth in all post-secondary enrolments would decline. However, such has not been the case for university enrolments. Despite a decline in the relative size of the 18- to 24-year-old cohort in the population, university enrolments have (until recently) continued to increase steadily (Secretary of State, 1991; Statistics Canada, 1995).

Women have made significant progress in their rate of participation in higher education, particularly over the last two decades. During this time period, the proportion of women among full-time university students increased at all levels, with women currently representing over half of the full-time enrolments at the undergraduate university level (Normand, 1995; Statistics Canada, 1995). Although women's progress, overall, is worthy of note, their representation in certain fields remains conspicuously low. Specifically, while the number of women pursuing degrees in nontraditional fields of study has increased somewhat, women continue to express a strong preference for traditionally-female-dominated areas of study.

Figure 1 summarizes women's and men's full-time undergraduate university enrolment within the fields of engineering/applied science, mathematics/physical science, agricultural/biological science, and the health professions for the academic years 1975-76, 1985-86, 1989-90, and 1992-93 (ISTC, 1991; Statistics Canada, 1994). As this figure shows, the engineering/applied science fields remain the least populated among women undergraduate

³It is important to point out that this 3-part categorization of S&T-related fields--that is--the grouping together of engineering with applied science; mathematics with physical science; and, agriculture with biological science is the categorization appearing throughout documentation published by the Canadian federal government. This categorization differs somewhat from the NELM designation employed in the present research. The rationale for the functionality of the NELM categorization is discussed elsewhere (see Chapter 3: Methodology).

Figure 1. Full-time university undergraduate enrolment by field of study and by sex, 1975-76, 1985-86, 1989-90, and 1992-93 (Industry, Science and Technology Canada, 1991; Statistics Canada, 1995)



students. Specifically, out of all the students enrolled in engineering/applied science in 1992-93, less than 19% were women. Nevertheless, the number of female students has seen consistent increases. Whereas, in 1975-76, less than 6% of the engineering/applied science students studying at the bachelor's level were women, by 1989-90, close to 15% of these students were women. Thus, while it is true that more women are pursuing these degrees now than ever before, for the most part, they still do not represent a very substantial proportion of the students pursuing engineering/applied science studies.

Overall, women's participation in mathematics/physical science is somewhat higher than their participation in the engineering/applied science fields. For the most part, the proportion of women undergraduate students studying in mathematics/physical science has held fairly constant. Between 1985-86 and 1992-93, women's proportional representation in these fields rose slightly from 27.2% to 29.9%; this represents an increase of only 6% in the proportion of women studying mathematics/physical science in the last two decades, from a base of 24.0% in 1975-76.

Unlike the above fields, the proportion of women and men studying in the fields of agriculture/biological science was almost equal, two decades ago. By 1986, women constituted more than half of the total number of students enrolled in these fields. Moreover, as Figure 1 shows, during the 18-year period from 1975-76 to 1992-93, the number of female undergraduate students in agriculture/biological science increased steadily from 10,428 to 19,053. This constitutes roughly a 12% increase in women's representation in the population of undergraduate students in the field, from 47% in 1975-76 to close to 60% in 1992-93. The number of male undergraduate students in agriculture/biological sciences fluctuated over the same period. In 1989-90, there were 11,728 male students at the bachelor's level in the field, only 25 more than in 1975-76 (see Figure 1).

Women's proportional enrolment in the health professions during the last two decades stands in sharp contrast to the above figures for S&T fields, particularly as compared with the engineering/applied science and mathematics/physical science fields. As shown in Figure 1, women undergraduate students studying in the health professions were in the majority in 1975-76, and have continued to make gains in their proportional representation since that time.

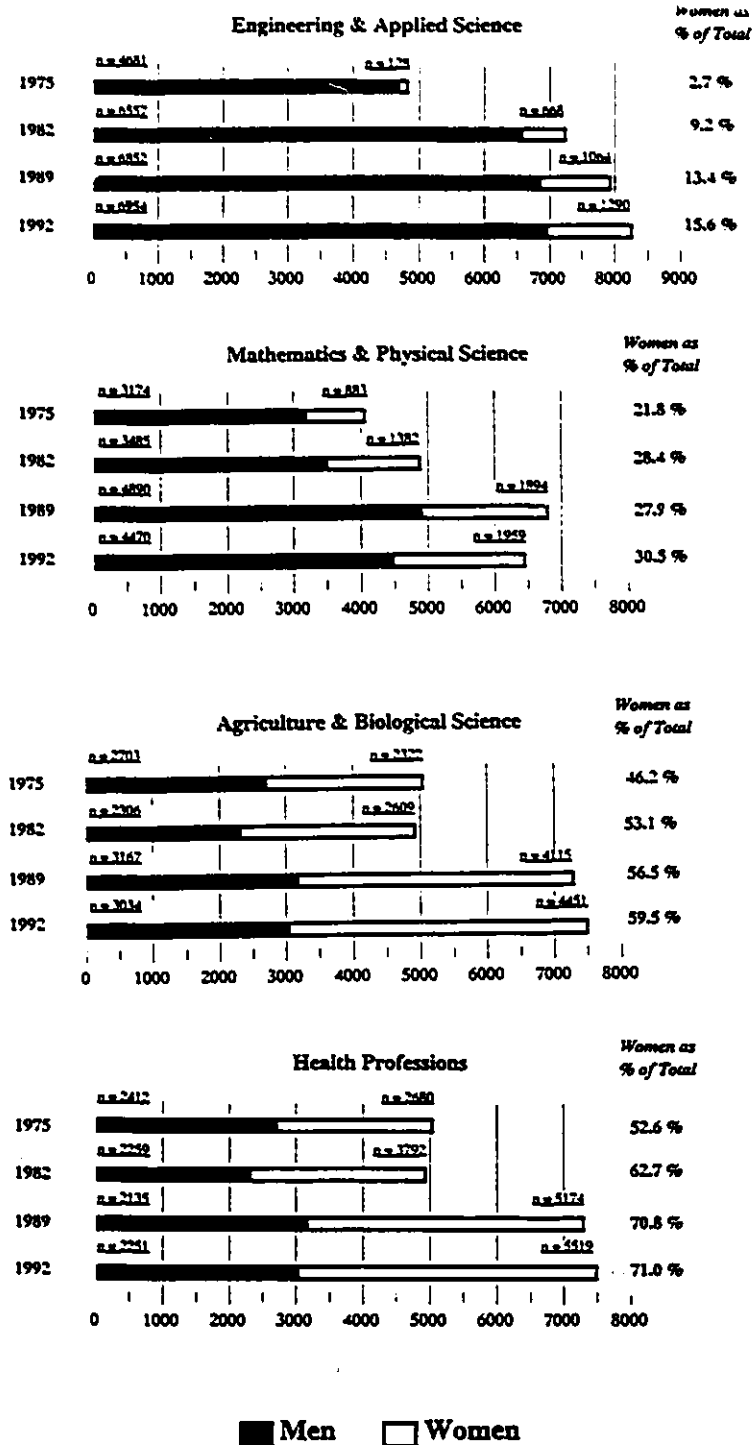
In 1992-93, there were more than 19,000 women studying in the health professions; this is a greater number of women students than in any of the previously mentioned fields of study. Specifically, in 1992-93 women represented close to 68% of the students enrolled in the health professions, an increase of approximately 12% during the previous 18-years.

Undergraduate Degree Attainment. Across all university disciplines there was a total of 120,738 bachelor's and first professional degrees granted in 1992; this represents an increase of almost 30% over the number awarded ten years earlier (i.e., in 1982, when 87,106 bachelor's and first professional degrees were granted). Regarding the proportion of bachelor's and first professional degrees earned by women--considering all fields of study together--there has been a noticeable increase over the last decade, from 51% earned by women in 1982 to 57% earned by women in 1992 (Secretary of State, 1991; Statistics Canada, 1994). This trend, however, has not held particularly well within the S&T-related domains specifically. In fact, in 1992, more undergraduate degrees were granted to women than to men in all major fields of study *except* the S&T fields of engineering/applied science; mathematics/physical science; and, agriculture/biological science (Statistics Canada, 1994).

Figure 2 summarizes the number of bachelor's and first professional degrees awarded to women and men within the fields of engineering/applied science; mathematics/physical science; agricultural/biological science; and the health professions for the academic years 1975, 1982, 1989, and 1992 (ISTC, 1991; Statistics Canada, 1994). As Figure 2 shows, the progress made in women's representation has not been equal across the S&T domains.

Considering bachelor's and first professional degree attainment in the fields of engineering/applied science specifically, women are seen to have earned only 128 degrees in 1975. This represents less than 3% of the total number of engineering/applied science degrees awarded that year. Since that time, the number of women receiving engineering/applied science degrees each year has increased tenfold, to 1,290 in 1992. However, because the increase in the number of men earning such a degree during this same period was close to twice that of women, women still made up less than 16% of all bachelor's degree recipients in these fields in 1992 (ISTC, 1991). Thus, although in 1992 more women received a bachelor's or first professional degree in the fields of engineering/applied science, they still did not represent a very substantial

Figure 2. Bachelor's and first professional degrees granted by field of study and by sex, 1975, 1982, 1989, and 1992 (Industry, Science and Technology Canada, 1991; Statistics Canada, 1995)



proportion of the students who earned such degrees.

As Figure 2 shows, overall, women's proportional representation among bachelor's and first professional degree earners was somewhat higher in the mathematics/physical science fields than in the engineering/applied science fields. Trends in degree attainment among women and men in the fields of mathematics/physical science, however, have shown some fluctuation during the last two decades. Moreover, although the proportional representation of women among mathematics/applied science degree recipients increased by close to 9% between 1975 and 1992, most of this increase occurred early on. Specifically, between 1975 and 1982, women's proportional representation among degree earners in mathematics/physical science increased by 7%; whereas, between 1982 and 1989, a slight decrease in women's proportional representation was noted, to just under 28%. Finally, between 1989 and 1992, the proportional representation of women among mathematics/physical science degree earners was on the rise again, increasing by just over 2% to close to 31% (ISTC, 1991; Statistics Canada, 1994). Albeit, this final increase in the proportional representation of women was partially due to a drop by more than 400 in the number of men receiving bachelor's and first professional degrees in mathematics/physical science, from 4890 in 1989 to 4470 in 1992. As Figure 2 shows, during the same period, the corresponding number of women increased by only 65.

As was the case for undergraduate university enrolment in the fields of agriculture/biological science (see Figure 1), trends in bachelor's and first professional degree attainment demonstrated a much more gender-equitable pattern two decades ago. As shown in Figure 2, women earned just over 53% of the degrees awarded in these fields in 1982-83, up from just over 46% in 1975 (ISTC, 1991; Statistics Canada, 1991a). By 1989, however, the proportional representation of women among agriculture/biological science degree earners had increased to just under 57%. Further, by 1992, women's proportional representation had increased to almost 60%, for a total increase over the last two-decades of more than 13%. This increase in the proportional representation of women earning degrees in the fields of agriculture/biological science can be at least partially accounted for by the rapidly increasing number of women earning such a degree, as opposed to the relatively stable number of men. Specifically, whereas the number of women earning such a degree almost doubled between 1975

and 1992 (from 2322 to 4451), the corresponding number of men increased by only about 300 (from 2703 to 3034). Further, between 1989 and 1992, the number of women rose by more than 330, whereas the number of men fell by more than 133.

Within the health professions, the proportion of bachelor's and first professional degrees earned by women and men stands in sharp contrast to the above figures for S&T fields, particularly as compared with the engineering/applied science and mathematics/physical science fields. Over the course of the last two decades, as Figure 2 shows, women have made up the majority of degree earners in the health professions, and their majority representation has been on the rise. In 1975, women's proportional representation of degree earners was close to 53%; by 1992, this majority had increased substantially, to 71% of degree earners in the health professions. In contrast, both the absolute number of men and the proportional representation of men earning degrees in the health professions decreased over the last two decades. Specifically, between 1975 and 1992, the number of men fell from 2412 to 2251; the corresponding proportional representation of men earning bachelor's or first professional degrees in the health professions fell from 47% to 29%, during the same period.

Male-dominated "professions". With the dramatic increases in women's participation in the labour force over the last two decades (Statistics Canada, 1994), concern has surfaced regarding occupational segregation. Clearly, differential participation rates for women and men in education and employment are difficult to ignore. In Canada, in 1991, 71% of all working women were employed in just five occupational groups—teaching, nursing or related health occupations, clerical, sales, and service (Ghulam, 1993). For a further example, one need only look to the United States. There, between 1970 and 1986, approximately 4 million women entered the labour force, with 3.3 million of these having taken jobs as secretaries, nurses, bookkeepers, cashiers, and in other female-dominated, supportive occupations (Hacker, 1986, cited in Eccles, 1987). In both Canada and the US, the majority of the occupational domains cited fall within the classification of so-called "pink collar jobs" (Cava, 1988), often being characterized by poor pay and low status.

In an effort to establish a more even distribution of women across all occupational groups, a number of wide-scale initiatives have been attempted over the last decade to bolster

female students' awareness of and participation in traditionally male-dominated careers (e.g. Herring, Lafontaine, & Saindon, 1986; ISTC, 1991; Mangiacasale, 1991). On the surface, it would appear that these measures have had some effect. In Canada, the changes that have been noted in women's educational pursuits have begun to be reflected in their labour force participation (Statistics Canada, 1991b; 1994). Progress within S&T sectors of employment, however, has not kept up to that made by women in other traditionally male-dominated domains.

Women's participation in male-dominated "professions" is of particular research interest both because these occupations are among the highest paid in Canada and because they carry the highest levels of social status (Marshall, 1987). Compared with women in other occupations, those in male-dominated professions have been found to have the most education, the highest employment rate, and the greatest income (Marshall, 1989). Women employed full-time in male-dominated professions, for example, earned an average of \$24,100 in 1980, compared with \$21,000 for women employed in other professions and \$13,400 earned by non-professional women. By 1986, the average employment income of women working full-time in a male-dominated profession was almost \$35,000, with women in other professions earning \$30,000 on average, and the figure for non-professional women being under \$20,000.

As classified by Marshall (1987, 1989), "professional occupations" include those in which 45% of the individuals employed in that occupation in 1981 held at least a bachelor's level degree. A profession is further classified as "male-dominated" if 65% or more of the individuals employed in it in 1971 were men. Based on these criteria, 46 occupational groups meet the requirement for being professional, and 34 of these are classified as male-dominated (Marshall, 1987; 1989).

In Table 1 a summary is presented of women's employment for the years 1971, 1981, and 1986 in the 34 male-dominated professions. As shown in this table, on the whole, women's overall participation has increased within the occupational groups that were classified in 1971 to

Table 1

Labour Force Participation of Canadian Women in Male-Dominated Professions, 1971, 1981, and 1986*

year	women as percent of total employment	total number of men	total number of women	grand total	women as percent of total growth	
1971	11	246 045	30 410	276 455		
1981	19	355 290	83 340	438 630	1971-1981	55.0
1986	23	395 560	118 155	513 715	1981-1986	52.1

Note. Figures adapted from Marshall (1987: 1989).

*As defined by Marshall, 1989 (p. 13), professional occupations (i.e., "professions") are those in which 45% or more of people employed in that occupation in 1981 had at least a bachelor's degree. Overall, 46 occupational groups were classified as professional. A profession was further considered to be "male-dominated" if 65% or more of the people employed in it in 1971 were men. Based on these criteria, the following 34 occupations were classified as "male-dominated professions" by Marshall (1987: 1989): (1) management occupations in natural sciences and engineering; (2) management occupations in social sciences and related fields; (3) administrators in teaching and related fields; (4) chemists; (5) geologists; (6) physicists; (7) meteorologists; (8) agriculturalists and related scientists; (9) biologists and related scientists; (10) architects; (11) chemical engineers; (12) civil engineers; (13) electrical engineers; (14) mechanical engineers; (15) metallurgical engineers; (16) mining engineers; (17) petroleum engineers; (18) nuclear engineers; (19) other architects and engineers; (20) mathematicians, statisticians, and actuaries; (21) economists; (22) sociologists, anthropologists, and related social scientists; (23) judges and magistrates; (24) lawyers and notaries; (25) ministers of religion; (26) university teachers; (27) other university teaching and related occupations; (28) community college and vocational school teachers; (29) physicians and surgeons; (30) dentists; (31) veterinarians; (32) osteopaths and chiropractors; (33) pharmacists; (34) optometrists.

be male-dominated⁴. Women have progressed from a representation of 11% of those employed in such professions in 1971 to 19% in 1981, to 23% in 1986 (Marshall, 1987, 1989). During the period of 1971-1981, the proportional representation of women increased in all but 1 of the 34 male-dominated professions: specifically, a 0.6% decrease in the occupation "physicist" was noted (Marshall, 1987). Between 1981 and 1986, women's proportional representation continued to show increases in all of the male-dominated professions, with the exception of "other university teaching and related occupations", an occupational group which is made up of non-tenured university professors and lecturers, teaching and research assistants, and other instructors, in which a 0.5% decrease was experienced.

Due to substantial gains, including a 42% increase in the number of women employed in the 34 male-dominated professions in Canada during the 5-year period between 1981 and 1986 alone, several could no longer be classified as "male-dominated" in 1986. In fact, by 1986 women actually outnumbered men among both "pharmacists" and "management occupations in the social sciences and related fields". As well, they made up over 35% (i.e., the cut-off for maintaining "male-dominated" status) of those employed in 6 other professions identified in 1971 as male-dominated, namely: "sociologists", "anthropologists", "community college teachers, other university teaching/related occupations", "veterinarians", "mathematicians, statisticians, and actuaries", and "biologists" (Marshall, 1989). Notably, among these professions which lost their male-dominated status by 1986, only the last two, namely, "biologists" and "mathematicians, statisticians, and actuaries", fall within S&T sectors of employment.

Returning to the original list of 34 professions classified as male-dominated in 1971, a

⁴The following 34 occupations were classified as "male-dominated professions" by Marshall (1987; 1989): (1) management occupations, natural sciences, and engineering; (2) management occupations, social sciences, and related fields; (3) administrators in teaching and related fields; (4) chemists; (5) geologists; (6) physicists; (7) meteorologists; (8) agriculturalists and related scientists; (9) biologists and related scientists; (10) architects; (11) chemical engineers; (12) civil engineers; (13) electrical engineers; (14) mechanical engineers; (15) metallurgical engineers; (16) mining engineers; (17) petroleum engineers; (18) nuclear engineers; (19) other architects and engineers; (20) mathematicians, statisticians, and actuaries; (21) economists; (22) sociologists, anthropologists, and related social scientists; (23) judges and magistrates; (24) lawyers and notaries; (25) ministers of religion; (26) university teachers; (27) other university teaching and related occupations; (28) community college and vocational school teachers; (29) physicians and surgeons; (30) dentists; (31) veterinarians; (32) osteopaths and chiropractors; (33) pharmacists; (34) optometrists.

total of 16 can be identified as falling within S&T sectors of employment. Table 2 presents a summary of women's employment status in these 16 male-dominated professions in S&T⁵. As shown in Table 2, compared with their gains in the occupational domains of biology and mathematics/statistics, women's progress was not nearly as noteworthy in the remaining 14 male-dominated professions in S&T. In fact, even by 1986, 10 of the total 34 professions continued to be heavily male-dominated (with women representing 10% or less of the total employment in the occupational group)--with all 10 of the professions maintaining this "notorious" status in 1986 falling within S&T sectors of employment. Nine of these occupations were engineering-related, the tenth was "physicist". The remaining 4 S&T professions in which women's representation was greater than 10% (but less than 35%) included "chemist", "geologist", "meteorologists", and "agriculturalists" (Marshall, 1989). Women's progress in these 4 male-dominated S&T professions varied, with women representing between 11% and 27% of total employment in the profession by 1986.

S&T career domains. As noted by the National Advisory Board on Science and Technology [NABST] (1988a), recent growth in the number of women in the labour market has been accompanied by an increase in the number of women working in most S&T sectors of employment. Further, this upward trend is expected to become more pronounced in the years to come (NABST, 1988a). Nonetheless, in 1988, the gender disparities in the labour force were so great that the NABST predicted that it would be more than a decade before the gender-gap would be closed (1988a). The NABST stated that, if, "no steps are taken to increase the representation of women in the scientific and technical occupations over the next decade, women will continue to be underrepresented in these fields, and labour shortages will affect several of tomorrow's employment sectors" (NABST, 1988a, p. 3) Considering current employment figures for women in S&T sectors, this prediction certainly appears to have been borne out (Shea, 1990).

On the whole, how many women are now working in S&T sectors of employment?

⁵Among the 34 occupations classified by Marshall (1987: 1989) as "male-dominated", the following 16 fell within S&T employment sectors: (1) management occupations, natural sciences/engineering; (2) physicists; (3) chemical engineers; (4) civil engineers; (5) electrical engineers; (6) mechanical engineers; (7) metallurgical engineers; (8) mining engineers; (9) petroleum engineers; (10) nuclear engineers; (11) chemists; (12) geologists; (13) meteorologists; (14) agriculturalists and related; (15) biologists; (16) mathematicians, statisticians, actuaries.

Table 2

Women Employed in 16 "Male-Dominated Professions" within Scientific/Technological Sectors of Employment, 1971, 1981, and 1986

profession	number of women			percent increase		women as percent of total growth		women as percent of total employment in profession		
	1971	1981	1986	1971 to 1986	1981 to 1986	1971 to 1986	1981 to 1986	1971	1981	1986
<i>still male-dominated in 1986 with less than 10% women</i>										
management occupations, natural sciences/engineering	70	800	1225	1043	53	8	24	2.7	6.6	8.8
physicists	45	65	95	44	46	4	*	5.6	5.0	7.9
chemical engineers	65	340	560	423	65	13	63	1.8	5.9	9.2
civil engineers	235	980	1490	317	52	7	*	1.1	3.0	4.6
electrical engineers	205	1000	1655	389	66	7	14	1.3	3.7	5.2
mechanical engineers	100	380	710	280	87	5	9	0.8	1.9	3.0
metallurgical engineers	15	50	100	233	100	4	*	1.7	2.8	6.1
mining engineers	20	105	155	425	47	6	*	0.9	2.9	4.3
petroleum engineers	15	255	285	1400	27	7	*	1.1	4.9	6.5
nuclear engineers	--	40	70	--	75	7	*	--	4.8	9.5
<i>still male-dominated in 1986 with greater than 10% women</i>										
chemists	895	1975	3080	121	56	51	64	11.4	20.4	27.0
geologists	145	795	1005	448	26	23	36	2.9	10.3	12.1
meteorologists	40	90	120	125	33	27	24	4.9	9.0	10.7
agriculturalists and related	330	1220	2420	270	98	32	38	5.1	13.2	19.5
<i>no longer male-dominated in 1986 -- greater than 35% women</i>										
biologists	830	2330	3000	181	29	36	81	26.1	31.9	36.9
mathematicians, statisticians, and actuaries	1010	2070	2305	105	11	56	54	25.0	34.7	36.0

Note. Figures adapted from Marshall (1987; 1989). Dashes (--) indicate number or proportion too small to be expressed. Asterisks (*) indicate total employment declined between 1981 and 1986.

Despite ambitious federal, provincial, and private-sector initiatives aimed at encouraging women to consider careers in S&T, there remain relatively few Canadian women working within these occupational domains. As reported by Shea (1990), women accounted for only about one in five employees in natural science/engineering/mathematics occupations in 1989. Specifically, in 1989 just 19.2% (88,000) of people in these fields were women, although this was up from 15% (56,000) in 1982 (Shea, 1990). Jagacinski (1987a) reported that although industry has become more willing to hire women engineers, they are not being promoted to the same supervisory levels, nor are they receiving the same career-advancement opportunities as their male counterparts.

As detailed by Wheeler (1989), a comparison of employment outcomes in Canada for bachelor's degree holders from "mathematics/physical science" fields⁶ and from "humanities" fields⁷, with consideration of the variable gender, is enlightening. Table 3 presents summary employment rates for these graduates, by sex and by age, for the year 1986, as compared with employment rates in the total population.

A look at the overall figures presented in Table 3 reveals that, across age-groups in 1986, the proportion of people with bachelor's degrees in mathematics/physical science who were employed was higher than either the corresponding proportion from the total population or the corresponding proportion of bachelor's degree holders from a humanities field (Wheeler, 1989). When the figures are differentiated by sex, the employment patterns among men and women bachelor's degree holders are similar. Specifically, in both disciplines and across age-groups, degree holders who were men had employment rates that were higher than either the rates of their female counterparts or of the men and women total population. Most strikingly, across age-groups in 1986, women holding bachelor's degrees in mathematics/physical science actually fared worse than did all 3 groups of men, namely, those men holding mathematics/physical

⁶As defined by Wheeler (1989), mathematics/physical science includes: "mathematics, actuarial science, applied mathematics, mathematical statistics, chemistry, geology, metallurgy and material science, meteorology, oceanography and marine sciences, physics, and general science" (p. 29).

⁷As defined by Wheeler (1989), humanities includes: "history, English language and literature, French language and literature, philosophy, religious studies, mass media studies, library and records science, classics, and other humanities" (p. 29).

Table 3

Percentage of Mathematics/Physical Science^a and Humanities^b Bachelor's Degree-Holders Employed in Canada in 1986, Compared with the Total Population, by Age and Sex

age and sex	percentage employed		
	mathematics/physical science bachelor's degree holders	humanities bachelor's degree-holders	total population
<i>25-35 years</i>			
men	90.3	87.2	85.8
women	80.4	76.1	65.4
<i>total</i>	<i>87.4</i>	<i>80.6</i>	<i>75.5</i>
<i>35-44 years</i>			
men	94.7	91.6	88.7
women	77.0	75.1	65.9
<i>total</i>	<i>90.2</i>	<i>82.5</i>	<i>77.3</i>
<i>45-54 years</i>			
men	94.8	92.5	85.8
women	73.0	76.3	57.6
<i>total</i>	<i>90.1</i>	<i>84.0</i>	<i>71.7</i>

Note. Figures adapted from Wheeler (1989).

^aAs defined by Wheeler (1989), *mathematics/physical science* includes: "mathematics, actuarial science, applied mathematics, mathematical statistics, chemistry, geology, metallurgy and material science, meteorology, oceanography and marine sciences, physics, and general science" (p. 29).

^bAs defined by Wheeler (1989), *humanities* includes: "history, English language and literature, French language and literature, philosophy, religious studies, mass media studies, library and records science, classics, and other humanities" (p. 29).

science bachelor's degrees, those men holding humanities bachelor's degrees, and those men in the general population.

Only a rough comparison of education and employment outcomes can be extrapolated from aggregate statistics. Nevertheless, in the case of S&T graduates, trends are apparent when women's educational attainment is compared with their subsequent employment outcomes. For example, as reported by Shea (1990), women received 29% of the bachelor's and first professional degrees awarded in mathematics/physical sciences and 12% of those awarded in engineering/applied sciences in 1986. Yet, three years later (i.e., in 1989), women still represented only 19% of the total labour force employed in occupations in natural science/engineering/mathematics domains (Shea, 1990). Despite their increasing enrolments in and graduation from S&T university programs, women's labour force participation has fluctuated little in recent years. During the years 1987, 1988, 1989, and 1993 for example, women represented 19%, 17%, 20%, and 18% respectively, of the total labour force employed in natural science/engineering/mathematics occupations (Labour Canada, 1990; Statistics Canada, 1994).

Even among those women receiving doctoral degrees in S&T fields, achievement of equal education does not appear to result in equal labour force participation. This seems to hold true both in Canada and the United States. In Canada, the academic sector continues to employ a large proportion of the people with a Ph.D. For example, in 1986, more than 40% of doctoral recipients across all university disciplines were employed in academia, at the university level (Burke, 1988). In the same year, however, the proportional representation of women in S&T faculties, specifically, did not compare to the 42% figure for all disciplines. Rather, women remained conspicuously absent from mathematics/physical sciences and engineering/applied sciences faculties at Canadian universities, where they made up only 6% and 2% of the faculty, respectively (Hollands, 1988). In the United States, an investigation into the status of doctoral scientists and engineers revealed that both in academe and industry women graduates were more likely than their male colleagues to be involuntarily unemployed (National Research Council [NRC], 1983). As well, promotion, tenure, and salary patterns were found to favour men, even when factors such as length of experience and prestige of institution awarding the doctorate were held constant (NRC, 1983).

Summary: Despite recent gains, the problem of women's under-representation in S&T educational and occupational domains persists. Further, figures and trends suggest that, even with advanced S&T training, young women may attain less favourable employment outcomes, compared with their male counterparts. Moreover, in the interest of the scientific and economic health Canada as a whole, as well as the equality of women and their career and life development in this country, the problem of women's underrepresentation in S&T must continue to be addressed.

Women's Underrepresentation in S&T: Recruitment and Retention Research

Clearly, there are benefits--both at the individual and societal level--to eliminating women's underrepresentation in domains of S&T. In an attempt to deal with the problem, a large number of research efforts have been directed toward explaining and accounting for the comparatively low numbers of women found in S&T domains. Consequently, this area of empirical and theoretical research represents by far the largest body of literature germane to this study.

Investigations of the factors posited to contribute to women's underrepresentation in S&T can be distinguished as either *entrance/recruitment* or *exit/retention* research, with the former being the larger of the two categories. Although grouping extant empirical and theoretical research according to this distinction is somewhat artificial--given that a number of contributing factors are unquestionably interrelated--the distinction is made for the purpose of organizing the literature review that follows.

Recruitment Research

"The underrepresentation of women in the professional scientific realm is an obvious and inevitable result of the fact that, comparatively speaking, very few girls set out to study science in high school or in university" (Scott, 1981, p. 23). Given the cumulative nature of science education, the aforementioned observation has become commonplace. Research relating to women's recruitment into S&T is reviewed below, organized under the following four headings: sex-role socialization and stereotyping; educational and extracurricular influences; self-efficacy

expectations; and biological arguments. The section concludes with a summary of Eccles' (1987) model of achievement-related decisions, emphasizing the need to study women's educational and occupational choices from the women's perspective.

Sex-role socialization and stereotyping. Sex-role socialization and stereotyping have been identified as primary contributors to the comparatively low number of women entering the scientific community. Women's social and cultural milieus surround them with values, expectations, and cues which encourage them to pursue particular educational choices (Betz & Fitzgerald, 1987). In turn, those educational choices set the pattern for career paths (Coddling, Nevitte, & Gibbins, 1987; Nevitte et al., 1988).

Sex-role stereotyping has been shown to significantly influence children's performance of tasks. In a study by Erb (1981), boys and girls were found to perform equally well on gender-neutral Piagetian tasks. However, when mathematical word problems of equal difficulty but which dealt with typically-male or typically-female situations were presented, both boys and girls performed significantly poorer on gender non-appropriate tasks.

With regard to scientific/technological fields specifically, research has suggested that traditional sex-role socialization practices and sex-role definitions (i.e., stereotypes) have served to define these fields as predominantly masculine domains. The stereotypical characteristics associated with women, namely, gentleness, quietness, tenderness, emotionality, passivity and dependence, are not those commonly associated with scientists (Broverman, Vogel, Broverman, Clarkson, & Rosenkrantz, 1972). In contrast, men are readily associated with traits matching the stereotypic view of a scientist, such as aggressiveness, dominance, rationality, independence, and objectivity (Broverman et al., 1972). In a survey of students' assumptions about science careers, high-school girls rated science careers as significantly masculine, particularly careers in the physical sciences (Vockell & Lobonc, 1981). Sex-role stereotypes of this sort have been demonstrated by female students as young as kindergarten age (Vockell & Lobonc, 1981). In sum, sex-role stereotyping has been cited as one of the major reasons for women's avoidance of science careers. In simplified terms, girls view science careers as masculine and, therefore, avoid them (Matyas, 1985).

Conversely, the influence of positive attitudes toward science and scientists was

evidenced in a recent study by Lips (1992). Therein, in the case of both women and men first-year college students, the belief that scientists are sociable was positively predictive of their intent to pursue additional science courses. For women in particular, a belief in the compatibility of a science career and family roles was found to be positively related to the intent to engage in further science studies.

Perhaps the most detrimental consequence of women's continued underrepresentation in science and technology lies in the relative lack of availability of female scientists in Canada to act as role-models for young women. This situation can only serve to reinforce the sex-role stereotype that careers in the sciences are for men (Ellis, 1981).

Early research sought to determine where young "career-salient" women found appropriate models and "how they managed to supply the modelling functions in the absence of adult women models" (Douvan, 1976, p. 6). The possibility that occupational role-models who were men would be sufficient for career-oriented women was suggested. If, for example, an occupational role-model served only to present a technical explication of a particular occupational role, the sex of the model would not be relevant (Almquist & Angrist, 1971). Findings suggested, however, that women choosing male-dominated occupations tended to have the opportunity to witness a wide range of female and male role-models (Lernkau, 1979). Further, findings suggested that the reality for most young women would be an attempt to integrate achievement in work with success in marriage and family life. This reality is aptly demonstrated in the following statement (from an early study): "For women, the importance of role models lies in their explication of a life style which incorporates work with family life. Occupational choice alone may be a temporary or changeable matter for a girl, but commitment to an adult life which includes work necessitates some notion of what such a life may be like" (Almquist & Angrist, 1971, p. 277).

More recently, research has shown that, for women, role-model influences are significantly related to career salience and to level of educational aspirations, as well as to nontraditionality of occupational choice (Hackett, Esposito, & O'Halloran, 1989). The lack of female professorial and occupational role-models for young women has been identified as a significant barrier to women's career development (Erkut & Mokros, 1984). Both female and

male students have been found to select role models, at least in part, for personal similarities (Gilbert, 1985). At the junior high school level, exposure to science career role-models who are women has been found to positively affect both female and male students' attitudes toward scientists and toward women in science (Smith & Erb, 1986). The use of women science career role-models has also been found to positively affect both enrolment in science courses by girls entering high school and their personal consideration of a science career (Smith & Erb, 1986).

The sex-role socialization and stereotyping line of reasoning for women's underrepresentation in S&T has substantial appeal in that it draws upon a large well-established literature (Betz & Fitzgerald, 1987). This explanation actually either overlaps with or encompasses several of the contributing factors discussed below, including educational and extracurricular influences, and self-efficacy expectations.

Educational and extracurricular influences. Another line of explanation for women's underrepresentation in the scientific community looks to educational and extracurricular influences that may contribute to girls' avoidance of science-related activities and course work (Matyas, 1985). Canadian researchers have argued that gender biases in curricula and teaching methods may convey, subtly, different expectations regarding what girls can achieve (Steinkemp & Maehr, 1984; Williams, 1990). Research has shown that, unlike boys, girls are discouraged from, or at least not encouraged to pursue science-related careers, and that counselling received in junior high school and high school actually serves to compound the problem (Fischer, 1981).

In a national American survey of 9, 13, and 17-year-olds, the science-achievement levels and science attitudes of young girls were assessed (Kahle & Lakes, 1983). Results showed that, as early as age 13, girls' science achievement was significantly lower than that of boys. The responses to attitudinal items indicated that, compared with boys of the same age, girls held less positive attitudes toward science and had participated in far fewer school science activities (Kahle & Lakes, 1983).

To explain the achievement and attitudinal differences, two types of questions were asked. One explored the number of actual science experiences encountered by a student; the second assessed the student's wish to participate in activities of this nature, regardless of actual participation opportunities. Responses comparing girls' desires for typical classroom science

activities versus their actual experiences revealed surprising results. Although 9-year-old girls expressed interest in many science activities, the actual number which they had experienced was significantly less than the number boys of the same age had experienced. Responses by 13- and 17-year-olds revealed that the gender-disparity in science experiences increases with age. A decline in the desire of girls to participate in science activities was found to parallel the decline in science achievement, between ages 9 and 13 (Kahle & Lakes, 1983).

Disparities in the science education of girls and boys go beyond the school classroom. Kahle and Lakes (1983) found that among students aged 13 and 17 years, girls reported participating in significantly fewer extracurricular science activities than did boys. These experiences included reading science articles and books, watching scientific television programs and doing science projects and hobbies (Kahle & Lakes, 1983; Kahle, Matyas, & Cho, 1985).

Even when they are at play, children's experiences likely offer differential preparation for later scientific/technological pursuits. Male and female children are given different toys to play with and are encouraged by parents, teachers, and peers to engage in sex-appropriate play (Maccoby & Jacklin, 1974). Boys toys and games tend to emphasize relationships between objects and their manipulation, such as the taking apart and rebuilding of objects. Girls' activities are generally more verbal and interpersonal, and usually have greater involvement of fine-motor skills (Skolnick, Langbort, & Day, 1982). Clearly, the play activities of boys are more likely to provide practice at spatial-visualization tasks which are useful later in scientific and technological pursuits (Matyas, 1985). As well, a lack of familiarity with the tools and techniques that are useful in science, many of which are differentially available to the sexes through extracurricular and play activities, may be a contributing factor in girls' lower enrolment and achievement and subsequent higher attrition rates from science-related courses (Kahle et al., 1985).

Moreover, the relationship between enrolment/achievement in science-related courses and the subsequent possibility of a future science career seems clear. If young women take fewer high school mathematics courses and have lower achievement levels in them, they limit their selection of scientific or technical majors in university as well as their probable success should they select such a major (Matyas, 1985). Maccoby and Jacklin (1974) found that during

elementary school both boys and girls enjoy mathematics. Nevertheless, by the time they graduate from high school, girls' SAT-Math scores are lower than boys' by almost fifty points. This difference does not appear to be due to differences in the math sequence taken, but rather, to higher rates of female attrition from that sequence (Matyas, 1985).

In Canada, the lack of science and mathematics training for young women in elementary and secondary schools has been identified as critical (SCC, 1981); if young women do not receive equal science-related education at the elementary school level, and subsequently receive little encouragement to pursue science-related studies during their high school years, there is little chance that they will become scientists (Matyas, 1985).

Self-efficacy expectations. Many empirical studies stress that achievement in science-related endeavours depends largely upon the attitudes and perceptions of individuals, in addition to their talent and performance (Kahle et al., 1985; Kahle & Lakes, 1983). Young women typically have less confidence than young men in their ability to learn mathematics and are less likely than young men to perceive positive parental attitudes toward them as math learners (Fennema & Sherman, 1977).

In a study by the Canadian Advisory Council on the Status of Women, only 19% of 122 adolescent women sampled could imagine themselves occupying jobs in the future which were not traditionally female-dominated (Baker, 1985). Adolescent women lacked confidence in their own abilities and in their likelihood of fulfilling their educational plans because they did not believe they were capable of succeeding (Baker, 1985). This lack of confidence, which was most often attributed to insufficient encouragement from parents, teachers, and guidance counsellors, often prompted adolescent women with interest in S&T careers to avoid scientific and technological fields because of a perception that these endeavours are simply too difficult (Baker, 1985). Moreover, whether or not a young woman possesses the necessary abilities for achievement in mathematics, she is likely to be lacking the prerequisite positive attitudes and personal confidence (Matyas, 1985).

An entire literature on the role of self-efficacy expectations in women's career development lends support to this hypothesis (cf. Hackett & Betz, 1981; Lent, Brown, & Hackett, 1994; Lent, Brown, & Larkin, 1984, 1986, 1987; Lent & Hackett, 1987). Investigations

of women's career self-efficacy expectations have shown sex differences in self-efficacy expectations for occupations to mirror the sex segregation that exists in the work place (Lent & Hackett, 1987; Lent et al., 1994). Further, career self-efficacy expectations have been consistently found to be significantly related to occupational choice (Betz & Hackett, 1981; Lent et al., 1994; Post-Krammer & Smith, 1985, 1986).

Among students considering scientific and technological fields specifically, high self-efficacy expectations have been found to be predictive of academic persistence and achievement (Lent et al., 1984, 1986, 1987). As well, both self-efficacy for scientific/technological fields and interest in these fields have been identified as reliable predictors of the science-relatedness of students' career choices (Betz & Hackett, 1983; Hackett, 1985; Hackett & Betz, 1989; Lent, Lopez, & Bieschke, 1991). With regard to sex differences, research has consistently shown that women are more likely than men to exhibit low science-related self-efficacy expectations and, consequently, to avoid the science and mathematics course work that must necessarily precede a career in S&T (Lent & Hackett, 1987; Lent et al., 1994).

Biological arguments. At one time it was common to locate the source of women's underrepresentation in science-related endeavours within women themselves (Gilbert & Pomfret, 1991). This line of reasoning commonly claimed that women lacked certain fundamental traits which would enable them to engage in scientific/technological activity. In particular, as compared to their male peers, women were characterized as possessing weaker inherent abilities and aptitudes, in part for genetic reasons. Quantitative ability, visual-spatial ability, and field articulation are among those areas in which differences have been suggested (Benbow & Stanley, 1980; Bock & Kolakowski, 1973; Maccoby & Jacklin, 1974; Stafford, 1972). Moreover, women's "deficiencies" were assumed to lead to poor performance, and consequently to low participation.

While abilities such as those listed above are recognized as the essential tools for scientific thinking, biological explanations of women's under-representation in science and technology have been strongly contested within the literature (Ethington & Wolfe, 1984; Fausto-Sterling, 1985). In particular, even when the data are interpreted very generously, the

magnitude of any found biological sex differences has been seriously challenged (Fennema & Sherman, 1977; Hyde, 1981; Kimball, 1981; Lord, 1987). As well, the biological hypothesis cannot easily explain the fairly substantial evidence indicating that those females who do pursue S&T-related academic programs tend, on average, to outperform their male counterparts in the classroom (Steinkemp & Maher, 1984).

Eccles' model of achievement-related decisions. Eccles (1987) proposed a model of achievement-related decisions that emphasizes the need to study women's educational and occupational choices from the women's perspective. According to Eccles (1987), any discussion of sex differences in achievement must acknowledge the problem of societal influence on the very definition of achievement as well as the value-laden nature of assessing the differential worth of various forms of achievement. Too often, theorists are guilty of adopting a male standard of achievement when judging the value of female accomplishments; they ask why capable women are not selecting high-status achievement goals and, in so doing, fail to address the more fundamental issue of why women select the options that they do. By contrast, Eccles' (1987) model places male- and female-achievement choices on a more equal footing. By assigning a central role to the construct of subjective task value, the model legitimizes women's life choices as valuable on their own terms, rather than as a reflection or distortion of men's choices and men's values.

Achievement norms are not the same for men and women. Eccles' (1987) makes salient the hypothesis that differences in male- and female-achievement patterns may result from the fact that males and females have been socialized to have different but equally important goals for their lives. Further, even when men and women identify similar educational and occupational goals, sex-role socialization can serve to influence the definition of the activities involved such that—even when they appear on the surface to be selecting a similar task—men and women may differ in their conceptualization of the requirements for successful task participation and completion.

As identified by Eccles (1987), the parenting role provides an excellent example of this process. If men define success in the parenting role as an extension of their occupational role, they may respond to parenthood with increased commitment to their career goals. In contrast, if

women define successful parenting as high levels of involvement in their children's lives, they may decrease their career goal commitment, at least for a period of time. Given the existing asymmetry in the sexes' family roles (Peplau & Gordon, 1985), women's life choices, unlike those of their male counterparts, will likely continue to involve inextricably linked decisions about work and family roles (Eccles, 1987).

Eccles' analyses of women's achievement-related decisions suggest that men and women's differential involvement in high-status, high-power careers requiring considerable time commitments and long periods of professional training (including scientific and technological occupations) may result, in part, from female/male differences in psychological investments and in their definitions of family versus professional roles. These sex differences undoubtedly result from a complex set of both psychological and sociological forces including the internalization of sex roles, the individual's assessment of what jobs and roles are realistically available, and both overt and subtle forms of discrimination operating in educational and occupational institutions.

Finally, Eccles (1987) acknowledges that the potential mediating effects of everyday socio-structural realities merit particular consideration for women. Her model focuses on value-based choices rather than on avoidance of male-defined achievement goals. An individual's life decisions are viewed as being made within the context of a complex social reality which presents her with a wide variety of choices, each of which has both long-range and immediate consequences. As such, the decision to become an engineer, for example, would not be made in isolation, based solely on the occupational characteristics of the engineering profession, but rather in the context of other complex choices and expectations such as whether or not to have children and, if so, to what extent one's spouse will share in child-rearing and home-care obligations.

By considering the context in which women's choices are made, Eccles concludes that "many women make educational and occupational decisions consistent with gender-role norms for positive rather than negative reasons" (p. 162). For example, if a woman thinks it will take a lot more effort to succeed as an engineer than as a school teacher or a secretary, she may opt for the more female-typed occupation because she places a high importance on having a career that is compatible with her anticipated family role.

In sum, Eccles' (1987) model of women's achievement-related decisions links women's educational and vocational choices to their expectations for success and subjective task value, which, in turn, are linked to their sex-role socialization, self schemas, and anticipated role and task demands. She emphasizes the need to understand the dynamics leading men and women to make different family, educational, and occupational choices. According to her model, individuals' decisions, whether made consciously or not, are guided by: (1) their expectations for success on the various options perceived as being appropriate, (2) the relation of these options both to individuals' short- and long-range goals and to their core self-identities and basic psychological needs, (3) individuals' gender-role and more general self-schemas, and (4) the potential cost of investing time in one activity rather than another. Each of these psychological variables are, in turn, shaped by experiences, cultural norms, and the behaviours and goals of individuals' parents, teachers, role models, and peers.

Retention Research

As discussed above, a large number of factors have been identified as having the potential to impact negatively on young women's science education and, consequently, on their entrance into scientific careers. It is important to note, however, that the problem of women's underrepresentation in S&T is not solely one of low entrance/recruitment into science-related endeavours. Rather, is it also a problem of their *lack of retention*, that is, attrition.

Given the scope of concern over women's underrepresentation in the S&T community and the wide-scale initiatives that have been carried out in an effort to increase their representation therein, one might expect that a "solution" to the problem would be well at hand. In fact, judging by recent gradual increases noted above—both in the number of women enrolled in university S&T-related pursuits and in the number of bachelor's degrees granted to women in these domains—one might be tempted to assume that a resolution to the ongoing issue of women's underrepresentation in S&T fields is already in motion and that, in time, gender equality will be reached.

Contrary to this optimistic expectation, however, the small size of the female scientific community is not solely determined by gender differences at the point of entry for science

training (Nevitte et al., 1988). If that were the case, then as the number of women graduating from universities with science degrees increased, one would expect to see a roughly proportional increase in the number of women in the scientific community. Aggregate data suggest, however, that this is not happening (Labour Canada, 1990; NRC, 1983; Symons & Page, 1984). The fact is, gender discrepancies exist not only in the enrolment of students in science-related university programs, but also in the rates of *exit* from these programs (Seymour, 1992a, 1992b; Symons & Page, 1984; Widnall, 1988).

Moreover, despite all the initiatives aimed at encouraging women to pursue nontraditional studies and careers, little discussion has taken place concerning the self-evident fact that in order for desegregation of the workplace to take effect, not only must women be drawn into nontraditional occupations, they must also be encouraged to *stay*. It has recently been suggested that, in Canada, efforts to eliminate women's low representation in nontraditional fields may merely be serving to constantly "top up the glass to the same level" (Tancred & Czarnocki, 1992, p. 2). This possibility is evident in the findings of a Canadian study by Nevitte et al. (1988), which is discussed below. Therein, among a sample of students pursuing university level science education, a significantly greater proportion of women senior science students reported planning for careers outside the scientific realm.

Clearly, if women students with "scientific interests" abandon these "interests" at a greater rate than their male counterparts (Hewitt & Seymour, 1991), simply increasing the enrolment of women in S&T related university programs will not eliminate the underrepresentation of women in S&T graduating classes. By the same token, aggregate data suggest that it is reasonable to assume that if discriminatory attitudes and practices persist in society, then simply graduating more women from science and engineering programs will not be sufficient to ease the shortage of scientists and engineers (Canadian Engineering Manpower Council, 1982, cited in Symons & Page, 1984).

In the review that follows, theory and research bearing on women's decisions to *leave* S&T domains is presented. Reviewed first are several studies that sought to delineate reasons why women forego or discontinue S&T-related studies; next, the issues of discrimination and sex segregation in the workplace are reviewed; finally, the "revolving-door" metaphor is described

(Jacobs, 1989), and research findings supporting this theory are discussed.

Decisions to forego/discontinue S&T educational pursuits. Ware et al. (1985) investigated the factors that facilitate the choice by university students of a science major. Participating in this study were 150 male and 150 female first-year students who, on their application to university, had expressed an interest in majoring in science. Analyses of background characteristics revealed no significant differences between the men and women students in the sample. They had nearly equivalent mean scores on SAT mathematics and verbal scales and were all but identical in the number of mathematics and science courses they had taken in high school. Based on these and other analyses of background characteristics, the men and women in the sample were judged to be equally *predisposed* toward the selection of a scientific major.

Despite their equal predispositions, however, when it came time to declare a major at the end of first year, a statistically significant sex difference was apparent ($p < .05$). Results indicated that only 50% of women, compared to 69% of men in the sample, actually declared a major in a science-related discipline. To address the question of why women undergraduates entering university with the intention to major in science abandon their plans (before a major is actually declared) at a greater rate than their male classmates, a path analytic model was designed. This model tested the relative impact of a variety of different factors on choice of university science major.

Not surprisingly, the analyses revealed the pattern of significant predictors of choice of a science major to be extremely different for the male and female students. For women, five factors were found to impact significantly on choice of university science major: (1) parent's level of education, (2) mathematics scores on the SAT, (3) need for control, prestige and influence (on the Thematic Apperception Test (TAT)), (4) need for affiliation (on the TAT), and (5) favourite first-year university course a science course. For men, three factors contributed significantly to the choice of a university science major: (1) science grades in first year, (2) certainty of choice of science major prior to entering university, and (3) favourite first-year university course a science course. More men than women (49% compared to 31%) reported a science course to be the most enjoyable of their first year classes. Because enjoying a science

course seems to be an important predisposing factor for the pursuit of a science major for both sexes, the fact that more men than women reported this reaction partially explains the gender difference in the choice of a science-related major (Ware et al., 1985).

Not only has attrition been found to occur at this crucial early phase of a student's university education, prior to the declaration of a major; it has also been found to remain extremely prevalent even after a science, mathematics, or engineering major has been declared (Seymour, 1992a; 1992b). In a recent investigation into the factors that contribute to the high attrition rates among science, mathematics, and engineering undergraduate majors, Hewitt and Seymour (1991) reported that the areas which create significant problems for women, and which are most frequently cited as influencing their decisions to switch to a non-science-related major, also show the greatest sex differences.

In interviews of a sample of 149 current and former science, mathematics, and engineering students at four Colorado universities, "discouragement and loss of self-esteem" experienced from low grades in the freshman and sophomore years was the most common factor cited in explanation by women who had switched to a non-science-related major (Hewitt & Seymour, 1991). "Conceptual difficulties with course work" was also mentioned more frequently by women than men. Although every woman who switched majors mentioned "poor teaching and the unapproachability of faculty as a concern", only one quarter said this had made a direct contribution to their decision. Women were more likely than men to switch because they rejected the lifestyle associated with a particular science-related career or because they had found a more appealing non-science-related career option. Other factors mentioned by women but which were cited more frequently by the men in the sample as contributing to their decisions to switch to a non-science-related field of study included: "overload and pace of presentation of material"; "the competitiveness of the science, mathematics, and engineering culture"; "the discovery of an aptitude for another field of study"; "switching as a means to attain a specific career goal"; and, "the decision that the ultimate rewards of a science, mathematics, or engineering degree were not worth the effort involved" (Hewitt & Seymour, 1991).

Moreover, the "overall picture that emerges for women who switch has much to do with the impropriety of their original choice of these majors, and their lack of strong motivation for a

career in these fields. When they are confronted by academic difficulty, in tandem with the loss of self-esteem based on grades, they become more vulnerable to the lure of other fields of study, regardless of the opportunities they offer for employment beyond graduation" (Hewitt & Seymour, 1991, pp. 103-104). Although no woman switcher in the study said that sexism figured in her decision to leave, the authors note that there are some structural features of the science-related academic culture which discriminate against women and may prove to have a bearing on attrition. These include the lack of sufficient female role-models and mentors and the "old-boy network" which draws promising male students into research projects and relationships with faculty, but which tends to exclude even the most capable women (Hall & Sandler, 1982).

Discrimination and sex segregation in the workplace. Overt discrimination encountered by women choosing to pursue careers in S&T fields stands as a potential explanation for their exit from these career domains. This influence goes beyond the sex-role socialization explanation, detailed above. Whereas the effects of socialization are assumed to predispose women to *aspire to* careers that are traditional for their sex (a recruitment issue), discrimination acts in addition to any influence of a sex-typed upbringing, and even after the "effects" of sex-role socialization have been "overcome". This explanation thereby surpasses all of the previously identified internal barriers to women (cf. Farmer, 1976) and focuses, for the most part, on environmental barriers contributing to women's exit from S&T career domains.

During the last three decades--the time that has elapsed since the initial investigations into the vocational behaviour of women were carried out (e.g., Psathas, 1968)--many fundamental changes have occurred. Not the least among these was the elimination of stereotypic images of women and work in the major publications which describe occupations. In 1981, the Canadian Classification Dictionary of Occupations was systematically revised to make its job titles and descriptions gender-neutral. In the same year, similar improvements were reflected in the census classification system (B. Shiell, Labour Canada Women's Bureau, personal communication, December 4, 1993).

Today, equality in employment is a fundamental right in Canada. Serving to guarantee this right are Canada's Constitution, The Charter of Rights and Freedoms, and federal and provincial Employment-Standards Legislation and Human Rights Codes (Abols, 1987). In spite

of these laws, however, sex segregation continues to dominate many sectors of the labour force. Further, equality in the workplace is still not a reality for all Canadians (EIC, 1991).

Historically, members of certain groups have experienced employment-related barriers resulting in higher rates of unemployment, occupational segregation, and lower rates of pay (EIC, 1990). In 1984, the term "employment equity" was coined by the Canadian Royal Commission on Equality in Employment (Moreau, 1991). Employment equity has been adopted to describe programs designed to improve the situation of individuals who, because they are in a particular group, find themselves adversely affected by certain systems or practices in the workplace. Simply put, employment equity means ensuring that all job applicants and employees have a fair chance in the workplace. It is achieved when no person is denied employment opportunities or benefits for reasons unrelated to ability (EIC, 1990). In Canada, women constitute one of four groups that have been identified as disadvantaged, because of their labour force participation and unemployment rates, their income levels, and their persistent occupational segregation (Moreau, 1991). (The remaining three employment-disadvantaged groups are aboriginal peoples, persons with disabilities, and members of visible minorities).

Based on the premise that it would be unjust to have a society in which particular groups are denied employment opportunities and benefits for reasons unrelated to ability, the Canadian federal government considers employment equity to be good social policy (EIC, 1991). In that it contributes to competitiveness and economic prosperity, employment equity is also considered to be good economic policy (EIC, 1991). Moreover, in "a rapidly changing environment that is characterized by the globalization of markets and an accelerating pace of technological change, employers must foster organizational cultures in which people are important and innovation and excellence nurtured" (EIC, 1991, p. 1). It is by recognizing the fact that people are the single most important resource to a firm that an organizational culture with a commitment to employment equity is assured.

In an effort to eliminate practices that result in employment barriers for the four designated groups and to ensure that these groups achieve a degree of employment proportionate to their representation in the work force as a whole, the federal government initiated the "Public Service Employment Equity Program", the "Employment Equity Act", and the "Federal

Contractors' Program" (Moreau, 1991). It is significant to note, however, that these legislated employment equity programs in Canada apply only to the Federal Public Service, Crown Corporations, and to federally regulated employers with 100 or more employees. These employers number approximately 400 in total and fall primarily in the banking, transportation, and communications industries. As well, as a continuing condition for bidding, federal government suppliers of goods and services having 100 or more employees, and bidding on government contracts worth \$200,000 or more, commit themselves to implement an employment equity program (EIC, 1990).

Encouragingly, many other employers (e.g., universities) have implemented policies of employment equity, including affirmative action for women (e.g. "Classified advertisements", 1995). Such voluntary initiatives, however, are not required to make a report to the federal government, nor are they monitored or regulated at either the provincial or federal level (D. Bougie, Employment Equity National Headquarters, Designated Group Services Directorate, personal communication, August 21, 1992). Therefore, the success and/or effectiveness of privately initiated efforts remains unknown.

Clearly, sexual harassment of women ranks among the most blatant forms of discrimination. Spurred largely by the implementation of employment equity legislation, this problem has generated considerable research interest and has been revealed to be substantially more widespread than was once thought (Lafontaine & Tredeau, 1986). In a study of 160 women in traditionally-male occupations, over 75% of respondents reported having experienced sexual harassment in the workplace (Lafontaine & Tredeau, 1986).

Systemic discrimination is a more subtle form of discrimination encountered by women in the workplace. It is defined by Employment and Immigration Canada (EIC) as "the exclusion of designated group members through the application of employment policies and practices based on criteria that are neither job-related nor required for the safe and efficient operation of the business" (EIC, 1991, p. 1). One example would be the enforcement of excessive weight or height requirements which were instituted years ago and are no longer job related, but which could still serve to exclude women (EIC, 1991). Existing human rights legislation, both at the national and provincial levels, prohibits not only those practices which actually deprive, but also

those which "tend to deprive" or exclude an individual or restrict a group from employment opportunities, based on sex (EIC, 1991, p. 2).

In 1988, Carroll and Cherry conducted an investigation into the kinds of barriers Canadian women can expect to encounter in nontraditional occupations and what kinds of strategies are likely to be helpful in overcoming these barriers. They concluded that factors such as heavy time demands, harsh environmental conditions, co-worker resentment, and being denied access to the more challenging aspects of the job were among the obstacles that Canadian women must commonly overcome if they are to enjoy success in nontraditional areas (Carroll & Cherry, 1988).

Obstacles encountered in nontraditional occupations were found to serve as barriers to women's achievement in these areas. The major theme emerging from their interviews was that women who choose nontraditional employment can expect to have a difficult time emotionally and, in some cases, physically as well. Women entering nontraditional fields were seen to have an advantage if they possessed personal qualities such as self-confidence and independence, assertiveness, positivism, commitment, energy, and a high level of social support (Carroll & Cherry, 1988).

The "revolving-door" metaphor. Women's rate of participation in Canada's S&T labour force was discussed above. The "revolving-door" metaphor (Jacobs, 1989) offers one explanation for the failure of recent initiatives to affect notable increases in women's representation in the male-dominated segments of the labour force, despite their increasing representation in S&T-related university program enrolments and among bachelor's degree earners in these fields. As documented by Jacobs (1989), the revolving-door metaphor explains the relationship between sex segregation in the workplace and women's career development. This metaphor does not imply that women are getting nowhere. Rather, it describes a phenomenon by which initiatives aimed at increasing women's representation in male-dominated domains merely serve to continually "top up the glass" to the same level.

Through his analysis of 1980-81 Current Population Survey data, Jacobs (1989) noted that, in the United States, there has been a slow net accumulation of women in male-dominated occupations, but that the resulting net change is small compared to the size of the flows into and

out of these occupations. From his analyses of 3,762 American women over the period of 1967 to 1977, Jacobs (1989) concluded that there would be more progress toward integrating men and women in the labour force if there were less attrition of women from male-dominated occupations. Specifically, "for every 100 women in male-dominated occupations who were employed in two consecutive years, 90 remained in a male-dominated occupation, while 10 left for either a sex-neutral or female-dominated occupation. At the same time, 11 entered a male-dominated occupation from one of these other occupational groups. Thus, the revolving door sends 10 out for every 11 it lets in" (Jacobs, 1989, p. 4).

The existence of the "revolving door" phenomenon has been supported by other research findings. Yohalem (1979) studied 226 Columbia University graduates with at least one year of graduate work leading to a professional occupation between the period of 1963 and 1974. She found that, by 1974, 16% of this group were out of the labour force for reasons other than retirement. McIlwee's study (1981) of women in male-dominated, non-professional occupations found that 23% had left nontraditional jobs after a one-year period. In a Canadian pilot study of the "revolving door" phenomenon among women in academia, Tancred & Czarnocki (1992) found that the emphasis on family responsibilities as the main explanation for women's workplace behaviour was not supported, though it is often cited in the literature. Rather, they reported that, among women who had left their academic positions, factors relating to the nature of the workplace were among the most common cited as reasons for their exit from academia (Tancred & Czarnocki, 1992).

Recruitment and Retention Research: Conclusion

Although the underrepresentation of women in the S&T community is not disputed, a wide variety of explanations for the existing gender gap have been advanced. With the exception of overt sex-discrimination and sexual harassment, many of the factors that have been posited to influence women's representation in science-related pursuits are subtle and, taken individually, appear almost insignificant. Their collective effect, however, can exert a powerful force upon a young women's level of achievement and interest in S&T, and, ultimately may cause her to think long and hard before committing herself to, or persisting in, a scientific or

technological career (Matyas, 1985).

Regardless of the explanation advanced, almost all of the North American research carried out to date has concentrated on one particular aspect of the problem, namely, the question of why--from the beginning--so few women are interested in, or seek to pursue, a science-related career. As a result, the majority of efforts to rectify the situation have focussed on entrance/recruitment issues, being directed toward bolstering science enrolments in schools in the early phases of academic training (e.g. Burton, 1986; Chauvin, 1987; Erickson, 1981; Vale, 1996; Whyte, 1986). It is still uncertain, however, whether the progress in Canadian high school enrolments will be followed by similar progress in more advanced education. Further, among those students who pursue and graduate with an S&T-related bachelor's degree, the proportion that actually goes on to become and remain active members of Canada's scientific community, even in the early stages of their careers, is unknown. The focus of the present research, therefore, is on retention, that is, it is directed at tracking the career outcomes of those men and women who have successfully earned an S&T-related bachelor's degree, during the 5-year period subsequent to their graduation from university.

Women Pursuing Nontraditional Careers: How Do They Compare?

While the field of vocational psychology itself is over 80 years old, research interest in women's career development is a relatively recent phenomenon, having surfaced only over the last three decades (Fitzgerald & Betz, 1983). This comparative lack of attention to women within the domain of vocational psychology has been attributed to two previously accepted assumptions (Betz & Fitzgerald, 1987; Fitzgerald & Betz, 1983). The first stems from the fact that, traditionally, women's primary role was viewed as that of housewife and mother. When women did work outside the home, they were perceived as "individually transient and collectively insignificant due to the type and level of jobs available to them" (Vetter, 1973, p. 54). Second is the implicit assumption that the theories and concepts developed to explain male career development would generalize to the explanation and description of women's career development.

Regarding the first assumption, "women's place" is clearly no longer in the home. In fact,

with 57.8% of the Canadian female population over the age of 15 being active participants in the labour force in May of 1995 (either working or looking for work), women whose adult lives will not include work outside the home are clearly the exception rather than the norm (Statistics Canada, 1995).

Regarding the second assumption, one of the most frequent criticisms of existing theories of career development (e.g., Holland, 1959, 1985; Super, 1957, 1980) concerns their applicability to the vocational behaviour of women. Given that existing theories were formulated to explain the career development of men, the probability is high that they would require modification in order to adequately generalize to the vocational behaviour of women (Davies & Stoppard, 1991; Holland, 1966; Osipow, 1975).

A careful analysis reveals that women's career development does differ from that of men. Betz and Fitzgerald (1987) document that, even in contemporary society, a limited range of occupational alternatives is pursued by women, in comparison to a much larger range pursued by men. Women generally restrict their occupational choices more than men; that is, they are under-represented in a variety of fields and professions, including science and technology (Labour Canada, 1990). As a group, women enter lower-paying, lower-status occupations. Women underutilize their abilities and talents and are less likely to advance to higher levels in their occupational fields (Betz & Fitzgerald, 1987; Fitzgerald & Crites, 1980). Women professionals are concentrated in professions of lower pay and status than the male-dominated professions. Even within the same occupation or occupational field, women tend to be concentrated at lower levels. "In summary, women's restricted range of career options, their disadvantaged position in the labour market, (and) the underutilization of their capabilities ... are some of the major areas in which women's career development differs from that of men" (Fitzgerald & Betz, 1983, p. 87).

Over the last three decades, there has been an extensive and widespread growth of interest in the vocational psychology of women. As a result, an extensive body of literature has accumulated on this topic (e.g., Betz & Fitzgerald, 1987; Gagné & Poirier, 1990; Jacobs, 1989). Much of the early research on women and work sought to discover the effects that the socialization of an individual had on her career choice processes and achievements (e.g. Farmer,

1976; Psathas, 1968). It focused, for the most part, on the barriers faced by women in their new position as participants in the male-dominated labour market. For example, Farmer (1976) suggested six internal or self-concept barriers (e.g. fear of success) and three environmental barriers (e.g. discrimination) to women. In Psathas' (1968) early theory of women's occupational choice, the very legitimacy of the concept of "choice" for women was questioned. She focused instead on the "settings" within which women make their vocational choices.

As detailed at the outset of this chapter, the primary objective of the present investigation is the establishment of comparative rates of persistence of highly trained young women and young men in scientific and technological sectors of employment (or post-baccalaureate study) in Canada. Beyond this objective, however, a secondary aim is to conduct a preliminary investigation into some of the potential correlates of retention and non-retention in S&T-related pursuits for men and women. It is in light of this secondary aim of the investigation that the next section of literature review is presented.

How do women who are pursuing nontraditional careers compare? Clearly, this question begets another, namely, "compared to whom?" Within the vocational psychology of women literature, a number of characteristics have been identified as having the potential to impact differently on women pursuing nontraditional careers versus their male colleagues in the same careers, as well as versus women pursuing traditionally female-dominated careers. Two types of research are reviewed below: studies comparing women in nontraditional careers with their male colleagues in the *same* careers, and, studies comparing women in nontraditional careers with women in *traditionally female-dominated* careers.

The empirical and theoretical research presented below is limited in scope to that dealing with correlates which are germane to the present investigation. For the purpose of organizing the discussion that follows, these characteristics have been classified into four categories: sex-role socialization/orientation factors; background and motivational variables; temporal marriage and childbearing patterns; and the occupational variable of job satisfaction.

Sex-role socialization/orientation. In a synthesis of previous research into the traits associated with women who make nontraditional vocational choices, Chusmir (1983) states that women who choose careers in male-dominated occupations are likely to possess many of the

personality characteristics commonly attributed to men. According to Chusmir (1983), these women may have internalized psychologically masculine attitudes from an environment in which they have had close contact, as an only or first born child, with both a father and a mother who treated them as "a person as well as a female" (p. 46).

Chusmir's (1983) conclusions are well supported by other research, including the findings of Tangri (1972). In this early research (investigating 342 college women over 4 years), "role innovators" (i.e., women who made nontraditional occupational choices) were found to score higher on autonomy, to be more individualistic, and more internally motivated to achieve to their capacity (Tangri, 1972). In a more recent comparison of a sample of women engineers with a sample of women from the general college population, Jagacinski (1987a) found the engineering women to score significantly higher on the M scale and lower on the F scale of the Personal Attributes Questionnaire (PAQ; Spence & Helmreich, 1978).

Research has also shown that compared to women in traditional occupations, women pursuing nontraditional occupations tend to have preferred androgynous or masculine play as children, as opposed to sex-typical play (Standley & Soule, 1974; Williams & McCullers, 1983). Nontraditional women have also been found to more frequently report having had the status of "favourite child" in the family, particularly of the father (Epstein, 1973; Standley & Soule, 1974). As well, compared to their traditional counterparts, nontraditional career-oriented women recall significantly less parental pressure as children to engage in stereotypically feminine activities (Hennig, 1983; Turner & McCaffrey, 1974; Williams & McCullers, 1983).

It has been argued that the sex-role socialization of women may influence their motivation for the pursuit of higher education, essentially resulting in their failing to consider career preparation to be an integral part of higher education. Historically, it has been assumed that, compared with their male counterparts, women tend to view higher education more as an intellectual pursuit than as a means of career preparation (Mason-Sowell & Sedlacek, 1984). Unfortunately, most of the research supporting this hypothesis has been carried out on small samples of students from single universities in the United States (e.g., Knight, Sedlacek, & Bachhuber, 1983; Martinez, Sedlacek, & Bachhuber, 1985). Further, these efforts have not attempted to study women and men in clearly comparable occupational areas (e.g., on the basis

of program of study), thus precluding any specific consideration of women graduating in nontraditional areas of study, or any specific comparisons of men and women S&T graduates.

In their early writings, Fitzgerald and Crites (1980) argued that confronting the process of sex-role socialization fundamentally distinguished the work of career counselling with women from that with men. Concerning the process of women's career choice, they pointed out that one resistance to effective career counselling is the long-term conditioning of women, through sex-role socialization, which produces a response set to consider only traditional roles as career options. According to Fitzgerald and Crites (1980), when asked which occupations they have considered, female clients will often respond with choices or preferences in a social, artistic, or conventional field. Counsellors, in turn, often take these choices and preferences at face value--as the only ones to consider--without questioning with the client their motivation for them. Moreover, to "examine why a female client chooses these occupations, possibly even without awareness that other options may exist for her, often reveals the highly conditioned expectancy that a women's place is 'in the home' or in parallel occupations in the world of work" (Fitzgerald & Crites, 1980, p. 55).

For women, sex-role orientation (as measured by the Bem Sex Role Inventory [Bem, 1974]) has been found to be highly predictive of educational and vocational choices. Research into women's choice of college majors has shown those enrolling in female-dominated majors to be primarily feminine-typed, whereas the largest proportion of those women enrolling in male-dominated majors were masculine-typed (Strange & Rea, 1983). Further, women pursuing atypical careers within the fields of medicine and law have been found to score higher on the masculinity scale than those in traditional occupations within these two fields (Williams & McCullerc, 1983). Finally, with regard to career decision-making, women's sex-role orientations have been shown to be related to their progress in making a decision about choice of college, choice of a major, and selection of an occupation, as well as their use of both the rational and intuitive decision-making styles (Moreland, Harren, Krinsky-Montague, & Tinsley, 1979).

In contrast to research findings showing women engaged in traditional versus nontraditional career pursuits to differ in terms of sex-role socialization/orientation variables, research that has compared women in nontraditional careers with their male colleagues engaged

in the same occupational pursuits has revealed there to be similarities between these women and men. A powerful example derives from a Canadian study of the "subjective culture" of public sector managers (McCarrey et al., 1989), designed to assess the work and personal value cognitions of women and men in managerial roles of comparable status and power. This investigation tested the notion that the meanings of male and female managers' work and personal values would be equivalently instrumental and expressive.

By means of content analyses of the antecedents and consequences reported by 183 participants as connected to 11 work and 10 personal values, men and women were found to have similar expressive-instrumental value orientations for both work and personal values (i.e., value profiles across gender were highly correlated). Thus, despite the fact that these findings fail to support previous findings of differences in the sex-role orientations of men and women in the general population, they fully supported the study's hypotheses. McCarrey and colleagues (1989) accounted for the lack of difference found between men and women managers by the fact that "the women of this study are in mid-management roles exclusively, with a fair degree of power and status and may well themselves not reflect the traditional sex-role socialization seen in earlier studies of the general population" (p. 59). Further, almost 70% of the women managers surveyed report having grown up in homes where their mothers had worked when they children, thus providing these women with easy access to a nontraditional role-model of a working mother. "Possibly these girls were reinforced for acquiring instrumental characteristics typified by their mothers so that they incorporated such instrumental characteristics into their personal gender schemas" (McCarrey et al., 1989, p. 60). As a result, these women engaged in the nontraditional occupation of manager could foreseeably constitute a unique subset of the general population for whom the characteristics of a manager would not be sex-role inappropriate and the position of manager would not be sex-role incongruent (McCarrey et al., 1989).

Background and motivational variables. As discussed by Fitzpatrick and Silverman (1989), a number of interrelated "background" and "motivational" variables have been found to impact on the traditionality of women's occupational choices. Beyond the childhood socialization experienced by women (discussed above), background variables include characteristics of their parents and the composition of the family in which they grew up.

Motivational variables include women's perceptions of career-choice support from external sources and the characteristics of occupations themselves.

Concerning the characteristics of women's parents, numerous studies have shown both mothers and fathers of women in nontraditional occupations to have higher educational and occupational status than parents of women in traditional careers (Almquist & Angrist, 1970; Greenfield, Greiner, & Wood, 1980; Lemkau, 1983; Standley & Soule, 1974; Tangri, 1972; Wilson, Weikel, & Rose, 1982). Other research has shown that the mothers of women in nontraditional careers are more likely to have been employed outside the home (Crawford, 1978; Haber, 1980; Lemkau, 1983; Tangri, 1972). In general, women in male-dominated jobs are likely to have been strongly influenced by highly educated mothers, especially those who worked in nontraditional occupations (Tangri, 1972). Additional research supports the role of mother's high educational attainment (Zuckerman, 1980) and the likelihood that she was employed in a professional position (Lemkau, 1983), both for women pursuing nontraditional careers generally, and for women engineers, specifically (Jagacinski, 1987b).

Research investigating the impact of family composition (e.g., birth order, gender of siblings) on the traditionality of women's career choice has produced somewhat inconsistent findings. Several studies have shown that women in nontraditional careers are more likely to be first born than those in traditional careers (Lemkau, 1983; Standley & Soule, 1974), whereas other studies have failed to support this finding (Crawford, 1978; Greenfield et al., 1980; Sandberg, Ehrhardt, Mellins, Ince, & Meyer-Bahlburg, 1987). Women in nontraditional careers were found, in an early study, to be less likely to have male siblings (Helson, 1971); more recent research has shown them to be more likely to have had close contact--as an only or first born child--with both parents (Chusmir, 1983).

Variables relating to perceived support and expectations of parents and others are among potential "motivational" influences. For the most part, research has consistently shown high parental support and high expectations of their daughters' achievement, especially from fathers, to be characteristic of women choosing nontraditional careers (Epstein, 1970, 1973; Helson, 1971; Houser & Garvey, 1985; Lemkau, 1979, 1983; O'Donnell & Anderson, 1978). Similarly, investigations of women's perceived support for their career choice have served to differentiate

women who engage in traditional occupations from those who choose to engage in nontraditional occupations. Specifically, research has shown women choosing nontraditional careers to report having received more support from external sources, particularly male sources, than those women choosing traditional careers (Handley & Hickson, 1978; Houser & Garvey, 1985; Lemkau, 1983; McLure & Piel, 1978; Stake & Levitz, 1979; Standley & Soule, 1974).

Regarding the characteristics of the work itself and the influence of these characteristics on an individual's career choice, research employing samples of engineers (Jagacinski, 1987b) and of medical students (Kutner & Brogan, 1980) have found similar results. In both cases, characteristics of the work (e.g. prestige, challenge, rapid advancement) and of the required course work were reported to be more important contributors to career choice decisions than were the influences of people (relatives, friends, teachers, counsellors), hobbies, or activities. As well, perceptions of job availability for women have been found to influence choice of careers in nontraditional domains (Bridges & Bower, 1985).

Temporal marriage and childbearing patterns. Research findings suggest that women in nontraditional occupations tend to marry at a later age and have fewer children than do women in traditional occupations. For example, in an early study Tangri (1972) found that women engaged in nontraditional careers were not nontraditionalists in the sense that they tended to reject the female roles of wife and mother. Rather, according to Tangri (1972), these women tended to postpone marriage to a later age, have fewer children, and show significantly higher career commitments, while maintaining the same desires for femininity and romance as did their traditional peers.

Research focusing on women and men in pursuit of nontraditional careers within S&T occupational sectors, specifically, has reported similar findings. For example, Perrucci (1970) conducted an early study comparing samples of "career-oriented" and "non-career-oriented" women and men with similar academic training in science and engineering. Findings showed marital status to be a key variable in the work lives of women, although this was not especially the case for men. For women, marital status varied with their career pattern; that is, career-oriented women were less likely ever to marry than were non-career-oriented women. Among married women, those who were career-oriented were also more likely to be childless

than were non-careerists. If they had a family, career-oriented women were more likely than non-career-oriented women to have only one child, and to bear the child at a later stage in their lives. Compared with the men scientists and engineers, only two out of five career-oriented women were married and living with their husbands, while an average of four out of five men were married and living with their wives. In a more recent investigation of men and women involved in engineering careers, women engineers were less likely to be married and were more likely to be childless (Jagacinski, 1987b).

Turning to a Canadian population, specifically, research by Marshall (1987; 1989) (discussed above) showed women employed in male-dominated professions to differ--on a variety of social and economic characteristics--both from their male-counterparts and from women employed in other occupational groups. According to Marshall (1987; 1989), many male-dominated professions possess characteristics--such as considerable workforce commitment and a demanding work schedule--which make them generally incompatible with the traditional societal view of women occupying a conventional family role. Consequently, many of the women who entered these fields adopted new patterns of behaviour, such as those reported in early research (e.g., Tangri, 1972; Perrucci, 1970), which resulted in them having different characteristics in terms of coping with family and career responsibilities. Specifically, compared to women in other occupations and to their male counterparts, Canadian women in the 34 male-dominated professions were more likely to have never married and to have had fewer children or to be childless (Marshall, 1989).

Finally, in a study by Card, Steel, and Abeles (1980), sex differences in "realization of achievement potential" were examined; these researchers investigated whether known sex differences in achievement would hold up when early potential for achievement was controlled for. They conducted a follow-up study of a sample of men and women, wherein the women had exhibited greater potential for achievement in grade 9. Findings showed that, 11 years after graduation from high school, the men in their sample had acquired more education and were earning more money on the job. Sex differences of this nature were found across all levels of socioeconomic status. The authors accounted for the difference in "realization of achievement potential" by the fact that it appeared more difficult for women than men to combine family or

spouse/parent roles with student/work-related roles. Variables measuring the onset, duration, and extent of family-related commitments were more strongly (and negatively) related to women's achievement than to men's. For women, more than for men, the onset of marriage and especially parenthood was often found to be at the expense of career-related realization of potential (Card et al., 1980).

Job satisfaction. Job satisfaction has an influence on the way women and men view the quality of their work setting, particularly if they are employed in nontraditional roles (Stewart & Gudykunst, 1982). In a Canadian survey (NABST, 1988a), the highest reported levels of job satisfaction were found to be associated with higher levels of learning and higher levels of employment. With respect to sex differences, however, studies comparing the job-satisfaction levels of women and men have reported conflicting findings. Moore (1985) accounts for the lack of systematic sex differences across studies by the fact that women and men base their job satisfaction upon the framework of benefits and rewards associated with the sectors of the labour market in which they are employed, as opposed to the traditional sex-role values that they may bring to their jobs.

The degree of sex segregation/domination in the labour market has been identified as an important contributor to an individual's job satisfaction; both the level and sources of women's job satisfaction have been found to vary in relation to the degree of occupational sex segregation that exists in their career field (Moore, 1985; Smart & Ethington, 1987). Moore (1985) compared the scores of men and women working in labour sectors which were male-dominated, female-dominated, or gender-balanced on a facet-free, global measure of job satisfaction. Her findings indicate the highest average job satisfaction scores to be among women and men in predominantly-male occupations. The strongest contrast in job satisfaction scores was between women and men in predominantly-female sectors of employment, with men in these jobs reporting significantly lower levels of job satisfaction than women.

Moore (1985) surmises that labour-market sectors and the rewards within them are an important structural dimension of job satisfaction, both for women and men employees. Beyond the global measure of job satisfaction, she found wide variations in specific aspects of jobs that affect job satisfaction for women and men; these tended to vary among the sex-segregated groups

of workers. Specifically, job satisfaction for women in male-dominated and gender-balanced sectors was predicted by age, perceptions of few income problems, flexibility of hours, occupational status and use of job skills. Factors related to maternity benefits and leave did not contribute significantly to the prediction of their job satisfaction. For women in the predominantly-female job sector, however, job satisfaction was found to be related to a wider cluster of factors, including age, perceived income problems, flexibility of hours, and available leave and maternity benefits. In addition, almost all of the factors classified as "intrinsic" by Moore (1985), including use of acquired skills, support from co-workers and supervisors, freedom within the work environment, involvement with the job, and relevance of the job, were found to be related to job satisfaction for women in traditional occupations.

The results of a study by Smart and Ethington (1987) indicate wide variation in the effects of occupational sex segregation on the job satisfaction of women college graduates employed in public and private organizations. Unlike previous investigators, they found no substantive differences in the job satisfaction levels of women across three levels of occupational sex segregation in public organizations. Specifically, women employed in male-dominated, female-dominated, and gender-balanced occupations in the public sector were found to have comparably high levels of job satisfaction. In private firms, however, women employed in female-dominated jobs (not male-dominated) were more satisfied with the extrinsic nature of their careers (i.e., "income", "job security" and "fringe benefits") than were those women employed in male-dominated jobs (Smart & Ethington, 1987).

Smart and Ethington (1987) note that one explanation for their findings--which are distinct from those commonly reported in the literature--may be that unlike most earlier research (e.g., Moore, 1985), they controlled for current income and educational attainment. Such controls are identified by the authors as important in order to assess the "true" relationship between occupational sex segregation and job satisfaction. Further, the impact of salary and advancement opportunities on job satisfaction for women employed in nontraditional careers has since received support in the literature, with Stewart & Gudykunst (1982) reporting "salary earned" and "opportunities for advancement" to rank among the most dissatisfying job factors for women in nontraditional occupations.

Jagacinski (1987a) examined differences between men and women engineers who had been in the field for different lengths of time. She found a considerable degree of similarity between the women engineers in her sample and the profiles of women in male-dominated occupations described in earlier studies (e.g., Lemkau, 1979; Perrucci, 1970; Standley & Soule, 1974).

With regard to job satisfaction, there were no significant sex differences on scales designed to measure the respondents' satisfaction with the intrinsic factors (e.g., "opportunity to innovate and propose new ideas") or extrinsic factors (e.g., "flexible working hours", "pleasant people to work with") of their jobs. Among engineers with more than five years experience, however, men scored significantly higher than did women on a twelve-point scale designed to assess satisfaction with career advancement opportunities provided by their jobs (e.g., "adequate preparation for top-level career"; "opportunity to move into a management career") (Jagacinski, 1987b). Further, the greater the number of years since completing their degrees, the more likely the engineers were to indicate that there are better opportunities for men than for women in engineering (Jagacinski, 1987b). This opinion was endorsed more consistently by women than men, with women who had graduated from 0 to 20 years ago supporting the statement, but only men who had graduated from 16 to 20 years ago supporting it (Jagacinski, 1987b).

In a second study (Jagacinski, 1987a), the relations between sex-typed traits and the job satisfaction and performance of men and women in the male-dominated field of engineering was examined. Regarding job satisfaction specifically, a multivariate analysis of variance demonstrated a highly significant effect for the M scale of the PAQ both on a global measure of job satisfaction and on three job satisfaction subscales (i.e., intrinsic aspects, extrinsic aspects, and career advancement opportunities). In all cases, engineers scoring high on the M scale expressed greater satisfaction with their jobs than those scoring low on the M scale. No other significant effects were observed for the set of satisfaction measures. Regression analyses supported the importance of the M scale, with it being the only independent variable in each analysis to have a significant regression coefficient. The authors underline the interesting finding that in this sample of women and men engineers--who were matched on various background factors--sex-typed traits were shown to have a greater predictive value than did sex itself.

In a study which compared sex and career-orientation influences on job satisfaction of men and women in dual-career families, Sekaran (1986) found there to be significant sex differences in the overall levels of job satisfaction of professional women versus professional men, and significant career-orientation differences in the levels of job satisfaction of professional women versus non-professional women. In both cases, individual tests for each of the predictors utilized in the study indicated that the differences could be tracked to the differential influences exerted by certain predictor variables. With respect to the sex difference among professionals, educational level and the amount of discretionary time spent on job-related activities both impacted significantly differently on the job satisfaction of men and women professionals. Concerning the career-orientation difference in professional/non-professional women's job satisfactions levels, multiple-role stress exerted a differential impact on job satisfaction for the two groups (Sekaran, 1986).

The findings of this study highlight the fact that, at least among dual-career families, differences in career orientations and sex differences can influence perceived levels of satisfaction derived from work. In follow-up interviews with a sub-sample of the participants' husbands and wives, it was revealed--both for wives in the professional and nonprofessional categories--that, in addition to the work role, the traditional role of homemaker was extensively played. Parenting, especially of infants and young children, seemed to be solely undertaken by the mothers in this sub-sample, with very little help from their spouses (Sekaran, 1986). This finding supports previous research which has suggested that the number of young children in the family can influence women's life- and job-satisfaction differently than men's, due to the fact that traditionally, women have been expected to take on--and have taken on--primary responsibility for child rearing (Bryson, Bryson, & Johnson, 1978; Hudis, 1976; St. John-Parsons, 1978; Szinovacz, 1977). Sekaran (1986) concludes that it is thus possible that the multiple-role-stress experienced by wives is due to the fact that they take on more roles and responsibilities in the family (Sekaran, 1986).

Finally, in a study by McIlwee (1982), the stability of job satisfaction for women employed in nontraditional occupations was examined. McIlwee (1982) surveyed a sample of 86 California women employed in male-dominated skilled and semi-skilled occupations, in

order to investigate the sources of their work satisfaction and dissatisfaction in their first and second years of employment. She found that in the first year of employment, most respondents reported a mixture of positive and negative experiences in the various aspects of their work; having good relationships with some co-workers and poor relationships with others; finding some aspects of the job, their training, or their status as a woman quite satisfying, while objecting to other aspects. Notably, the nontraditional nature of their jobs was a persistent theme when these women were asked to evaluate their work experiences (McIlwee, 1982). "They were mastering skills traditionally labelled 'male', finding intrinsic satisfaction and both intellectual and physical challenge in their work, receiving help and support from some of their male co-workers in their efforts to succeed in the job, taking home good-sized paychecks, anticipating advancements, and basking in the status of their nontraditional roles. These were new experiences and a considerable source of satisfaction" (McIlwee, 1982, p. 315).

By the second-year interviews, more than 30% of the sample were no longer employed in a nontraditional occupation. The job satisfaction of respondents who remained in nontraditional occupations had become considerably more focused on the qualities of the work itself, the autonomy it provided, and the conditions of the work setting. Respondents spoke more about the interesting, enjoyable nature of the work in the second year and less about the challenges and difficulties it provided. While social relationships and the physical and technical demands of the job were still important concerns--with poor social relationships and problems with harassment and hostility remaining near the top of their list of complaints--management practices had become a significant source of dissatisfaction for the women. Further, the nontraditional status of the job had become considerably less important as a source of satisfaction. "This suggests that changes had occurred for these women both in the work experience itself and in their own process of evaluating that experience" (McIlwee, 1982, p. 329). According to McIlwee (1982), as their nontraditional status in the workplace diminished, the perceived advantages of nontraditional work were counteracted to some extent as they became more aware of the dissatisfactions inherent in their jobs.

Summary and conclusion. In sum, research has shown nontraditional career-oriented women to differ in a number of distinct ways from traditional career-oriented women. Compared

with women in traditional career domains, those engaged in nontraditional careers tend to be more androgynous or masculine-typed, to have received more career-decision-making support from external sources (particularly male sources), to have mothers and fathers with higher levels of educational and occupational status, and to marry later and have fewer children.

In contrast, research has shown that--with some notable exceptions--women engaged in nontraditional careers tend to have many characteristics in common with their male counterparts engaged in the *same* careers. For example, nontraditional career-oriented women have been shown to possess many of the personality characteristics commonly attributed to men. As well, the work and personal value cognitions of women and men in managerial roles have been found to be highly comparable. The gender similarities end, however, when marriage and childbearing patterns are taken into consideration; compared with their male counterparts, women engaged in nontraditional careers are less likely to be married, and more likely to have fewer children or be childless. Thus, for these women--more so than the men--the onset of marriage and especially parenthood is often at the expense of career-related realization of potential.

With regard to job satisfaction, previous research findings are somewhat inconsistent, at best. For the most part, both women and men engaged in predominantly-male occupations tend to report higher-than-average job-satisfaction. However, the specific aspects of jobs affecting the satisfaction of these individuals have been found to vary widely for women and men. Among women engaged in nontraditional careers, salary earned and opportunities for advancement have been identified as among the most dissatisfying aspects, though such findings have been moderated by variables such as number of years of experience and type of organization (i.e., public vs. private) under study. Moreover, research suggests both women's and men's job satisfaction to be based on the framework of benefits and rewards associated with the sector of the labour market in which they are employed, with their level and sources of job satisfaction varying in relation to the degree of occupational sex segregation that exists in the field.

Where Do We Go From Here? Targeting Individuals with Science Training for Study

Certainly those women and men who are among the most immediate, serious contenders for careers in S&T are senior undergraduate students who are enrolled in, or have recently

graduated from, university S&T-related programs. Recognizing this fact, Nevitte et al. (1988) conducted a survey of a cross-Canada sampling of senior university science students. This study represents one of the few efforts to examine the career goals of this group, through an examination of the late-point career plans of those women and men who were in the process of studying science.

Nevitte and his colleagues (1988) make a strong argument to support the targeting of this population for analysis. Given that these students are the pool from which future role models will be drawn, any information about why some of these women and men are planning to continue in science, while others are not, is potentially useful. Such knowledge may serve as a policy guide for those interested in pursuing remedies for the gender imbalance that exists within S&T domains. According to Nevitte et al. (1988), a remedy based on this information would not only be less ephemeral than a general call for a change in social values, it would also have a better chance of success.

Another important feature of this target group is that it consists of those women and men with sustained S&T training. As such, it can generally be assumed that the women in this group are those who have successfully overcome the wide array of socialization, educational, extracurricular, and self-efficacy influences that, as discussed above, served to draw others away from S&T domains during their early exposure to science-related pursuits. Consequently, Nevitte and his colleagues (1988) consider that by looking at this group, they are imposing an approximate set of "controls" for those factors that explain why females fail to enter the scientific academic disciplines. Direct comparisons between women in this target group and their male counterparts may, thereby, help to isolate the gender significance of those variables particular to late-point career decision making (Nevitte et al., 1988).

The specific goal of the Nevitte et al. (1988) study was to explore the question of whether there are differences between the career aspirations of female and male undergraduates who are already within the same subdisciplines of academic science programs. In other words, if the career goals of students presently pursuing science programs were gender-neutral, one would expect that there would be no substantial differences found in the career goals of men and women within the same field of science.

The results of the research, however, lead to different, somewhat startling, conclusions (Nevitte et al., 1988). Moreover, they suggest that there are notable sex differences in the career plans of senior science students. In the study, females pursuing university science degrees were found to be more likely than their male peers to be planning for the pursuit of a career outside of the science realm. Also, of the men and women planning to leave the scientific/technological community for the pursuit of careers elsewhere, there were notable sex differences in the aspirations displayed. Furthermore, it was the top female performers who were found to be least likely to be planning a career in the sciences.

With regard to career goals specifically, the results showed that for those female and male science students who had not explicitly indicated that they intended to pursue a science career path, the overall prospective (rather than actual) non-retention rate among women science students was about fifty percent higher than among male science students (44.9% for females versus 29.8% for males). Nevitte and his colleagues (1988) interpret this finding as offering further support for the general trend which can be inferred from the aggregate Canadian census data, namely, that there are significant sex differences in the recruitment of senior science undergraduates to Canada's scientific/technological community.

A more detailed examination of the individual-level data revealed significant variation in the non-retention rates for Canadian science students. Firstly, women science students were about four times more likely than their male counterparts to be planning to enter such "nurturing" careers as social work or missionary work. Secondly, in all instances, across all subdisciplines within science, female students were systematically less likely than males to cite "business" as a career aspiration. Nevitte and colleagues (1988) conclude from their findings that a more systematic and substantial understanding of the dynamics of the late-point career decisions of men and women is called for. In particular, they call for further exploration into the question: "Why do women defect from science at a greater rate than do their male counterparts?" (Nevitte et al., 1988, p. 46).

Problems with the study by Nevitte and colleagues (1988). Prior to addressing the question just posed for future research, however, it must be pointed out that the Nevitte et al. (1988) results need to be interpreted with caution (and considered to be tentative) until such time

as a replication of the study offers support for the findings. There are several reasons why this is the case.

For one, the coding of responses to the survey question posed to participants is at issue. The survey question itself, which asked participants to detail their career goals upon receipt of their degree, was open-ended. From the variety of responses given to this question, the authors constructed the following five broad categories of career goals: (1) nurturing, (2) education, (3) business, (4) science/research technology, and (5) job in field.

It is the response pattern of participants to the fifth category ("job in field") that is cause for some concern. This final category was used to classify responses such as "to do something in my field", that is, those responses considered by the authors to be "too ambiguous or general to be useful" (p. 37). More importantly, only those responses which fell into the other four categories were considered by the authors to provide a basis which was definitive enough to merit interpretation. Based on this classification, almost twice as many women, compared with men, were considered to be planning to pursue some "non-definitive" job related to their field of study. Specifically, this means that from the outset of their data analysis, the authors regarded 25 of the 78 females (32% of the total female sample) as planning to leave the S&T domain. By comparison, only 18 of the 108 male participants (17% of the total male sample) were classified as such. Moreover, the use of this general category by the authors (i.e., failing to consider it definitive enough to be interpretable) may have served to seriously inflate the overall non-retention rate, particularly for women.

A second reason for cautious interpretation of the findings concerns the size of the sample and the ability to generalize from the findings based on it to the Canadian population of university students who are pursuing studies within the various subdisciplines of science. This is especially true in the case of female engineering students, who were only 10 in number. Overall, the sample consisted of a total of 78 women and 108 men. Students from only seven universities were surveyed, with three Canadian provinces remaining unrepresented.

Finally, the authors present their findings as percentages, only. Their conclusions are based on the same, without any statistical analyses having been conducted to assess the significance of the reported sex differences.

When these shortcomings are taken into consideration, the appropriateness of the question that is posed by Nevitte et al. (1988) for future research--asking why women defect from science at a greater rate than do their male counterparts--becomes dubious. Specifically, in this 1988 study, senior university students were asked to state their career plans. In actuality, however, a student's career plans may or may not necessarily be synonymous with her/his future career behaviour. In fact, the actual rate of non-retention of women and men in the domain of science in Canada may be higher, or lower, than the Nevitte et al. (1988) findings would suggest. Thus, there are inherent problems with the question that stems from their research. A more suitable first question leading from their study might ask: **"Is the pattern of student career aspirations found by Nevitte and colleagues (1988) reflected in the pattern of actual labour force *participation* of Canadian women and men upon graduation from a university S&T bachelor's degree program?"** That is, can the continued underrepresentation of women in Canada's S&T occupational domains be attributed to a lower rate of female persistence in this sector of employment, and not merely to the relatively low number of women initially pursuing S&T academic programs?

In order to address this question, a longitudinal look at the actual employment patterns of women and men S&T bachelor's-degree holders is required. Only when this research question has been clearly and affirmatively answered would it be useful to begin to investigate possible reasons as to why this phenomenon may occur.

CHAPTER TWO

THE PRESENT INVESTIGATION: HYPOTHESES AND RATIONALE

Introduction

It was the goal of the present investigation to put the "aspirational" findings of Nevitte and colleagues (1988) to a behavioural test. As such, this investigation was designed in an effort to respond to the more suitable question (posed above) leading from the Nevitte et al. (1988) study. That is: "Can the continued underrepresentation of women in Canada's S&T occupational domains be attributed to a lower rate of female persistence in this sector of employment, and not merely to the relatively low number of women initially pursuing S&T academic programs?"

The population of interest was young women and men who had earned a bachelor's degree from a Canadian university in one of the following four broad academic areas⁸: Natural Science (N); Engineering (E); Life Science/Health Professions (L); or, Mathematics/Computer Science (M). These recent graduates were deemed to be the most likely contenders for contributing to the immediate expansion of the Canadian scientific/technological community.

The primary objective of this investigation was to document the phenomenon of early-career retention in Canada's scientific/technological community via the establishment of comparative rates of persistence of highly-trained young women and young men in S&T sectors of employment (or post-baccalaureate study). If the post-baccalaureate educational/occupational behaviour of NELM bachelor's degree holders was, in fact, gender-neutral, one would expect that, among young women and young men earning bachelor's degrees within the same subdiscipline, there would be no substantial differences in rates of non-retention. Conversely, if the rate of non-retention in N, E, L, and/or M was found to be greater for women than for men, then the aspirational findings of the Nevitte et al. (1988) study would be considered supported by this behavioural test.

⁸A summary of the university programs of study comprising the N, E, L, and M (or NELM) academic areas is presented in Appendix A.

Regardless of whether or not rates of persistence in S&T pursuits were comparable among women and men NELM bachelor's degree holders, a secondary objective of this investigation was to conduct a preliminary investigation into some of the potential social and psychological correlates of retention (and non-retention) in scientific/technological pursuits for women and men. The specific correlates of retention and non-retention investigated herein were necessarily limited to those available in the data.

Statistics Canada Data

This investigation was carried out via a secondary analysis of survey data offering excellent descriptive potential. The data were collected as part of a large, national, longitudinal survey conducted between 1988 and 1991 by Statistics Canada, on behalf of Employment and Immigration Canada: "The Survey of 1986 Graduates", a two-year post-graduation survey (conducted in 1988), and, "The Follow-up of 1986 Graduates", a five-year post-graduation survey (conducted in 1991). Interviews were conducted by telephone from the regional offices of Statistics Canada (Statistics Canada, 1991c). According to a statement from the Department of the Secretary of State of Canada (1990), the National Graduates Surveys conducted up to 1990 alone required a total investment of close to 5 million dollars. They represent a unique and very rich source of data which are little known and greatly under-utilised; these data "have not been used much in policy-making or policy review exercises, or even as basic material for scholarly work" (Secretary of State, 1990, p. 2).

For this survey, a "graduate" was defined as someone who had received a bachelor's, master's, or doctoral degree from a recognized Canadian university in the calendar year 1986. Statistics Canada compiled as complete a "master list" as possible of all 1986 graduates, from all levels and fields of study. To this end, lists were provided by individual universities and/or by provincial Ministries of Education (Clark, 1989). From this "master list" of graduates, Statistics Canada selected a representative sample, stratified by province, level of qualification, and major field of study, for participation in the survey. Graduates found to be living outside of Canada were not queried (Clark, 1989).

Scholarly Contribution

Clearly, these data offered an ideal opportunity to investigate and to document the phenomenon of early-career retention (vs. non-retention) in Canada's scientific/technological community by young Canadians holding bachelor's degrees in an S&T-related domain. In addition, the data were broad enough that whether or not systematic sex differences in retention in S&T-related pursuits were found, a preliminary investigation into some of the social and psychological correlates of retention (and non-retention), for both women and men, was possible.

A major contribution of this investigation is its joint consideration of the post-baccalaureate educational *and* labour force behaviour of recent bachelor's degree earners. To date, most Canadian research has considered labour force behaviour, only. By establishing comparative rates of men's and women's non-retention in S&T-related pursuits—whether they were in the labour force *or* pursuing further education—this investigation would offer a more *complete* picture of the "loss" of expertise from the Canadian S&T establishment.

A second way in which this investigation sought to make a contribution was by means of the precision with which it assessed the variable "relation of job to education" for a national Canadian sample of NELM graduates. To date, most Canadian research (e.g., that carried out by Statistics Canada) has relied on the *opinion* of bachelor's degree-earners in evaluating the education-employment relation. Typically, graduates were asked two questions: "if their job was one for which their educational program was designed", and, "whether or not they used any of the skills they acquired in their education program on the job" (Clark, 1989, p. 58). Based on an affirmative response to both, one, or neither of these questions, respondents were classified as having a job that was "directly-related", "partially-related", or "unrelated" to their education, respectively.

In the present investigation, a more rigorous assessment of the education-employment relation was carried out. Rather than relying on the *opinions* of the graduates to make this classification, the education-employment relation was assessed *directly*--by comparing the academic area in which the bachelor's degree was obtained with the Standard Occupational Classification (Statistics Canada, 1980) of the job held.

Moreover, in this investigation, every attempt was made to provide an accurate portrayal of the post-baccalaureate educational pursuits/employment outcomes of Canadian women and men graduating with bachelor's degrees in S&T-related domains. Whether or not there were sex differences in rates of retention in S&T pursuits, the issue of retention is crucial from an economic-policy perspective. This is due to the fact that, in order to alleviate the crisis in Canada with regard to the shortage of highly trained S&T personnel, both men and women must be encouraged not only to pursue S&T-related ambitions, but to *remain* within S&T occupational domains.

Therefore, within the limits of these national, longitudinal data (collected largely for other purposes), the influence of selected social and psychological correlates of retention (vs. non-retention) was also investigated. Specifically, for both men and women, the contribution of the following predictor variables was assessed: mother's and father's levels of education; respondents' own intrinsic and extrinsic motivation for having originally enrolled in an N, E, L, or M program of study; age; marital status; and, number of dependent children. For the sub-samples of respondents who were employed, data were also available for a number of other variables. Specifically, among the employed sub-samples of graduates, the contribution of each of the following predictor variables was also assessed: further NELM-related education/training; further non-NELM-related education/training; income; job satisfaction; and, salary satisfaction.

A secondary objective of this investigation (beyond the establishment of rates-of-retention for men and women in S&T-related pursuits) was thus to assess the comparative influence of the above mentioned predictor variables on retention (vs. non-retention), as *predictors in their own right*. If sex differences in rates-of-retention were found, the question of whether or not they would remain, once men and women were equated on the available variables, would be investigated. Thus, research interest was not *solely* directed at identifying sex differences per se, but also towards shedding light on some of the potential social and psychological correlates of retention (vs. non-retention) in scientific/technological pursuits, for women and men.

Retention Versus Non-Retention in S&T-related Pursuits: Hypotheses

In Canada, even after the completion of a bachelor's degree in an S&T-related field, a sizable number of men and women choose not to pursue a career (or further education) within the scientific/technological realm (McDowell, 1991; Clark et al., 1986). Hence, the issue is not simply one of attracting more Canadian young women (and young men) to pursue S&T-related studies; it is also one of encouraging them to remain in scientific/technological careers.

Essentially, it was predicted in the present investigation that, in Canada, among undergraduate degree holders in science and technology, early career retention would be proportionately lower for young women, as compared to young men. This *fundamental postulation*, concerning the post-baccalaureate career behaviour of these individuals, stems primarily from previous research that has consistently shown women's rates of retention in S&T-related studies--during secondary school and beyond--to be proportionately lower than those of men. Of course, in this previous research, science and technology is generally defined to include only those domains in which women have traditionally been under-represented (i.e., primarily N, E, and M, but not L). A brief rationale for this fundamental postulation is provided below, following the statement of research hypotheses.

Hypotheses (research versus statistical). As noted by Kirk (1968), a distinguishing characteristic of the scientific method is the formulation and testing of hypotheses. There is an important distinction to be made between *statistical* hypotheses (presented in Chapter 3: Methodology), and *research* hypotheses, presented below. A statistical hypothesis is "a statement about one or more parameters of population distributions; and, as such, it refers to a situation that *might* be true" (Kirk, 1968, p. 22). Such a statement is always made with respect to a population and not to a sample. A research hypothesis, on the other hand, is "normally stated in general terms, at least in the initial stages of an inquiry" (Kirk, 1968, p. 22).

As will be demonstrated in Chapter 3, it is the task of the experimenter to translate each research hypothesis into a dichotomous set of mutually exclusive statistical hypotheses (i.e., the *null hypothesis* and the *alternative hypothesis*). Although researchers may speak of testing a single hypothesis, in practice we behave as though we were deciding which one of two mutually

exclusive and exhaustive hypotheses is supported by our data. The procedure by which researchers make this decision is called a statistical test (Kirk, 1968).

This distinction between the two different types of hypotheses--research and statistical--is made at this point in order to clarify for the reader that what follows is a presentation of the present investigation's *research hypotheses*. As noted above, the fundamental postulation herein was that early career retention among undergraduate degree holders in S&T would be proportionately lower for young women than young men. As such, each of the four research hypotheses that follow make this prediction; in fact, these are actually four complementary ways of testing the same postulation⁹. It is important to note that the feature distinguishing each hypothesis is the *sample* or *sub-sample* of respondents in which it was tested.

Hypothesis 1. CONSIDERING THE *ENTIRE* SAMPLE OF NELM BACHELOR'S DEGREE HOLDERS AS A WHOLE, THE PROBABILITY OF BEING RETAINED IN NELM AT THE 2-YEAR *AND* THE 5-YEAR POST-GRADUATION FOLLOW-UP INTERVIEWS WILL BE *LOWER* FOR YOUNG WOMEN THAN FOR YOUNG MEN.

In this, the first test of the present investigation's fundamental postulation, the post-baccalaureate educational *and* labour force behaviour of recent S&T bachelor's degree earners were given *joint* consideration. Academic area was not differentiated in this test, rather, the entire sample of NELM bachelor's degree holders was considered as a whole. A separate test was conducted at each of the two post-graduation follow-up interviews (i.e., year-2 and year-5).

Hypothesis 2. CONSIDERING EACH OF THE FOUR NELM GROUPS OF BACHELOR'S DEGREE HOLDERS *SEPARATELY*, THE PROBABILITY OF BEING RETAINED IN NELM AT THE 5-YEAR POST-GRADUATION FOLLOW-UP INTERVIEW WILL BE *LOWER* FOR YOUNG WOMEN THAN FOR YOUNG MEN IN THE "N", "E", AND "M" GROUPS (AND WILL BE *DIFFERENT* FOR YOUNG WOMEN VS. YOUNG MEN IN THE "L" GROUP).

In this, the second test of the investigation's fundamental postulation, the

⁹The expression of this investigation's *fundamental postulation* as a set of four complementary research hypotheses necessarily resulted in some *redundancy*. As detailed below and in Chapter 4, there were compelling pragmatic reasons for stating the hypotheses in this way (e.g., data on certain correlates of interest, including, income, job satisfaction, salary satisfaction, and those dealing with further education were available *only* for the sub-samples of *employed* respondents).

post-baccalaureate educational *and* labour force behaviour of recent S&T bachelor's degree earners were, again, given *joint* consideration. This test, conducted only at the later post-graduation follow-up interview, was carried out *separately* in each of the four sub-samples of bachelor's degree holders (i.e., the N, E, L, and M groups). Although this research hypothesis was *directional* with regard to three of these four sub-samples of bachelor's degree holders, the hypothesis with regard to the "L" group was *non-directional*, due to insufficient evidence being available on which to base a directional hypothesis in this case.

Hypothesis 3. UPON FURTHER REFINING THE SAMPLE UNDER CONSIDERATION TO INCLUDE ONLY THOSE BACHELOR'S DEGREE HOLDERS WHO WERE *EMPLOYED* AT BOTH THE 2-YEAR AND THE 5-YEAR POST-GRADUATION FOLLOW-UP INTERVIEWS, THE PROBABILITY OF BEING RETAINED IN NELM-RELATED EMPLOYMENT AT THE 5-YEAR POST-GRADUATION FOLLOW-UP INTERVIEW WILL BE *LOWER* FOR YOUNG WOMEN THAN FOR YOUNG MEN, IN THE "N", "E", AND "M" GROUPS (AND WILL BE *DIFFERENT* FOR YOUNG WOMEN VS. YOUNG MEN IN THE "L" GROUP).

By virtue of pre-selecting the sub-sample of *employed* respondents, this third test of the investigation's fundamental postulation gave consideration *only* to the post-baccalaureate labour force behaviour of recent NELM bachelor's degree earners. This was done in order to allow for the consideration of such employment-related variables as job-satisfaction and income. This test, conducted only at the later post-graduation follow-up interview, was also carried out separately in each of the four sub-samples of bachelor's degree holders (i.e., the N, E, L, and M groups). Again, whereas this research hypothesis was *directional* with regard to three of these four sub-samples of bachelor's degree holders, the hypothesis with regard to the "L" group was *non-directional*, due to insufficient evidence being available on which to base a directional hypothesis in this case, as well.

Hypothesis 4. UPON *REDEFINING* THE RESTRICTED SAMPLE UNDER CONSIDERATION TO INCLUDE ONLY THOSE BACHELOR'S DEGREE HOLDERS WHO WERE *NOT* RETAINED IN NELM-RELATED PURSUITS AT THE 2-YEAR POST-GRADUATION FOLLOW-UP INTERVIEW, THE PROBABILITY OF *RETURNING* TO NELM-RELATED PURSUITS AT THE 5-YEAR POST-GRADUATION FOLLOW-UP INTERVIEW WILL BE *LOWER* FOR YOUNG WOMEN THAN FOR YOUNG MEN, IN THE "N", "E", AND "M" GROUPS (AND WILL BE *DIFFERENT* FOR YOUNG WOMEN VS. YOUNG MEN IN THE "L" GROUP).

This fourth test of the investigation's fundamental postulation again gave *joint* consideration to the post-baccalaureate educational *and* labour force behaviour of recent S&T bachelor's degree earners. In this case, however, by virtue of pre-selecting the sub-sample of respondents who were *not* retained in NELM-related education or employment at the 2-year post-graduation follow-up interview, this test was specifically focussed on *return* to NELM-related pursuits. Once again, this test was conducted only at the later post-graduation follow-up interview, and was carried out separately in each of the sub-samples of N, E, L, and M bachelor's degree holders. As before, this research hypothesis was *directional* with regard to three of these four sub-samples of bachelor's degree holders, whereas the hypothesis with regard to the "L" group was *non-directional*, due to insufficient evidence being available on which to base a directional hypothesis.

Brief rationale for research hypotheses 1 to 4. As noted above, these research hypotheses were derived by extrapolation from previous investigations that have consistently revealed the rate of women's attrition from S&T-related academic studies to be proportionately greater than that of men. Research has shown this to be the case for women at a number of stages of preparation for a scientific/technological career, including: during secondary school (Matyas, 1985; Scott, 1981); during undergraduate studies, both before and after declaring an S&T-related major (Seymour 1992a, 1992b; Ware et al., 1985); and, in the senior year of their pursuit of an S&T-related university degree (Nevitte et al., 1988). In the last-mentioned study, significant sex differences in the career plans of Canadian senior university science students were found, with the most capable female university students *planning to leave* S&T-related pursuits.

It is important to note, however, that as is reflected in the statement of Hypotheses 2, 3 and 4 (above), previous research has generally considered S&T to primarily encompass the academic areas of "N", "E", and "M". Therefore, in respecting the exploratory nature of this investigation with regard to "L" sub-sample of bachelor's degree holders, no directional predictions have been made.

The sex composition of the work group affects men and women differently. For example, membership in a primarily male work-group has been shown to function to the advantage of men, while placing stressful performance pressures on women and detracting from the social

support they would otherwise receive (South, Bonjean, Markham, & Corder, 1982). For the most part, with the exception of some occupations in the agriculture and biological sciences sector (i.e., the "L" cohort, herein), S&T occupational environments tend to be male-dominated (Marshall, 1987; 1989). As such, although conditions will vary depending on the type of scientific pursuit and the proportional representation of women therein, Canadian women beginning their careers in an S&T domain may well find themselves in an occupational environment that is relatively unsupportive of women (Carroll & Cherry, 1988; Tancred & Czarnocki, 1992).

Finally, family-related commitments, especially the parenting of young children, are likely to present more career/family challenges for women than for men (Card et al., 1980). Career stage and family characteristics are among the variables which have been shown to influence both men's and women's occupational-mobility decisions. Noe, Steffy, and Barber (1988) found employees in early career stages to be more willing to accept movement opportunities (i.e., promotions, demotions, or lateral transfers) than those individuals in later career stages. For women more so than for men, family-related commitments including marriage and parenthood have been shown to have a negative influence on the realization of career potential (Card et al., 1980). Such influences are likely to be particularly salient given the timing of the follow-ups in the present study (i.e., 2 years and 5 years after graduation from university with a bachelor's degree). Moreover, temporal marriage- and childbearing-patterns, which have been noted as key variables of influence in the work lives of women in nontraditional occupations (Marshall, 1989; Perrucci, 1970), are likely to impact on the post-baccalaureate educational and occupational behaviour of these S&T-trained Canadian women, particularly in the "N", "E", and "M" cohorts.

Correlates of Retention Versus Non-Retention in S&T-related Pursuits: Research Questions

As noted above, this investigation was conducted via the secondary analysis of survey data collected by Statistics Canada. Derived from a national, longitudinal survey of Canadian post-secondary graduates, these data offer good descriptive/inferential potential and an ideal opportunity to document the phenomenon of early-career retention (vs. non-retention) in the

scientific/technological community by young Canadians holding bachelor's degrees in an S&T-related domain. As with all good things, however, these data do have limitations, by which the research design of the present investigation was unavoidably bound. Specifically, what these data do *not* offer is the chance to definitively probe the issue of "why", during the five year period subsequent to completing advanced S&T-related education and training, some young women (and young men) choose either to forego or to discontinue their participation in Canada's scientific/technological community.

There have been a number of recent federal, provincial, and private-industry based initiatives aimed at encouraging young Canadians--particularly young women--to pursue careers in scientific- and technologically-oriented fields. However, regardless of the number of women starting out on the "pathway" to an S&T-related career, it is known that, in Canada, within the 5-years following the receipt of an S&T-related bachelor's degree, there is a substantial degree of "loss" of expertise from the scientific/technological establishment (McDowell, 1991; Clark et al., 1986). In the United States, there have been a handful of recent wide-scale efforts aimed at comprehensively addressing the issue of women's attrition from S&T-related pursuits (e.g., Hewitt & Seymour, 1991; Rayman & Brett, 1993). In Canada, however, this research is in its elementary stages.

Formulation. Despite the theoretical limitations imposed by the current state of Canadian research and the practical limitations imposed by the data employed in the present investigation, a preliminary attempt was made to take a closer look at those young women who--upon reaching the end of the S&T-related training "pathway" and receiving a NELM bachelor's degree--chose to join the Canadian scientific/technological establishment (i.e., were "retained" in S&T). Specifically, for each of the available social and psychological correlates of retention (vs. non-retention) in NELM, answers to the following pair of basic research questions were sought: (1) How do the sub-samples of "retained" women compare with sub-samples of "retained" men? And, (2) how do the sub-samples of "retained" women compare with sub-samples of women who were "not retained" in NELM?

In view of the theoretical and practical limitations discussed above, these inquiries were clearly exploratory in nature. As such, it was deemed inappropriate to place them in a traditional

hypothesis-testing framework (Kirk, 1968); therefore, they were framed in the form of a set of research questions, as follows. A statement of rationale and expectations for each research question is elaborated at the conclusion of this section.

Answers to these two basic research questions were sought, *separately*, in each of the four NELM groups. Further (as detailed below), answers to each of the two research questions were actually sought for two different *sub-samples* of individuals--*within* each of the four NELM groups--namely: the samples of "retained" respondents as a whole, and, the sub-samples of "retained" respondents who were *employed* in NELM-related careers¹⁰.

Research Question 1: How do "retained" women compare with "retained" men?

(1.1) Considering each of the NELM groups of bachelor's degree holders *separately*, how do women engaged in S&T-related pursuits at the 5-year post-graduation follow-up interview (i.e., in a NELM-related career or field of further study) compare with their male counterparts on the following variables: (a) mother's level of education; (b) father's level of education; (c) intrinsic motivation for having originally enrolled in an N, E, L, or M program of study; (d) extrinsic motivation for having originally enrolled in an N, E, L, or M program of study; (e) marital status at the 5-year follow-up; (f) age at the 5-year follow-up; (g) number of dependent children at the 5-year follow-up?

(1.2) Again, considering each of the NELM groups of bachelor's degree holders *separately*, how do women engaged in S&T-related *employment* at the 5-year follow-up interview (i.e., in a NELM-related career) compare with their *employed* male counterparts on each of the seven variables listed above (i.e., [a] to [g]), as well as the variables: (h) further NELM-related education since 1986; (i) further non-NELM-related education since 1986; (j) income at the 5-year follow-up; (k) job satisfaction at the 5-year follow-up; and, (l) salary satisfaction at the 5-year follow-up?

Research Question 2: How do "retained" women compare with "non-retained" women?

(2.1) Considering each of the NELM groups of bachelor's degree holders *separately*,

¹⁰These redundancies were, again, necessitated by the fact that data on certain correlates of interest (i.e., income, job satisfaction, salary satisfaction, and those dealing with further education) were available only for the sub-samples of *employed* respondents.

how do women engaged in S&T-related pursuits at the 5-year post-graduation follow-up interview (i.e., in a NELM-related career or field of further study) compare with those women who were *not* engaged in S&T-related pursuits at the 5-year post-graduation follow-up interview, on the following variables: (a) mother's level of education; (b) father's level of education; (c) intrinsic motivation for having originally enrolled in an N, E, L, or M program of study; (d) extrinsic motivation for having originally enrolled in an N, E, L, or M program of study; (e) marital status at the 5-year follow-up; (f) age at the 5-year follow-up; (g) number of dependent children at the 5-year follow-up?

(2.2) Again, considering each of the NELM groups of bachelor's degree holders *separately*, how do women engaged in S&T-related *employment* at the 5-year follow-up interview (i.e., in a NELM-related career) compare with those women who were engaged in non-NELM-related *employment* at the 5-year post-graduation follow-up interview, on each of the seven variables listed above (i.e., [a] to [g]), as well as the variables: (h) further NELM-related education since 1986; (i) further non-NELM-related education since 1986; (j) income at the 5-year follow-up; (k) job satisfaction at the 5-year follow-up; (l) salary satisfaction at the 5-year follow-up?

Brief statement of rationale regarding the research questions. To date, relatively little empirical research has focussed specifically on individuals with advanced NELM training (e.g., bachelor's degrees). However, there is a substantial body of literature comparing women engaged in nontraditional careers with their male counterparts in the *same* careers and/or with women engaged in *traditionally female-dominated* careers. It is from this literature (reviewed in the latter portion of Chapter 1), that an attempt was made to extrapolate a rationale and formulate expectations regarding this study's research questions.

As noted above, this pair of basic research questions was posed in an effort to take a closer look at those young women who, 5 years after completing a NELM bachelor's degree, were "retained" within the Canadian scientific/technological establishment. Despite the fact that only a limited collection of social and psychological correlates of retention (vs. non-retention) were available for study in the present research, an initial assessment of group differences was carried out. This was done as a preliminary effort to begin to probe the question of "why" some

highly trained young women remain in S&T-related domains, while others depart. Expectations for research questions 1 and 2 (which varied across correlates and across NELM groups) are elaborated below and presented (in summary form) in Tables 4 and 5, respectively.

Expectations: Research question 1. Prior to comparing women who were "retained" in NELM with men "retained" in NELM, previous research findings were reviewed and--where possible--expectations formulated. As detailed below, expectations regarding anticipated sex differences were formulated only for the three groups comprised of traditionally male-dominated disciplines, namely, the N, E, and M groups. As Table 4 shows, for these 3 groups of respondents, sex differences were expected on several correlates; for other correlates, the expectation was that there would be *no* sex difference; and, for the remaining correlates, no predictions were made. Given the heterogenous nature of the L group--comprised of some disciplines which are traditionally male-dominated (e.g., dentistry), others that are relatively gender-neutral (e.g., medicine), and still others which are traditionally female-dominated (e.g., nursing)--no predictions were made on the basis of the review of previous research.

Research has shown that, generally speaking, women in male-dominated jobs are likely to have been strongly influenced by highly educated mothers, especially mothers who worked in nontraditional and/or professional occupations (Jagacinski, 1987b; Lemkau, 1983; Tangri, 1972; Zuckerman, 1980). As such, it was expected that, on average, (a) mother's level education would be higher among "retained" N, E, and M women than among "retained" N, E, and M men. (No prediction was made for the L group).

According to previous research, women engaged in nontraditional careers tend to have a number of characteristics in common with their male counterparts engaged in the *same* careers. For example, nontraditional career-oriented women have been shown to possess many of the personality characteristics commonly attributed to men (Chusmir, 1983). As well, the work and personal value cognitions of women and men in managerial roles have been found to be highly comparable (McCarrey et al., 1989). By extension, "retained" N, E, and M women were *not* expected to differ from their male counterparts in terms of two correlates, namely: (c) intrinsic and (d) extrinsic motivation for having originally enrolled their program of study. (No predictions were made for the L group).

Table 4

Research Question 1: How Do Women "Retained" in NELM at Year-5 Compare with Men "Retained" in NELM at Year-5? Summary of Expectations

variable ^a	test statistic	natural science	engineering	life science / health professions	mathematics / computer science
<i>research question 1.1: "whole" samples of "retained" women and men</i>					
(a) mother's level of education ^b	<i>t</i> -test	women's more highly educated	women's more highly educated	---	women's more highly educated
(b) father's level of education	<i>t</i> -test	---	---	---	---
(c) intrinsic motivation (to enrol in NELM)	<i>t</i> -test	no difference	no difference	---	no difference
(d) extrinsic motivation (to enrol in NELM)	<i>t</i> -test	no difference	no difference	---	no difference
(e) marital status at 5-years	Pearson χ^2	fewer women married	fewer women married	---	fewer women married
(f) age at 5-years	<i>t</i> -test	---	---	---	---
(g) number of children at 5-years ^b	<i>t</i> -test	women have fewer children	women have fewer children	---	women have fewer children
<i>research question 1.2: "employed" sub-samples of "retained" women and men</i>					
variables (a) to (g)		SAME AS ABOVE			
(h) further NELM-related education since 1986	Pearson χ^2	---	---	---	---
(i) further non-NELM-related education since 1986	Pearson χ^2	---	---	---	---
(j) income at 5-years	<i>t</i> -test	no difference	no difference	---	no difference
(k) job satisfaction at 5-years	<i>t</i> -test	no difference	no difference	---	no difference
(l) salary satisfaction at 5-years	<i>t</i> -test	no difference	no difference	---	no difference

Note: dashes indicate no prediction made.

^aRefer to Table 6 for a complete summary of variable coding.

^bGiven the expectation regarding the direction of the difference, one-tailed *t*-tests were conducted for the N, E, and M academic area sub-samples.

Table 5

Research Question 2: How Do Women "Retained" in NELM at Year-5 Compare with Women "Not-Retained" in NELM at Year-5? Summary of Expectations

variable ^a	test statistic	natural science	engineering	life science / health professions	mathematics / computer science
<i>research question 2.1: "whole" samples of women</i>					
(a) mother's level of education	<i>t</i> -test	---	---	---	---
(b) father's level of education	<i>t</i> -test	---	---	---	---
(c) intrinsic motivation (to enrol in NELM)	<i>t</i> -test	---	---	---	---
(d) extrinsic motivation (to enrol in NELM)	<i>t</i> -test	---	---	---	---
(e) marital status at 5-years	Pearson χ^2	fewer "retained" married	fewer "retained" married	---	fewer "retained" married
(f) age at 5-years	<i>t</i> -test	---	---	---	---
(g) number of children at 5-years ^b	<i>t</i> -test	"retained" have fewer children	"retained" have fewer children	---	"retained" have fewer children
<i>Research Question 2.2: "employed" sub-samples of women</i>					
variables (a) to (g)	SAME AS ABOVE				
(h) further NELM-related education since 1986	Pearson χ^2	more likely among "retained"	more likely among "retained"	more likely among "retained"	more likely among "retained"
(i) further non-NELM-related education since 1986	Pearson χ^2	more likely among those "not-retained"	more likely among those "not-retained"	more likely among those "not-retained"	more likely among those "not-retained"
(j) income at 5-years	<i>t</i> -test	---	---	---	---
(k) job satisfaction at 5-years	<i>t</i> -test	---	---	---	---
(l) salary satisfaction at 5-years	<i>t</i> -test	---	---	---	---

Note: dashes indicate no prediction made.

^aRefer to Table 6 for a complete summary of variable coding.

^bGiven the expectation regarding the direction of the difference, one-tailed *t*-tests were conducted for the N, E, and M academic area sub-samples.

Regarding marriage and childbearing patterns, research has shown that, compared with their male counterparts, women engaged in nontraditional careers are less likely to be married and more likely to have fewer children or to be childless (Card et al., 1980; Jagacinski, 1987a, 1987b; Marshall, 1989; Perucci, 1970). As such, it was expected that, 5 years subsequent to graduating with a bachelor's degree, "retained" N, E, and M women would be less likely to be (e) married and would (g) have fewer children than "retained" N, E, and M men. (No predictions were made for the L group).

In the test of the sub-sample of *employed* individuals (i.e., research question 1.2), all of the previous expectations applied, with further expectations being formulated for the available correlates: income, job satisfaction, and salary satisfaction. With regard to job satisfaction, though previous researchers have reported findings that are somewhat inconsistent, both women and men engaged in predominantly-male occupations tend to report higher-than-average job-satisfaction (Moore, 1985). Therefore, no sex difference on (k) job-satisfaction was expected for the N, E, and M groups. Regarding (j) income and (l) salary satisfaction, no differences were expected when these highly-trained N, E, and M young women and young men who were "retained" in NELM were compared. (Again, no predictions were made for the L group).

Finally, as Table 4 shows, predictions were not made--for any of the four NELM groups--on the correlates: (b) father's level of education or (f) age at the 5-year follow-up (research questions 1.1 and 1.2), nor for the correlates: (h) further NELM-related education since 1986 or (i) further non-NELM-related education since 1986 (research question 1.2).

Expectations: Research question 2. Prior to comparing women who were "retained" in NELM with those women who were "not retained", previous research findings were reviewed and--where possible--expectations were, again, formulated regarding group differences on the available correlates, for each of the NELM groups. Research has shown that, compared with women in traditional career domains, those engaged in nontraditional careers tend to be more androgynous or masculine-typed (Chusmir, 1983; Jagacinski, 1987a; 1987b; Standley & Soule, 1974; Strange & Rea, 1983; Williams & McCullers, 1983), to have received more career-decision-making support from external sources (particularly male sources) (Handley & Hickson, 1978; Houser & Garvey, 1985; Lemkau, 1983; McLure & Piel, 1978; Stake & Levitz,

1979; Standley & Soule, 1974), to have mothers and fathers with higher levels of educational and occupational status (Marshall, 1987; 1989; Tangri, 1972), and, to marry later and have fewer children (Card et al., 1980; Jagacinski, 1987a; 1987b; Marshall, 1987; 1989; Perucci, 1970; Tangri, 1972).

Granted, previous research comparing nontraditionally-career-oriented women with traditionally-career-oriented women has shown these two groups to differ in several distinct ways. However, the groups of women being compared in the present study do not expressly fit this categorization--the difference being that, in the present case, *both* groups of women had pursued high-level education and training in a traditionally male-dominated area of S&T. This fundamental distinguishing feature made it difficult to formulate expectations in the present case that would essentially equate the "non-retained" women with "nontraditionally-career-oriented" women in the general population.

Consequently, except in the case of the most "conspicuous" correlates, it was deemed inappropriate to formulate expectations based on this body of prior research. Therefore (as shown in Table 5), the *only* expectations were that--compared with their "non-retained" female counterparts--the women "retained" in NELM would be *less* likely to be (e) married, and (g) have fewer children. These expectations applied to research question 2.1 as well as research question 2.2 (the test of the sub-samples of *employed* women). Once again, these expectations applied *only* to the N, E, and M groups of women, with no predictions being made for the heterogenous L group.

Finally, two supplementary, intuitive expectations were formulated which applied across all four NELM groups. These additional expectations pertained to the "further education" correlates and were based on common sense. Specifically, it was expected that--across all four NELM groups--a larger proportion of "retained" women (vs. "non-retained women) would have pursued further NELM-related education since 1986; conversely, it was expected that a larger proportion of "non-retained" women (vs. "retained" women) would have pursued further non-NELM-related education since 1986.

CHAPTER THREE
METHODOLOGY

Academic Areas of N, E, L, and M

At the outset of this investigation there were two critical decisions to be made concerning university "majors" or programs of study. First, from which university programs of study would the sample be selected (i.e., which of the programs of study were of research interest?). Second, how would the programs of study chosen be grouped together into categories?

Regarding the first decision, the very definition of "science and technology" was at issue. It was acknowledged that typically, when the shortage of highly qualified S&T personnel is discussed, the occupational groups being referred to are those in the high-tech, research and development-oriented fields of physical science, engineering, and mathematics (ECC, 1991). Similarly, it is in these occupational groups that the underrepresentation of women has been an on-going problem. However, a more "all-encompassing" approach to defining science and technology would also take into account other fields, including those that were traditionally more gender-balanced (e.g., biology) and some that were female-dominated (e.g., physiotherapy).

Thus, the major question involved in this decision was whether or not to include in this investigation programs of study in agricultural sciences, biological sciences, and/or in the life sciences and health professions. Obviously, women's underrepresentation in these latter programs of study was not a concern. Nevertheless, the attrition of both women and men from these occupational domains was deemed to be of research interest. Further, these programs of study had the potential to provide a basis against which the more high-tech, research and development-oriented fields could be compared. Moreover, this issue was resolved with the decision to take a "maximalist" approach to defining "science and technology" by including the above mentioned programs of study.

The second critical decision was how to group the vast array of university programs of study into meaningful categories. Initially this may appear to be a "non-issue" to some readers, given that the federal government already has a system in place, namely, the University Student

Information System (USIS¹¹), developed by the Education, Culture, and Tourism Division of Statistics Canada (Statistics Canada, 1991c). As noted above (see footnote 3), this system of categorization classifies S&T-related programs of study into the following three categories: engineering together with applied science; mathematics together with physical science; and, agriculture together with biological science. A fourth category is comprised of programs of study in the health professions and occupations.

For the purpose of the present investigation, however, this system of categorization was deemed to be inadequate and was rejected. The major problem with the USIS-based system was its formation of categories that were far too heterogenous. Of specific concern was the grouping together of programs of study as diverse as mathematics, chemistry, computer science, physics, oceanography, climatology and geology into the very broad *mathematics/physical science* category (see Appendix B). Similarly, the *engineering/applied science* category saw landscape architecture and forestry grouped together with the engineering programs of study. Ultimately, the decision to reject the USIS coding system for the purposes of the present investigation was based on discussions with other researchers in the field as well as on pilot work conducted by the author (Worth Gavin, 1995; Worth Gavin & Brown, 1993). Therein, concerns were raised about the conspicuous mixing together of dissimilar programs of study in this rather crude taxonomy, which could potentially serve to invalidate research results. Moreover, it was concluded that a greater contribution to the literature could be made by developing a new system of categorizing university majors for the specific purposes of the present study, rather than relying on the USIS-based system.

As such, a system of classifying the programs of study into academic areas using the "NELM" designations was developed. Each of the programs of study listed in the USIS was examined by the author and a second researcher¹² to determine which belonged under each of the four designations of Natural Science, Engineering, Life Science/Health Professions, and

¹¹The University Student Information System (Statistics Canada, 1991c) is presented in Appendix B.

¹²The two researchers who carried out this examination were the author of this dissertation and her advisor, Dr. Robert Flynn. The process consisted of a roughly independent review by these two researchers, who were in the position of having the best sense of the data and of the objectives of the investigation.

Mathematics/Computer Science. Complete consensus was reached on the categorization via this process, with additional information obtained, when necessary, by making reference to descriptions of the programs of study in the "User's Guide to the 1986 Census Data on Major Fields of Study" (Statistics Canada, 1986). A summary of the decisions stemming from a review of eleven of these descriptions is presented in Appendix C.

Respondents

The respondents were members of Canadian university graduating classes of 1986, surveyed by Statistics Canada 2- and 5-years after graduation (i.e., in 1988 and 1991); all Canadian universities were represented. For the purpose of this investigation, only the national sample ($N = 3205$) of Natural Science, Engineering, Life Science/Health Professions, and Mathematics/Computer Science (NELM) bachelor's or first-professional degree holders was retained from the original sample of 1986 graduates ($N = 35\ 401$) compiled by Statistics Canada (stratified by level of qualification, major field of study, and province). A complete list of the distribution of respondents in the university programs comprising the N, E, L, and M academic areas is presented in Appendix D. In Appendix E, a complete list of the universities included in the Survey of 1986 Graduates and the Follow-up of 1986 Graduates is presented.

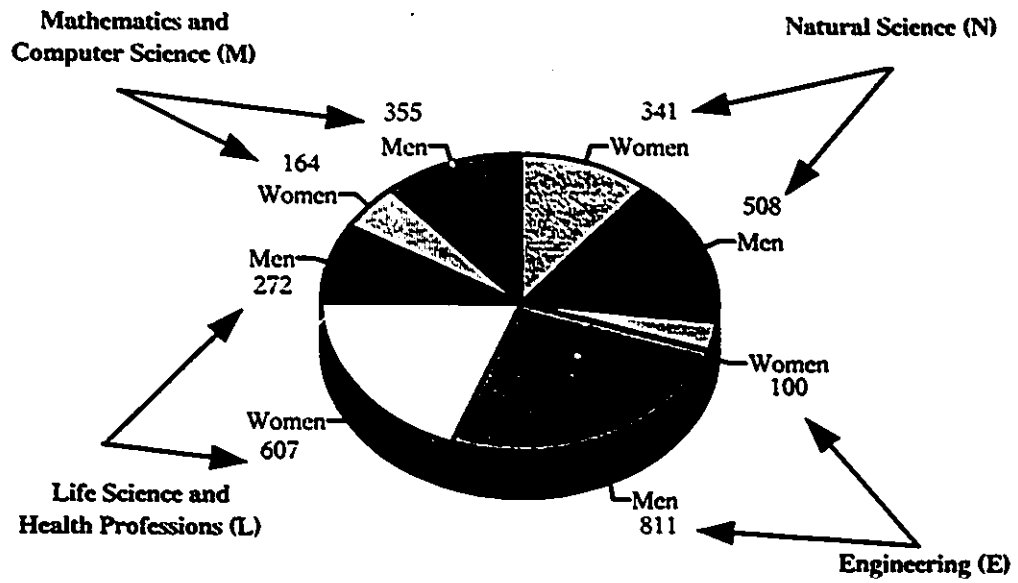
As detailed in Chapter 4 (see Preliminary Analyses), only 47 respondents were excluded from the original sample of NELM bachelor's degree holders due to inordinate missing values: the remaining sample of 3158 comprised 1212 women and 1946 men. Although respondents ranged in age from 18 to 72 years, approximately 90% of the sample was between 23 and 30 years of age at the 2-year follow-up interview¹³. The mean age at the 2-year follow-up interview was 26.34 years ($SD = 4.98$) among women and 25.96 years ($SD = 3.57$) among men. Figure 3 presents a breakdown of the final sample by academic area and by sex.

Questionnaires

The data were drawn from two survey instruments (i.e., questionnaires). The "Survey of 1986 Graduates University and College Programs Questionnaire", administered to the

¹³Approximately 99% of the sample ranged in age from 22 to 43 at the 2-year follow-up interview.

Figure 3. Distribution of sample by NELM academic area and by sex (N = 3158)



respondents at the 2-year follow-up interview (i.e., in 1988), consisted of a total of 171 questions. The "Follow-up of 1986 Graduates Questionnaire", administered to the respondents at the 5-year follow-up interview (i.e., in 1991), consisted of a total of 156 questions. The two questionnaires are presented in Appendices F and G, respectively. Presented in Appendix H is the Statistics Canada coding manual for the two questionnaires (Statistics Canada, 1991c).

Only selected questions from the questionnaires were relevant to the purposes of this investigation. Specifically, questions relating to background, motivation, and situational variables (specifically: sex; age; mother's and father's level of education; marital status; number of dependent children; original motivation for having enrolled in a NELM bachelor's degree program; and, further post-baccalaureate education pursued since graduation in 1986) were utilized. As well, the graduates' responses to those questions which lent themselves to the investigation of retention (versus non-retention) in NELM, income, job satisfaction, and salary satisfaction, were utilized. In 1988 (i.e., at the 2-year post-graduation follow-up interview), graduates responded to these latter questions for a specific period, that is, the "reference week" of May 1 to 7, 1988. In 1991, (i.e., the 5-year post-graduation follow-up interview) graduates responded for the week that immediately preceded the interview (i.e., "last week").

A description of the measurement and coding of the variables employed in this investigation follows. When relevant, the specific wording of the question(s) is presented.

*Variable Derivation and Coding*¹⁴

Table 6 provides a summary of the coding of all variables, measured at the 2-year and/or the 5-year post-graduation follow-up interviews, in the form in which they were used for the purpose of the present analyses¹⁵. It is important to note that, for those variables measured at both follow-up interviews (e.g., marital status, etc.), variable coding was identical across follow-ups, unless otherwise indicated.

¹⁴Variable coding (i.e., the numeric codes used and what each represented) is distinguished from variable derivation. Due to the complexities involved in the derivation of certain variables, some information is summarized in this section—the rest is presented in Appendices I through N.

¹⁵As discussed in Chapter 3 (see Data Analyses), for the purpose of the logistic regression analyses, the scaling of several continuous variables was reparameterized to represent distinct, meaningful categories.

Table 6

Coding Details and Descriptions of all Variables Measured at the 2- and 5-Year Post-Graduation Follow-up Interviews and Used in Subsequent Analyses³

variable(s) ^b	coding details/descriptions	
sex	0 = female 1 = male	
mother's level of education ^c	1 = no formal schooling to less than secondary school completion	
father's level of education ^c	2 = completed secondary school 3 = some to completed: college, CEGEP, tech, trade, vocational, or nursing school 4 = teacher's college, some university, or earned bachelor's degree 5 = degree or diploma above bachelor's level (master's, Ph.D., professional degree)	
intrinsic motivation ^d	1 = not at all	
extrinsic motivation ^d	to 4 = to a great extent	
	<i>at the 2-year follow-up</i>	<i>at the 5-year follow-up</i>
age (category) ^e	1 = less than or equal to 23 years 2 = 24 years 3 = 25 years 4 = 26 years 5 = 27 years 6 = greater than or equal to 28 years	1 = less than or equal to 26 years 2 = 27 years 3 = 28 years 4 = 29 years 5 = 30 years 6 = greater than or equal to 31 years
marital status ^f	0 = single, widowed, or divorced 1 = married or living common law	0 = single, widowed, or divorced 1 = married or living common law
number of dependent children	<i>continuous variable</i> ranging from 0 to 4	
further education ^g	0 = none 1 = some NELM-related 2 = some non-NELM related	0 = none 1 = some NELM-related 2 = some non-NELM related
income (category) ^h	1 = less than \$15,000 2 = \$15,000 to 19,999 3 = \$20,000 to \$24,999 4 = \$25,000 to \$29,999 5 = \$30,000 to \$34,999 6 = \$35,000 and above	1 = less than \$25,000 2 = \$25,000 to \$29,999 3 = \$30,000 to \$34,999 4 = \$35,000 to \$39,999 5 = \$40,000 to \$44,999 6 = \$45,000 to \$49,999 7 = \$50,000 to \$54,999 8 = \$55,000 and above
job satisfaction	1 = very dissatisfied 2 = dissatisfied 3 = satisfied 4 = very satisfied	1 = very dissatisfied 2 = dissatisfied 3 = satisfied 4 = very satisfied
salary satisfaction		
activity ⁱ	1 = employed 2 = not employed but eligible for work 3 = student	1 = employed 2 = not employed but eligible for work 3 = student
NELM retention status	0 = not retained in NELM 1 = retained in NELM	0 = not retained in NELM 1 = retained in NELM

Table 6 Cont'd

Note. Where two columns of values appear, values on the left represent coding of the variable as measured at the 2-year follow-up, and values on the right represent coding of the variable as measured at the 5-year follow-up.

^aIn all of the sequential logistic regression analyses conducted in hypothesis testing, the antecedent variables measured at the 2-year post-graduation follow-up interview served as predictors of NELM retention status (i.e., retention vs. non-retention) at 5 years.

^bWhen a logistic regression model contains continuous variables, interpretation of the estimated coefficients for these variables depends on their particular units (i.e., variable scaling) (Hosmer & Lemeshow, 1989). Specifically, with regard to the variables' scale in the logit, *a one unit increase or decrease must represent a meaningful change*. Thus, for interpretation purposes, the scaling of continuous variables including mother's level of education, father's level of education, age (at 2- and 5-years), and income (at 2- and 5-years) were reparameterized to represent distinct, meaningful categories (elaborated below). Refer to Appendix O for a primer of logistic regression analysis.

^cThe original 16-point scales on which the variables mother's and father's level of education were measured were collapsed into this 5-point scale (see footnote b and Chapter 3: Variable Derivation and Coding).

^dThe variables intrinsic motivation for enrolling in a NELM program and extrinsic motivation for enrolling in a NELM program, each of which is coded on this 4-point scale, were derived from a principal components analysis of four items from the original questionnaire on which respondents rated (*retrospectively*) their original reasons for having enrolled in an N, E, L, or M program. As described in Appendix M, two items loaded on each of two factors.

^eThe age variable, which was originally a continuous variable ranging from 18 to 69 at 2-years and from 21 to 72 at 5-years, was collapsed into this 6-point scale (see footnote b and Chapter 3: Variable Derivation and Coding).

^fThe marital status variable was recoded into this dichotomy from the original 4-point categorical variable which consisted of the following: 1="now married or living common law"; 2="single, that is, never married"; 3="a widow or widower"; and 4="separated or divorced" (see footnote b and Chapter 3: Variable Derivation and Coding).

^gThe derivation and coding of the further education variables are described in Appendix N.

^hThe income variables, which were originally measured on an 8-point scale (at 2-years) and on a 12-point scale (at 5-years) were collapsed into these 6- and 8-point scales, respectively (see footnote b and Chapter 3: Variable Derivation and Coding).

ⁱThe activity variable was used only in the identification of the employed sub-samples (see Chapter 3: Variable Derivation and Coding and Appendix I).

Sex and NELM retention-status. As shown in Table 6, each of the main variables of interest in the investigation--*sex* and *NELM retention-status*--were dichotomous variables coded as 0 and 1. In the case of *sex* (0="female" and 1="male"), values were provided to Statistics Canada by the degree-granting institution. According to Statistics Canada (1991c), for the few institutions that did not report the graduates' sex, values were imputed (where possible) based on given names. Coding of the variables *NELM retention-status at the 2-year post-graduation follow-up interview* and *NELM retention status at the 5-year post-graduation follow-up interview* (0="not retained in NELM" and 1="retained in NELM") was considerably more complex; details regarding the derivation of the NELM retention-status variables and their coding-rule(s) are presented in Appendix I.

As noted above, a major contribution of this investigation is its holistic approach to the study of career behaviour, in taking both the post-baccalaureate educational *and* labour force behaviour of recent NELM bachelor's degree-earners into account. Comparative rates-of-retention (vs. non-retention) in NELM for women and men were established, whether or not they were in the labour force, including those who were pursuing further education. As such, the coding of the dichotomous NELM retention-status variables (at both the 2-year and 5-year post-graduation follow-up interviews) can be summarized as follows: Respondents engaged in NELM-related employment *or* NELM-related further education received a score of 1 (i.e., retained in NELM); respondents who were engaged in non-NELM-related employment, non-NELM-related further education, *or* who were neither working nor pursuing further-education, received a score of 0 (i.e., not retained in NELM).

As such, the assignment of NELM retention-status values for those pursuing further education was carried out according to these persons' academic area of study (i.e., non-NELM=0; NELM=1). The assignment of values on the basis of field of employment, however, necessitated the development of a new coding system to classify occupation areas--similar to that used to classify university programs of study into the "NELM" academic areas. A discussion of this coding system follows.

Statistics Canada classified the job(s) held by respondents at the 2- and 5-year

post-graduation follow-up interviews¹⁶ according to the Standard Occupational Classification (SOC) codes (Statistics Canada, 1980; see Appendix J). Consequently, the coding system developed served to group the SOC codes into one of the following six "NELMCO" occupational areas: Natural Science-related (labelled "N"), Engineering-related (labelled "E"), Life Science/Health Professions-related (labelled "L"), Mathematics/Computer Science-related (labelled "M"), some "combination" of two or more of the NELM areas (labelled "C"), or, "other areas"--that is--those outside of NELM (labelled "O").

To this end, each of the SOC codes were examined by two researchers¹⁷ to determine which belonged under each of the six designations of N, E, L, M, C, and O. Given the clarity of the categories, complete consensus on the categorization was reached via this process, with additional information obtained, when necessary, by making reference to the descriptions of occupations in the Canadian Classification Dictionary of Occupations (EIC, 1978). A summary of the occupations comprising the N, E, L, M, C, and O occupational areas is presented in Appendix K.

Level of mother's and father's education. Item 162 of the 1988 Survey asked: "What is the highest level of education completed by your father and by your mother (or guardian)?" Respondents' responses were recorded by Statistics Canada on two identical 16-point scales. As detailed in Appendix L, derivation of the variables *mother's level of education* and *father's level of education* (for the purpose of the present study) involved collapsing¹⁸ these 16-point scales into 5-point scales. As such, as shown in Table 6, both of these variables were coded as: 1="from no formal schooling to less than secondary school completion"; 2="completed

¹⁶Statistics Canada assigned Standard Occupational Classification codes based on the combined responses to items 74 and 75 of the 1988 Survey (variable "q7475soc"), and based on the combined responses to items B8/B9, B14/B15, and C3/C4 of the 1991 Survey (variable "soc91").

¹⁷Again, the two researchers who carried out this examination were the author of this dissertation and her advisor, Dr. Robert Flynn. The process consisted of a roughly independent review by these two researchers, who were in the position of having the best sense of the data and of the objectives of the investigation.

¹⁸There was a compelling empirical reason to do this collapsing, that is, in order to facilitate interpretation of the estimated logistic regression coefficients. Specifically, it was necessitated by the need to reparameterize the variable units to represent distinct, meaningful categories, such that a one unit increase or decrease in the variable's scale in the logit would represent a *meaningful* change. (Further explanation appears in Table 6, specific note b).

secondary school"; 3="from some to completed any of the following: CEGEP, college, tech. trade, vocational, or nursing school"; 4="from some university, to earned a bachelor's degree or completed teacher's college"; 5="earned a degree or diploma above bachelor's level (i.e., master's, Ph.D., or other professional degree)".

Intrinsic and extrinsic motivation. The variables *intrinsic motivation for enrolling in a NELM program of study* and *extrinsic motivation for enrolling in a NELM program of study* were coded on continuous 4-point scales which ranged from 1="not at all" (intrinsically/extrinsically motivated) to 4="to a great extent" (intrinsically/extrinsically motivated). This pair of variables was derived from a principle component analysis of items 121, 123, 125, and 127 of the 1988 Survey, the details of which are presented in Appendix M.

Age. Statistics Canada computed the age of respondents by subtracting their year of birth from the year they were surveyed (i.e., 1988 and 1991 for respondents' ages at the 2- and 5-year follow-up surveys, respectively). Derivation of the variables *age at the 2-year follow-up* and *age at the 5-year follow-up* (for the purpose of the present study) involved collapsing¹⁹ the Statistics Canada age ranges into 6-point scales. As shown in Table 6, the age at 2-years variable was coded as: 1="less than or equal to 23 years", 2="24 years", 3="25 years", 4="26 years", 5="27 years", 6="greater than or equal to 28 year". The age at 5-years variable was coded as: 1="less than or equal to 26 years", 2="27 years", 3="28 years", 4="29 years", 5="30 years", 6="greater than or equal to 31 year".

Marital status. Item 155 of the 1988 Survey and G1 of the 1991 Survey asked: "What is your marital status? Are you ... now married or living common law? single, that is, never married? a widow or widower? separated or divorced?" By posing the question in this manner, Statistics Canada introduced a potential confound into the present investigation, due to the preclusion of any separate consideration of individuals who were married from those who were living common law. There was no means by which to rectify this problem. For the purpose of the present study, Statistics Canada's 4-part categorization was collapsed in order to create the

¹⁹See footnote 18.

dichotomous variables *marital status at the 2-year follow-up* and *marital status at the 5-year follow-up*, coded as: 0="single (i.e., never married), widowed, or divorced" and 1="now married or living common law".

Number of dependent children. As shown in Table 6, the variables *number of dependent children at the 2-year follow-up* and *number of dependent children at the 5-year follow-up* were continuous variables, each of which ranged from 0 to 4. These variables were derived directly from responses to item 160 of the 1988 Survey and item G2 of the 1991 Survey, respectively.

Further education. As shown in Table 6, the variables *further education at the 2-year follow-up* (i.e., since 1986) and *further education at the 5-year follow-up* (i.e., also since 1986) were coded as: 0="no further education", 1="some NELM-related further education", and 2="some non-NELM-related further education". The steps involved in the derivation and coding of these variables are summarized in Appendix N.

Income. As shown in Table 6, the variable *income at the 2-year follow-up* was coded as 1="less than \$15,000", 2="\$15,000 to \$19,999", 3="\$20,000 to \$24,999", 4="\$25,000 to \$29,999", 5="\$30,000 to \$34,000", 6="\$35,000 and above". This variable was derived from responses to item 161 of the 1988 Survey, by collapsing the original 8-point scale (for the purpose of the present study²⁰) into a 6-point scale. The variable *income at the 5-year follow up* was coded as: 1="less than \$25,000", 2="\$25,000 to \$29,999", 3="\$30,000 to \$34,999", 4="\$35,000 to \$39,999", 5="\$40,000 to \$44,999", 6="\$45,000 to \$49,999", 7="\$50,000 to \$54,999", 8="\$55,000 and above". This variable was derived from responses to item G3 of the 1991 Survey, by collapsing the original 12-point scale (for the purpose of the present study²¹) into an 8-point scale.

Job satisfaction and salary satisfaction. As shown in Table 6, both the variables *job satisfaction* and *salary satisfaction at the 2-year follow-up* and the variables *job satisfaction* and *salary satisfaction at the 5-year follow-up* were coded as: 1="very dissatisfied", 2="dissatisfied",

²⁰See footnote 18.

²¹See footnote 18.

3="satisfied", and 4="very satisfied". The job satisfaction variables were derived directly from responses to item 86 of the 1988 Survey and items B26 and C18 of the 1991 Survey. The salary satisfaction variables were derived directly from responses to item 87 of the 1988 Survey and items B27 and C19 of the 1991 Survey.

Statistical Hypotheses

Although the distinction between *statistical* and *research* hypotheses was highlighted in Chapter 2, it bears repeating at this point. A statistical hypothesis is "a statement about one or more parameters of population distributions; and, as such, it refers to a situation that *might* be true" (Kirk, 1968, p. 22). Such a statement is always made with respect to a population and not to a sample. A research hypothesis, on the other hand, is "normally stated in general terms, at least in the initial stages of an inquiry" (Kirk, 1968, p. 22).

In hypothesis testing, we typically have one or more *research* hypothesis (about the population) that we wish to test with the data (our sample). Research hypotheses, however, cannot be tested directly, as they are not sufficiently specific to be evaluated through the use of the procedures and theory of statistical inference (Cliff, 1987; Kirk, 1968). Instead (as the reader will recall from Chapter 2), it is the task of the investigator to translate each research hypothesis into a dichotomous set of mutually exclusive and exhaustive *statistical* hypotheses. Thus, although investigators may speak of testing a single hypothesis, in practice we behave as though we were deciding which one of two--the *null* or the *alternative* hypothesis--is supported by our data. The procedure by which we make this decision is the statistical test (discussed below).

Moreover, hypothesis testing is a procedure whereby an experimenter decides which one of a dichotomous set of mutually exclusive and exhaustive hypotheses is to be rejected and which one is to be accepted at some specified risk of making an incorrect decision (Cliff, 1987). The null hypothesis (H_0) is the statistical hypothesis that is subjected to a test; the alternative hypothesis (H_1) is the statistical hypothesis that remains tenable if the null hypothesis is rejected (Kirk, 1968). The specified risk of making an incorrect decision is the *alpha level* of the test, where alpha refers to the probability of rejecting the null hypothesis when it is true (Cliff,

1987).

The research hypotheses of the present investigation were presented in Chapter 2. Below, each of the four research hypotheses is restated and translated into dichotomous sets of mutually exclusive, exhaustive statistical hypotheses (i.e., the null²² and the alternative hypothesis). This section concludes with a discussion of the alpha level(s) adopted in the present investigation.

Hypothesis 1. Considering the *entire* sample of NELM bachelor's degree holders as a whole, the probability of being retained in NELM at the 2-year *and* the 5-year post-graduation follow-up interviews will be *lower* for young women than for young men. This research hypothesis was translated into the following set of statistical hypotheses:

Hypothesis 1(a)

$$H_0 : P_{\text{retention in NELM } \oplus \text{ 2-years (females)}} - P_{\text{retention in NELM } \oplus \text{ 2-years (males)}} \geq 0$$

$$H_1 : P_{\text{retention in NELM } \oplus \text{ 2-years (females)}} - P_{\text{retention in NELM } \oplus \text{ 2-years (males)}} < 0$$

Hypothesis 1(b)

$$H_0 : P_{\text{retention in NELM } \oplus \text{ 5-years (females)}} - P_{\text{retention in NELM } \oplus \text{ 5-years (males)}} \geq 0$$

$$H_1 : P_{\text{retention in NELM } \oplus \text{ 5-years (females)}} - P_{\text{retention in NELM } \oplus \text{ 5-years (males)}} < 0$$

Hypothesis 2. Considering each of the four NELM groups of bachelor's degree holders *separately*, the probability of being retained in NELM at the 5-year post-graduation follow-up interview will be *lower* for young women than for young men in the "N", "E", and "M" groups (and will be *different* for young women vs. young men in the "L" group). This research hypothesis was translated into the following set of statistical hypotheses:

Hypothesis 2(a)

$$H_0 : P_{\text{retention in NELM } \oplus \text{ 5-years (female "N" graduates)}} - P_{\text{retention in NELM } \oplus \text{ 5-years (male "N" graduates)}} \geq 0$$

$$H_1 : P_{\text{retention in NELM } \oplus \text{ 5-years (female "N" graduates)}} - P_{\text{retention in NELM } \oplus \text{ 5-years (male "N" graduates)}} < 0$$

²²The most traditional way of the defining the null would be have it represent a statement of "no difference" (i.e., the phenomenon to be demonstrated is, in fact, absent or equal to zero). The presentation herein (in accordance with Kirk, 1968) serves to highlight the *directionality* of each of the latter three hypotheses with regard to 3 of the 4 sub-samples of bachelor's degree holders (i.e., the "N", "E", and "M" groups), and the *non-directionality* of these three hypotheses with regard to 1 (i.e., the "L" group).

Hypothesis 2(b)

$$H_0 : P_{\text{retention in NELM @ 5-years}} (\text{female "E" graduates}) - P_{\text{retention in NELM @ 5-years}} (\text{male "E" graduates}) \geq 0$$

$$H_1 : P_{\text{retention in NELM @ 5-years}} (\text{female "E" graduates}) - P_{\text{retention in NELM @ 5-years}} (\text{male "E" graduates}) < 0$$

Hypothesis 2(c)

$$H_0 : P_{\text{retention in NELM @ 5-years}} (\text{female "L" graduates}) - P_{\text{retention in NELM @ 5-years}} (\text{male "L" graduates}) = 0$$

$$H_1 : P_{\text{retention in NELM @ 5-years}} (\text{female "L" graduates}) - P_{\text{retention in NELM @ 5-years}} (\text{male "L" graduates}) \neq 0$$

Hypothesis 2(d)

$$H_0 : P_{\text{retention in NELM @ 5-years}} (\text{female "M" graduates}) - P_{\text{retention in NELM @ 5-years}} (\text{male "M" graduates}) \geq 0$$

$$H_1 : P_{\text{retention in NELM @ 5-years}} (\text{female "M" graduates}) - P_{\text{retention in NELM @ 5-years}} (\text{male "M" graduates}) < 0$$

Hypothesis 3. Upon further refining the sample under consideration to include only those bachelor's degree holders who were *employed* at both the 2-year and the 5-year post-graduation follow-up interviews, the probability of being retained in NELM-related employment at the 5-year post-graduation follow-up interview will be *lower* for young women than for young men, in the "N", "E", and "M" groups (and will be *different* for young women vs. young men in the "L" group). This research hypothesis was translated into the following set of statistical hypotheses:

Hypothesis 3(a)

$$H_0 : P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed female "N" graduates}) - P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed male "N" graduates}) \geq 0$$

$$H_1 : P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed female "N" graduates}) - P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed male "N" graduates}) < 0$$

Hypothesis 3(b)

$$H_0 : P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed female "E" graduates}) - P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed male "E" graduates}) \geq 0$$

$$H_1 : P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed female "E" graduates}) - P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed male "E" graduates}) < 0$$

Hypothesis 3(c)

$$H_0 : P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed female "L" graduates}) \\ - P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed male "L" graduates}) = 0$$

$$H_1 : P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed female "L" graduates}) \\ - P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed male "L" graduates}) \neq 0$$

Hypothesis 3(d)

$$H_0 : P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed female "M" graduates}) \\ - P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed male "M" graduates}) \geq 0$$

$$H_1 : P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed female "M" graduates}) \\ - P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed male "M" graduates}) < 0$$

Hypothesis 4. Upon *redefining* the restricted sample under consideration to include only those bachelor's degree holders who were *not* retained in NELM-related pursuits at the 2-year post-graduation follow-up interview, the probability of *returning* to NELM-related pursuits at the 5-year post-graduation follow-up interview will be *lower* for young women than for young men, in the "N", "E", and "M" groups (and will be *different* for young women vs. young men in the "L" group). This research hypothesis was translated into the following set of statistical hypotheses:

Hypothesis 4(a)

$$H_0 : P_{\text{retention in NELM @ 5-years}} (\text{female "N" graduates not retained @ 2-years}) \\ - P_{\text{retention in NELM @ 5-years}} (\text{male "N" graduates not retained @ 2-years}) \geq 0$$

$$H_1 : P_{\text{retention in NELM @ 5-years}} (\text{female "N" graduates not retained @ 2-years}) \\ - P_{\text{retention in NELM @ 5-years}} (\text{male "N" graduates not retained @ 2-years}) < 0$$

Hypothesis 4(b)

$$H_0 : P_{\text{retention in NELM @ 5-years}} (\text{female "E" graduates not retained @ 2-years}) \\ - P_{\text{retention in NELM @ 5-years}} (\text{male "E" graduates not retained @ 2-years}) \geq 0$$

$$H_1 : P_{\text{retention in NELM @ 5-years}} (\text{female "E" graduates not retained @ 2-years}) \\ - P_{\text{retention in NELM @ 5-years}} (\text{male "E" graduates not retained @ 2-years}) < 0$$

Hypothesis 4(c)

$$H_0 : P_{\text{retention in NELM @ 5-years}} (\text{female "L" graduates not retained @ 2-years}) \\ - P_{\text{retention in NELM @ 5-years}} (\text{male "L" graduates not retained @ 2-years}) = 0$$

$$H_1 : P_{\text{retention in NELM @ 5-years}} (\text{female "L" graduates not retained @ 2-years}) \\ - P_{\text{retention in NELM @ 5-years}} (\text{male "L" graduates not retained @ 2-years}) \neq 0$$

Hypothesis 4(d)

$$H_0 : P_{\text{retention in NELM @ 5-years}} (\text{female "M" graduates not retained @ 2-years}) \\ - P_{\text{retention in NELM @ 5-years}} (\text{male "M" graduates not retained @ 2-years}) \geq 0$$

$$H_1 : P_{\text{retention in NELM @ 5-years}} (\text{female "M" graduates not retained @ 2-years}) \\ - P_{\text{retention in NELM @ 5-years}} (\text{male "M" graduates not retained @ 2-years}) < 0$$

Alpha level. As noted above, alpha (α) refers to the probability of falsely rejecting the null hypothesis (i.e., of making a Type I error by rejecting H_0 when it is true). By convention in the behavioural sciences, the most common α level used by researchers in hypothesis testing is .05 (Kirk, 1968; Tabachnick & Fidell, 1996).

Testing multiple hypotheses (as in the present case) serves to inflate the Type I error rate (e.g., if k hypotheses are tested at a given α level, the probability of at least one Type I error occurring when all null hypotheses are true is $k\alpha$). Therefore, researchers must take steps to reduce the probability of making Type I errors; this procedure is commonly referred to as controlling the *experimentwise* alpha level (Cliff, 1987). The technique most frequently used by researchers to control the experimentwise alpha level is the Bonferroni approach (in which one tests each hypothesis at α/k instead of α , thus reducing the probability of making a Type I error in the multiple hypothesis case to α) (Cliff, 1987).

Controlling experimentwise alpha levels is especially important when (as in the present

case) the research is exploratory²³; this is due to the fact that multiple tests provide many opportunities for false positives at a developmental stage in the research when investigators are looking for trends in the data that may be noteworthy and/or indicative of future avenues for research. For this reason, it was considered important in the present investigation to institute a procedure for controlling the probability of making Type I errors.

In addition, serving to further inflate the Type I error rate in the present study was the fact that *multivariate* statistical analyses were conducted in testing each hypothesis. Multivariate statistical inference, by itself, involves multiple statements about parameters; therefore, when conducting multivariate statistical analyses, investigators need to consider the purpose and context of the analyses, know what α actually is, and--where appropriate--attempt to control it (Cliff, 1987). In logistic regression analysis (as in multiple regression analysis), it is often difficult to determine the exact degree to which experimentwise alpha might be inflated over .05 when $p < .05$ is used for each individual test because this is, in part, determined by the degree to which the hypotheses are mutually dependent. However, the increased probability of committing Type I errors is very likely to be large enough to be of major concern, particularly when there are multiple steps in the analyses (Grimm & Yarnold, 1995).

Moreover, given that--in the present investigation--*multivariate* tests of *multiple* hypotheses were carried out, steps were taken in order to reduce the probability of making a Type I error (i.e., to control the experimentwise alpha level). This was done by adjusting the alpha level to take account of the fact that multiple multivariate tests would be conducted, while respecting the exploratory nature of the study²⁴. In sum, it was considered excessively conservative to institute the Bonferroni approach to experimentwise protection. This was due to the fact that across hypotheses (i.e., the tests of Hypothesis 1[a] & 1[b] plus Hypothesis 2 to 4, [a] to [d]), a total of thirteen multivariate analyses were conducted ($.05/13 = .0035$). Instead, α

²³Readers may wish to refer to the discussion (in Chapter 2) of the present study's theoretical and practical limitations.

²⁴As noted below (see Chapter 4), due to multiple tests, some results may not be replicable. However, given that this investigation constitutes a preliminary effort to address these research hypotheses in a national Canadian sample, an effort was made to determine and set α at an appropriate level, in accordance with the exploratory nature of the study and without being overly conservative.

was set at .01 for all analyses. As will be seen in Chapter 4, throughout the present investigation, findings of $p < .05$ were considered to be marginally significant, findings of $p < .01$ were regarded as statistically significant, and those of $p < .001$ were deemed to be highly significant.

Analysis of the Data

Three stages of data analysis were carried out: (a) preliminary and descriptive analyses, (b) hypothesis testing, and (c) analyses addressing the research questions. Preliminary analyses consisted of an inspection for accuracy of data entry and missing values; descriptive statistical analytic procedures were then applied to the "cleaned" data to compute--separately by NELM academic area and by sex--means and standard deviations (for interval-level variables) and percentage-frequencies (for nominal-level variables). Stage two--hypothesis testing--constituted the major portion of the data analysis; the inferential statistical test utilized was logistic regression analysis (discussed below). Finally, univariate analyses were employed at stage three to address the research questions. For interval-level variables, t -tests were conducted; for nominal-level variables, Pearson chi-square (χ^2) tests were carried out.

Logistic regression analysis. Regression methods are an integral component of any data analysis concerned with describing the relationship between an outcome/response variable and one or more predictor/explanatory variables. It is often the case that the outcome variable of interest is discrete, taking on two (or more²⁵) possible values. Logistic regression analysis is a variant of traditional multiple regression analysis (i.e., ordinary least squares [OLS] regression analysis) for use with dichotomous dependent variables. Logistic regression does not suffer from the weaknesses of the traditional approach to such data but nevertheless shares many of its powerful features such as the ability to study quantitative as well as categorical independent variables and to include in the model interactions among the independent variables (Cox, 1977). Over the last three decades, in many fields, the logistic regression model has become the standard method for regression analysis of dichotomous data, in recognition of the fact that it is preferable for estimating binary outcomes (Hosmer & Lemeshow, 1989).

²⁵Though beyond the scope of this discussion (i.e., not relevant to this investigation), polytomous logistic regression can be used to develop and test models for polytomous outcome variables (Hosmer & Lemeshow, 1989).

Given the dichotomy of retention versus non-retention in NELM-related pursuits as the outcome variable of interest in the present investigation, logistic regression analyses were employed to test the study's four hypotheses--each of which predicted that the probability of non-retention would be greater for women than for men, (i.e., that there would be a significantly lower rate of retention in NELM for women than for men). Two different types of logistic regression analysis were conducted: direct and sequential. Direct logistic regression analysis is akin to standard (or simultaneous) selection in multiple regression in that, in the direct model, all predictor variables enter into the regression equation at once. Sequential logistic regression is akin to sequential (or hierarchical) selection in multiple regression analysis in that, in the sequential model, predictor variables enter into the regression equation in a predetermined order that is specified by the researcher: each predictor is then assessed in terms of what it adds to the equation at its own point of entry. In an effort to orient the reader to these two logistic regression techniques in general, and to their application in the present investigation, specifically, Appendix O has been provided (which outlines logistic regression analysis and how OLS regression principles are modified or paralleled therein).

Hypothesis testing. Procedurally, each of the statistical hypotheses was tested using logistic regression analysis (see Appendix O) in an essentially identical 2-phase process. First, a *direct* logistic regression analysis was performed to assess the prediction of the dependent variable NELM retention-status (i.e., retention vs. non-retention) on the basis of sex, *only*. The purpose of this first phase was to ascertain any "base" contribution of the variable sex to the prediction of the outcome (i.e., on the whole--without taking any other variables into consideration--does sex contribute to the prediction of retention vs. non-retention in NELM?). Thus, phase one was a test of the "gross-effect-of-sex model".

Next, a *sequential* logistic regression analysis was performed to investigate the comparative influence of a number of predictor variables--including sex--in the prediction of the dichotomous dependent variable NELM retention-status. The purpose of this second phase was to determine whether the variable sex made any contribution to the prediction of the outcome, "net" of other variables (i.e., upon controlling for the effects of other predictors, does sex contribute to the prediction of retention vs. non-retention in NELM?) This second phase also

served to alleviate the possibility of some third confounding variable, correlated with both sex and NELM retention-status, obscuring the findings with regard to sex. By sequentially ordering the predictor variables and entering sex as the final block in each of these analyses, the issue addressed was actually whether the variable sex would be a reliable predictor of NELM retention-status, once the effects of the other predictor variables had been statistically eliminated. Thus, phase two was a test of the "net-effect-of-sex model"²⁶.

As noted in Chapter 2, although a set of four hypotheses was tested, this set actually represented four complementary ways of testing the fundamental postulation of the present investigation: *that early career retention among undergraduate degree holders in S&T would be proportionately lower for young women, as compared to young men.* In each case, the identical 2-phase logistic regression analysis process, just described, was carried out. The feature distinguishing the test of each of the four hypotheses was the data set (or sub-set) analyzed.

In testing Hypothesis 1(a) and 1(b), the *entire* sample of NELM bachelor's degree holders were analyzed as a whole, employing the 2-year and 5-year post-graduation follow-up interview data, respectively. First, in order to determine whether, in the entire sample, the variable sex--on it's own--was a reliable predictor of NELM retention-status at the 2-year post-graduation follow-up interview (i.e., Hypothesis 1[a]), a direct logistic regression analysis was conducted to predict the dependent variable NELM retention-status (i.e., retention vs. non-retention) at 2-years on the basis of sex, only. (Phase one thus represented the test of the gross-effect-of-sex model at

²⁶It is important to note that technically, with regard to the N, E, and M cohorts, each of the four hypotheses were directional, thereby implying a 1-tailed test. Thus, in the case of each of the "gross-effect-of-sex models" and "net-effect-of-sex models", hypothesis testing did not represent a test of overall model fit, *only* (i.e., does the addition of the predictor variable sex to the model being tested result in *any* improvement in the prediction NELM retention status?), as would be the case in a 2-tailed test. Rather, each represented a test of both the magnitude *and* the sign of the coefficient for sex. Therefore, in order to support the present investigation's hypotheses, findings with regard to sex would not only have to show this variable to make a difference, but the difference would also have to be in the anticipated direction (i.e., showing women to be *less likely* to be retained in NELM than their male counterparts). However, as will be seen in Chapter 4, the decision was made that if the 2-tailed test were to indicate a significant effect of sex that was *not* in the anticipated direction, *this finding would be reported* (i.e., that the addition of the predictor variable sex to the model *did* enhance the prediction of NELM retention status, *though in the direction opposite to that which was hypothesized*). Moreover, even though the four working hypotheses were directional, this decision enabled an openness to the possibility that sex might have an effect in the *opposite* direction (i.e., showing *men* to be less likely to be retained in NELM than their *female* counterparts). This (admittedly somewhat illogical) practice is often used in the behavioural sciences, particularly in the initial stages of an inquiry, for it has the potential to convey important information.

2-years). Second, in order to determine whether, in the entire sample, the variable sex was a reliable predictor of NELM retention-status at the 2-year post-graduation follow-up interview, *after* the effect of the variable *NELM program of study* had been statistically eliminated, a sequential logistic regression analysis was conducted to predict the dependent variable NELM retention-status at 2-years on the basis of NELM program of study (entered at Block-1) and sex (entered at Block-2). (Phase two thus represented the test of the net-effect-of-sex model at 2-years). The identical two-phase procedure was repeated in the test of Hypothesis 1(b), utilizing the data-set from the 5-year post-graduation follow-up interview.

In testing each of the three remaining statistical hypotheses, analyses were conducted separately for the sub-samples of respondents holding bachelor's degrees in each of the four academic areas (i.e., N, E, L, and M). As well, in all cases, the outcome variable of interest was NELM retention-status at the 5-year post-graduation follow-up interview; functioning as covariates were the variables measured at the 2-year post-graduation follow-up interview. Utilizing the variables measured at the 2-year follow-up to predict the 5-year outcome served to capitalize on the longitudinality of the data while avoiding the problem of potential reciprocal causality²⁷.

In the test of Hypothesis 2, data for all of the NELM bachelor's degree holders were again analyzed--though separately by NELM academic area and at the 5-year post-graduation follow-up interview, only. In the tests of Hypotheses 3 and 4, specific sub-groups of bachelor's degree holders were selected for analysis. For Hypothesis 3, the sub-sample of "employed" respondents (i.e., those who were working) at both post-graduation follow-up interviews were selected for analysis in an assessment of NELM retention-status at the 5-year post-graduation follow-up interview. Finally, for Hypothesis 4, the sub-samples of respondents who were "not retained" at the 2-year post-graduation follow-up interview were selected for analysis, in order to assess *return* to retention in NELM at the 5-year post-graduation follow-up interview (from

²⁷Utilizing variables measured at the 5-year follow-up to predict NELM retention status at 5-years could have led to the problem of reciprocal causality (e.g., does marital status at 5-years predict NELM retention status at 5-years, or is it NELM retention status at 5-years that influences marital status, or both?). This problem was precluded by using only variables measured at the 2-year follow-up to predict the 5-year NELM retention status outcome.

non-retention status at the 2-year post-graduation follow-up interview).

Also distinguishing the test of Hypothesis 3 from those of Hypotheses 2 and 4 was the set of predictor variables utilized in the sequential logistic regression analyses (i.e., phase two of the process). Although phase two of each of these analyses (i.e., the test of the net-effect-of-sex model) still served to investigate the relation between the dichotomous outcome variable (NELM retention-status at 5-years) and the main predictor variable of interest (sex), controlling for the effects of the antecedent variables (covariates), the variables being controlled for differed somewhat. This is attributable to the fact that, when the employed sub-sample of respondents was selected for study, a number of additional employment- and training-related variables became available to serve as predictors (i.e., covariates).

In sum, sex was the last predictor entered into the sequential logistic regression equations (i.e., the net-effect-of-sex models), in all cases, with the covariates being entered in the following order: mother's level of education (Block-1), father's level of education (Block-2); respondents' age at 2-years (Block-3); marital status at 2-years (Block-4); number of dependent children at 2-years (Block-5); intrinsic motivation for having originally enrolled in a N, E, L, or M program of study (Block-6); extrinsic motivation for having originally enrolled in a N, E, L, or M program of study (Block-7). In testing Hypothesis 3, the following covariates were also entered: further education at 2-years (Block-8); income at 2-years (Block-9); job satisfaction at 2-years (Block-10); and, salary satisfaction at 2-years (Block-11). Hence, the variable sex was entered into the sequential logistic regression analysis at Block-7 in the test of Hypotheses 2 and 4, and at Block-12 in the test of Hypothesis 3.

You will note that, across analyses, the predictor variables were each entered into the sequential logistic regression model as a separate block, as well as in a particular, consistent order. A few words of explanation regarding this method and order of variable entry are called for at this point.

First, with regard to the method of variable entry, each variable was entered as a separate block for the simple, pragmatic reason that this is the only way to judge the incremental contribution of each variable to a sequential logistic regression model. Sequential logistic regression analyses produce goodness-of-fit statistics at each block, however, when more than

one variable is entered at any given block, it becomes impossible to isolate the individual effects of those simultaneous predictors. In addition, entering more than one predictor variable at a given block may lead to further interpretation difficulties in the event that the predictors are correlated, because a variable that is highly predictive of the outcome by itself may show little prediction capability in the presence of other predictors (i.e., due to multicollinearity) (Tabachnick & Fidell, 1996).

Second, with regard to the order of variable entry, the explanation is somewhat less precise and of a more intuitive nature. Of course, as the primary variable of interest, sex was—in all cases—entered into the sequential logistic regression model last. With regard to the covariates, however, there was (by necessity) a certain degree of subjectiveness in arriving at their order of entry. The basic rationale was for these variables to be entered beginning the most *distal* and ending with the most *proximal*. As such, the decision was made to begin with the parents' level of education variables, giving mothers' level of education the highest priority because it was expected to be the stronger predictor of the two. In keeping with the distal to proximal rationale, age was entered next, followed by the two familial variables—marital status and number of dependent children—in that order. The two motivational variables followed, with intrinsic motivation preceding extrinsic motivation²⁸. Finally, in the sequential logistic regression analyses testing Hypothesis 3, the first 7 blocks were held constant with the tests of the other hypotheses (for comparison purposes), and the distal to proximal strategy was extended to the remaining four variables. This saw the further education variable precede income, job satisfaction, and salary satisfaction. Of the two satisfaction variables, job satisfaction was given the higher priority because it was expected to be the stronger predictor.

Research questions. The research questions were addressed via univariate statistical procedures, with separate analyses being conducted in each of the N, E, L, and M academic areas. Procedurally, research questions 1 and 2 were addressed in an identical manner, with the

²⁸Although these two variables were intended to measure the respondents' motivation for having *originally* enrolled in an N, E, L, or M program of study, they were actually measured in a *retrospective* fashion at the 2-year post-graduation follow-up interview. As such, they were not expected to be particularly strong predictors of NELM-retention status, and so, the decision was made not to enter them until the sixth and seventh blocks of the sequential logistic regression analyses.

feature distinguishing the two again being the sub-set of data analyzed. In the case of research question 1, sub-samples of women "retained" in NELM-related pursuits were compared with sub-samples of men "retained" therein. In addressing research question 2, sub-samples of "retained" women were compared with sub-samples of "non-retained" women.

As stated above, the univariate analyses conducted were *t*-tests and Pearson χ^2 tests. For interval-level variables, a series of *t*-tests served to test the null hypothesis that there were no group differences in means (in the population). When it was possible to make a directional alternative hypothesis about group mean-differences, one-tailed *t*-tests were employed; otherwise, two-tailed *t*-tests were carried out (cf. Tables 4 and 5). When the assumption that the population variances were equal was met, pooled-variance *t*-tests were reported; when this assumption was violated, separate-variance *t*-tests were reported. For nominal-level variables, a series of Pearson χ^2 tests of independence served to test the null hypothesis of no differences in proportions (in the population). Because each of the nominal-level variables tested was dichotomous—resulting in 2X2 approximation tables, each with 1 degree of freedom—Yates' correction for continuity was applied and reported (Norusis, 1990).

A summary of the data analyses carried out in addressing the research questions 1 and 2 was presented in Tables 4 and 5, respectively. As shown in these tables, in addressing research questions 1.1 and 2.1, Pearson χ^2 tests were used in the tests of proportions for the variable marital status at the 5-year follow-up; *t*-tests for mean group-differences were conducted for the variables: mother's level of education; father's level of education; age at the 5-year follow-up; number of dependent children at the 5-year follow-up; intrinsic motivation for having originally enrolled in a N, E, L, or M program of study; and, extrinsic motivation for having originally enrolled in a N, E, L, or M program of study. In addressing research questions 1.2 and 2.2, additional Pearson χ^2 tests were used in the test of proportions for the variables NELM-related further education and non-NELM-related further education; additional *t*-tests for mean group-differences were conducted for the variables: income at the 5-year follow-up; job satisfaction at the 5-year follow-up; and, salary satisfaction at the 5-year follow-up.

CHAPTER FOUR

RESULTS

Introduction

As outlined above (see Chapter 3), the data were analyzed in three stages. These three stages of data analysis--namely, preliminary and descriptive analyses, hypothesis testing, and analyses addressing the research questions--provide the organizational framework for the presentation of results in this chapter. Readers are reminded that, given that multiple statistical tests were required, together with the exploratory nature of these analyses, an α of .01 was adopted in order to adjust for inflated Type I error rate. Specifically, findings of $p < .05$ were considered to be marginally significant, findings of $p < .01$ were regarded as statistically significant, and those of $p < .001$ were deemed to be highly significant.

Stage I: Preliminary and Descriptive Analyses

All cases were examined, at the individual variable level, to assess the accuracy with which values had been entered into the data file (i.e., to inspect for values that were either out-of-range or missing). A summary of the results of these procedures follows; complete details are presented in Appendix P.

First, it was determined that across all 20 variables of research interest²⁹, values in the data set were within the expected range; means and standard deviations (for continuous variables) were also found to be plausible. Next, upon inspection of the total sample ($N = 3205$), 255 cases (i.e., approximately 8% of the total sample) were found to have missing values on at least 1 of the 20 variables. Careful examination of the pattern of missing values showed them to be scattered randomly through the data set (i.e., across cases and variables). Forty-seven of the 255 cases (i.e., approximately 1.5% of the total sample) were missing values on 3 or more

²⁹That is, those variables utilized in subsequent stages of data analysis: (1) sex, (2) activity (see Appendix I) (3) mother's and (4) father's level of education, (5) respondent's age at 2-years and (6) 5-years, (7) marital status at 2-years and (8) 5-years, (9) number of dependent children at 2-years and (10) 5-years, (11) intrinsic and (12) extrinsic motivation for having originally enrolled in a N, E, L, or M program of study, (13) further education at 2-years and (14) 5-years, (15) income at 2-years and (16) 5-years, (17) job satisfaction at 2-years and (18) 5-years, (19) salary satisfaction at 2-years and (20) 5-years.

variables; these 47 cases were subsequently deleted from the data set, resulting in a new total sample of 3158. The distribution of this new total sample, by NELM academic area and by sex, is presented in Figure 3 (see Chapter 3).

For the remaining 208 cases (i.e., approximately 6.5% of the new total sample) that were missing values on 1 or 2 variables only, missing values were replaced with estimated values. Specifically, following a procedure recommended by Tabachnick and Fidell (1989), group means (by NELM academic area and by sex) were inserted in place of the missing values (e.g., where a female Natural Science graduate was missing the value for a given variable, the group mean for all female Natural Science graduates was used for that variable).

As noted by Tabachnick and Fidell (1989), in the absence of all other information, it is the overall or grand mean (for the total sample) that is a researcher's best guess about the value of a variable. Part of the attraction of inserting the grand mean in place of a missing value is that this procedure is conservative: the mean for the distribution as a whole does not change and the researcher is not required to guess at missing values. On the other hand, the variance of the variable is reduced because the mean is closer to itself than to the missing value it replaces, and the correlation the variable has with other variables is reduced because of the reduction in variance. A compromise is to insert the *group* mean for missing values, as was done in the present investigation. In that this procedure is not as conservative as inserting overall mean values and not as liberal as using prior knowledge, it is highly recommended (Tabachnick & Fidell, 1989, p. 64).

Table 7 presents a summary of descriptive statistics for all variables, including NELM retention status, by NELM academic area and by sex. Therein, means and standard deviations are presented for continuous variables, and percentages for discrete variables. In the top two portions of this table, descriptive statistics are presented for *all* respondents ($N=3158$) for variables measured at the 2-year and 5-year post-graduation follow-up interviews, respectively. In the bottom two portions of the table, descriptive statistics are presented first for the sub-samples of respondents who were employed as of the 2-year follow-up, followed by those for the sub-samples of respondents who were employed as of the 5-year follow-up.

Table 7
Descriptive Statistics^a, by NELM Academic Area and by Sex (N=3158)

variable	n	NATURAL SCIENCE		ENGINEERING		LIFE SCIENCE ^b		MATHEMATICS ^c	
		WOMEN 341	MEN 508	WOMEN 100	MEN 811	WOMEN 607	MEN 272	WOMEN 164	MEN 355
FOR ALL RESPONDENTS – VARIABLES MEASURED AT THE 2-YEAR FOLLOW-UP, ONLY									
mother's level of education		2.60 (1.18)	2.46 (1.18)	2.66 (1.22)	2.35 (1.16)	2.43 (1.12)	2.63 (1.24)	2.27 (1.17)	2.33 (1.14)
father's level of education		2.91 (1.43)	2.84 (1.47)	2.91 (1.45)	2.62 (1.41)	2.61 (1.41)	3.01 (1.55)	2.52 (1.34)	2.52 (1.37)
intrinsic motivation		3.53 (0.59)	3.39 (0.63)	3.50 (0.55)	3.41 (0.58)	3.61 (0.52)	3.51 (0.59)	3.44 (0.59)	3.30 (0.66)
extrinsic motivation		3.30 (0.69)	3.17 (0.77)	3.52 (0.55)	3.37 (0.64)	3.42 (0.57)	3.39 (0.60)	3.37 (0.72)	3.32 (0.68)
age at 2-years (continuous)		24.72 (2.64)	25.28 (2.89)	25.12 (1.82)	25.90 (3.60)	27.51 (5.96)	27.12 (3.77)	26.12 (4.93)	26.20 (3.98)
marital status at 2-years (%)	0=other 1=married/CL	78.0 22.0	76.8 23.2	61.0 39.0	65.9 35.1	57.7 42.3	56.6 43.4	64.6 35.4	72.7 27.3
number of children at 2-years		0.05 (0.28)	0.09 (0.42)	0.03 (0.22)	0.13 (0.45)	0.27 (0.71)	0.32 (0.77)	0.15 (0.51)	0.14 (0.48)
retention status ^d at 2-years (%)	0=not retained 1=retained	43.9 56.1	40.8 59.2	31.2 68.8	29.0 71.0	12.1 87.9	11.7 88.3	38.0 62.0	32.6 67.4
FOR ALL RESPONDENTS – VARIABLES MEASURED AT THE 5-YEAR FOLLOW-UP, ONLY									
age at 5-years (continuous)		27.72 (2.64)	28.28 (2.89)	28.12 (1.82)	28.90 (3.60)	30.51 (5.96)	30.12 (3.77)	29.12 (4.93)	29.20 (3.98)
marital status at 5-years (%)	0=other 1=married/CL	47.5 52.5	55.9 44.1	37.0 63.0	42.3 57.7	38.1 61.9	33.8 66.2	41.5 58.5	52.7 47.3
number of children at 5-years		0.21 (0.56)	0.27 (0.69)	0.27 (0.55)	0.40 (0.79)	0.54 (0.88)	0.68 (1.09)	0.35 (0.72)	0.32 (0.71)
retention status ^e at 5-years (%)	0=not retained 1=retained	46.7 53.3	42.0 58.0	33.0 67.0	33.0 67.0	14.0 86.0	14.4 85.6	37.7 62.3	31.8 68.2
FOR SUB-SAMPLES OF RESPONDENTS EMPLOYED AS OF THE 2-YEAR FOLLOW-UP									
	n	199	318	82	679	551	218	150	318
further education at 2-years (%)	0=none 1=NELM 2=non-NELM	49.2 32.7 18.1	50.3 28.0 21.7	63.4 13.4 23.2	70.8 13.5 15.6	68.6 10.9 20.5	59.2 8.7 32.1	70.7 22.7 6.7	71.7 16.0 12.3
income at 2-years		2.16 (1.32)	2.66 (1.64)	3.67 (1.52)	4.13 (1.43)	4.06 (1.39)	4.80 (1.37)	3.51 (1.41)	3.82 (1.42)
job satisfaction at 2-years		3.20 (0.75)	3.31 (0.69)	3.37 (0.68)	3.43 (0.64)	3.38 (0.64)	3.61 (0.54)	3.32 (0.68)	3.38 (0.68)
salary satisfaction at 2-years		2.73 (0.82)	2.95 (0.73)	3.00 (0.74)	3.00 (0.68)	2.77 (0.76)	3.03 (0.67)	3.07 (0.62)	3.02 (0.62)
retention status ^f at 2-years (%)	0=not retained 1=retained	55.8 44.2	50.3 49.7	32.1 67.9	29.8 70.2	11.8 88.2	13.4 86.6	37.3 62.7	33.0 67.0
FOR SUB-SAMPLES OF RESPONDENTS EMPLOYED AS OF THE 5-YEAR FOLLOW-UP									
	n	261	396	86	749	564	260	157	328
further education at 5-years (%)	0=none 1=NELM 2=non-NELM	75.5 14.9 9.6	78.0 10.9 11.1	82.6 11.6 5.8	85.4 6.3 8.3	80.0 7.6 12.4	86.5 2.7 10.8	79.6 12.1 8.3	83.5 10.4 6.1
income at 5-years		2.68 (1.80)	3.51 (2.13)	4.29 (1.88)	4.94 (1.84)	4.16 (2.13)	6.37 (2.04)	3.99 (1.97)	4.59 (1.96)
job satisfaction at 5-years		3.45 (0.60)	3.43 (0.61)	3.44 (0.59)	3.40 (0.62)	3.43 (0.58)	3.67 (0.51)	3.46 (0.56)	3.44 (0.62)
salary satisfaction at 5-years		3.00 (0.77)	2.97 (0.71)	3.08 (0.65)	3.01 (0.64)	2.91 (0.70)	3.02 (0.77)	3.13 (0.69)	3.10 (0.64)
retention status ^g at 5-years (%)	0=not retained 1=retained	50.4 49.6	45.1 54.9	35.3 64.7	32.4 67.6	13.1 86.9	13.8 86.2	36.9 63.1	31.4 68.6

Table 7 cont'd

Note. CL = common law. For additional information regarding variable derivation and coding, readers are referred to Chapter 3 and to Table 6.

^aFor interval-level variables, means and standard deviations are presented (standard deviations appear in parentheses). For ordinal-level variables, percentages (%) are presented.

^b*Health Professions* are also included in this academic area.

^c*Computer Science* is also included in this academic area.

^dFor some respondents, *NELM retention status at 2-years* was indeterminable and these respondents were necessarily excluded from the analyses involving this dependent variable. Therefore, the sample-sizes differ slightly for this variable. Included in the Natural Science academic area are 303 women and 456 men; in Engineering 93 women and 751 men; in Life Science/Health Professions 596 women and 264 men; in Mathematics/Computer Science 158 women and 344 men ($N=2965$).

^eFor some respondents, *NELM retention status at 5-years* was indeterminable and these respondents were necessarily excluded from the analyses involving this dependent variable. Therefore, the sample-sizes differ slightly for this variable. Included in the Natural Science academic area are 302 women and 467 men; in Engineering 91 women and 787 men; in Life Science/Health Professions 584 women and 270 men; in Mathematics/Computer Science 162 women and 340 men ($N=3003$).

^fFor some respondents in the *employed sub-samples* (i.e., who were employed at both the 2-year and 5-year post-graduation follow-up interviews), *NELM retention status at 2-years* was indeterminable. Therefore, the sub-sample-sizes differ slightly for this variable. Included in the Natural Science academic area are 197 women and 318 men; in Engineering 81 women and 677 men; in Life Science/Health Professions 550 women and 217 men; in Mathematics/Computer Science 150 women and 318 men ($N=2508$).

^gFor some respondents in the *employed sub-samples* (i.e., who were employed at both the 2-year and 5-year post-graduation follow-up interviews), *NELM retention status at 5-years* was indeterminable. Therefore, the sub-sample-sizes differ slightly for this variable. Included in the Natural Science academic area are 260 women and 395 men; in Engineering 85 women and 747 men; in Life Science/Health Professions 563 women and 260 men; in Mathematics/Computer Science 157 women and 328 men ($N=2795$).

Stage II: Hypothesis Testing

The two-phase process employed to test each hypothesis in the present investigation was outlined in Chapter 3. Accordingly, each of the sections that follow commences with details of the direct logistic regression analysis used to test the "gross-effect-of-sex model" (i.e., phase one), followed by details of the sequential logistic regression analysis used to test the "net-effect-of-sex model" (i.e., phase two). In all cases, summary tables of the results of the logistic regression analyses are presented, with the findings being interpreted for the reader in text³⁰. Conclusions supported by the statistical analytic findings are summarized in brief at the end of each section.

In each of the logistic regression summary tables, goodness-of-fit statistics are presented first for the constant-only model, next for the test of the gross-effect-of-sex model, third for the test of the net-effect-of-sex model, and finally (where applicable) for the interactions³¹ (which were tested post-hoc). For each of these models (and for each block of the net-effect-of-sex model), applicable findings are displayed in two columns. Presented first (on the left) are those statistics relating to the individual predictor variable(s), namely: the estimated logistic regression coefficient (**B**); the standard error of the estimate (**SE**); the **Wald's test** and accompanying degrees of freedom (**df**); the partial correlation coefficient (**R**; this is a measure of the correlation of the parameter entered at this block with the dependent variable, after adjusting for all other parameters [Tabachnick & Fidell, 1996]); and, the **odds ratio**. Presented to the right of the vertical line that divides each table are those statistics indicative of the goodness-of-fit of each model (as a whole), namely: the **-2 log likelihood** and accompanying degrees of freedom (**df**); the **Model χ^2 ($\Delta -2 LL$)** value (this is the change in the -2 log likelihood from the constant-only

³⁰Although it is customary not to present, in text, information that is already shown in a table, readers will note a considerable amount of detail in the textual interpretations of the summary tables, as well as some repetition of information. This level of detail was purposefully included by the author; given the infrequency of use and relative unfamiliarity in psychology of logistic regression analysis, relatively more elaboration has been deliberately provided for the reader, in text.

³¹Anytime an antecedent variable was found to be a significant predictor of the criterion, the interaction of this variable by sex was subsequently entered into the net-effect-of-sex model—in a post-hoc fashion—in order to test, post-hoc, the speculation that this variable could, potentially be operating differentially among women versus men.

model) and accompanying change in degrees of freedom (Δ df); and, the Improvement χ^2 value (this is the improvement in model-fit for each of the nested models over the immediately-preceding block) and accompanying degrees of freedom (df). (For additional interpretative information, readers may wish to consult Appendix O, in which a primer of logistic regression analysis is presented).

Test of Hypothesis 1

IT HAD BEEN HYPOTHESIZED THAT, UPON CONSIDERING THE ENTIRE SAMPLE OF NELM BACHELOR'S DEGREE HOLDERS AS A WHOLE, THE PROBABILITY OF BEING RETAINED IN NELM, AT THE 2-YEAR AND THE 5-YEAR POST-GRADUATION FOLLOW-UP INTERVIEWS WOULD BE LOWER FOR YOUNG WOMEN THAN FOR YOUNG MEN. Hypothesis 1(a) was tested first utilizing the 2-year post-graduation follow-up interview data and the procedure detailed below; this procedure was then repeated utilizing the 5-year post-graduation follow-up interview data, to test Hypothesis 1(b).

In phase one, the question addressed was whether, in the entire sample, the variable sex—on its own—was a reliable predictor of NELM retention status at 2-years (i.e., the gross-effect-of-sex model). To address this question, a direct logistic regression analysis was conducted to assess prediction of NELM retention status at 2-years (i.e., retention vs. non-retention) on the basis of the variable sex, only.

Whether or not sex was found, on its own, to be a reliable predictor of NELM retention status in the entire sample, a second question, addressed in phase two, was whether the variable sex would be a reliable predictor of NELM retention status at 2-years, after adjusting for the effects of the NELM program of study variable (i.e., the net-effect-of-sex model). To address this question, a sequential logistic regression analysis was conducted to assess the prediction of NELM retention status at 2-years (i.e., retention vs. non-retention) on the basis of the variables NELM program of study (entered at Block-1) and sex (entered at Block-2).

The goal of the sequential logistic regression analysis was to investigate the relationship between the dichotomous dependent variable NELM retention status at 2-years and the independent variable sex, with the effects of the predictor variable NELM program of study

statistically controlled. Simply put, the major question was whether sex would significantly *enhance* prediction of retention versus non-retention at 2-years, once prediction by the variable NELM program of study had been accounted for³².

Figures 4 and 5 present a summary of NELM retention status at post-graduation year-2 and post-graduation year-5, respectively, by NELM academic area and by sex. From both of these figures it is apparent that there was considerable variability across NELM academic areas in rates of retention (and non-retention). Judging by Figures 4 and 5, the proportion of respondents *not* retained in NELM was *not* higher among women. Contrary to what had been hypothesized, these figures show a slightly larger proportion of men than women to have *not* been retained NELM at the 2-year and 5-year post-graduation follow-up interviews.

Table 8 presents a summary of relevant descriptive statistics for the predictor variables employed in testing Hypothesis 1. In accord with the visual presentation of Figures 4 and 5, at the descriptive level, a larger proportion of men were *not* retained in NELM at the both the 2-year (30.1% vs. 25.6%) and 5-year (32.2% vs. 27.6%) post-graduation follow-up interviews. The direct and sequential logistic regression findings for the analysis of the 2- and 5-year post-graduation follow-up interview data are summarized in Tables 9 and 10, respectively.

Hypothesis 1(a): NELM Retention Status at the 2-year Post-graduation Follow-up Interview

Gross-effect-of-sex model. Strictly speaking, an assessment of the adequacy of model fit must precede any attempt at interpreting it (Hosmer & Lemeshow, 1989). As shown in Table 9, for the entire sample of NELM bachelor's degree holders, model-fit was statistically significant when the dependent variable NELM retention status at 2-years was predicted based on the full model (containing the independent variable sex, only). The Model χ^2 value resulting from this analysis indicated better prediction of NELM retention status at 2-years than would be expected by chance ($p < .01$). The Improvement χ^2 value (associated with the variable sex in this analysis) was statistically significant ($p < .01$), indicating that the addition of sex to the model resulted in a

³²The purpose in asking this question was to address the issue of whether any difference found was genuinely attributable to sex, as a predictor variable, (i.e., a true "sex difference") or, was it actually associated with differences on the antecedent variable NELM program of study?

Figure 4. Retention versus non-retention in NELM at the 2-year post-graduation follow-up interview, by NELM academic area and by sex (N = 2965)

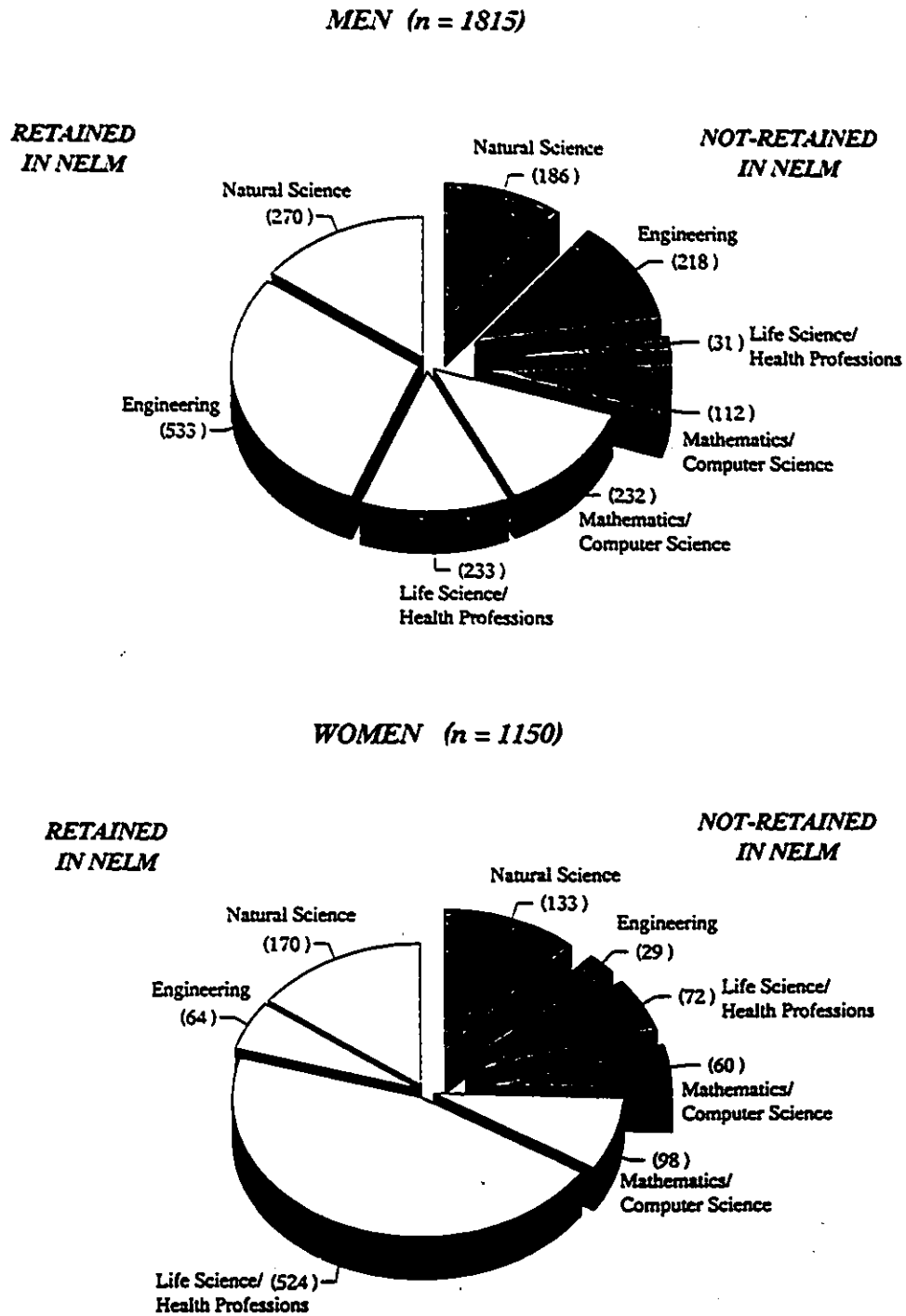


Figure 5. Retention versus non-retention in NELM at the 5-year post-graduation follow-up interview, by NELM academic area and by sex (N = 3003)

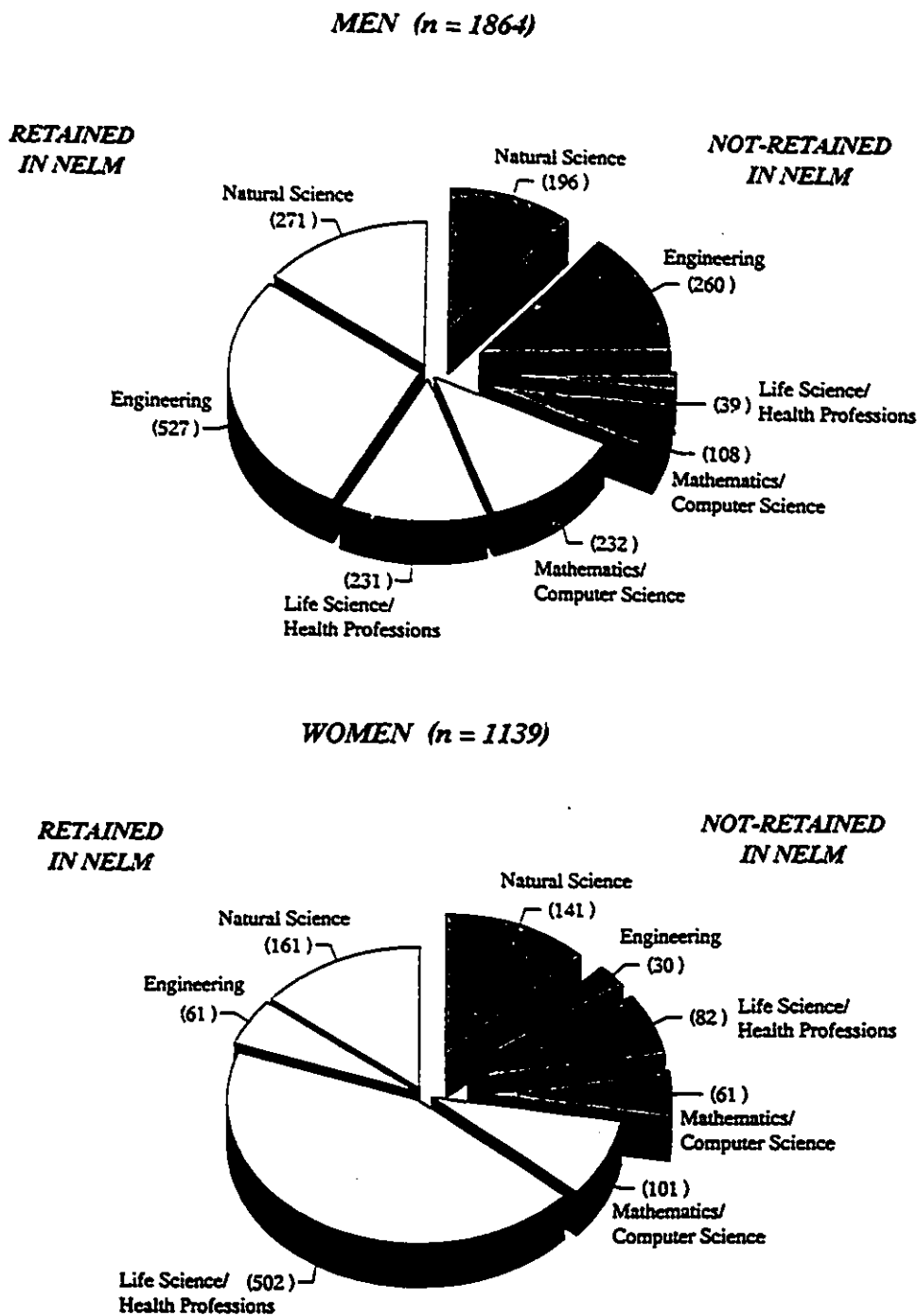


Table 8

*Hypothesis 1 (considering the entire sample of NELM bachelor's degree-holders together, as a whole):
Descriptive Statistics for Predictor Variables Entered in the Sequential Logistic Regression Analyses of the 2- and 5-year Post-Graduation Follow-up Interview Data, by NELM Retention Status*

variable	<i>n</i>	IN	OUT
2-year post-graduation follow-up^a			
		<i>n</i> =2124 71.64%	<i>n</i> =841 28.36%
program of study (%)			
Natural Science	759	58.0	42.0
Engineering	844	70.7	29.3
Life Science	860	88.0	12.0
Mathematics	502	65.7	34.3
sex (%)			
0=female	1150	74.4	25.6
1=male	1815	69.9	30.1
5-year post-graduation follow-up^b			
		<i>n</i> =2086 69.46%	<i>n</i> =917 30.54%
program of study (%)			
Natural Science	769	56.2	43.8
Engineering	878	67.0	33.0
Life Science	854	85.8	14.2
Mathematics	502	66.3	33.7
sex (%)			
0=female	1139	72.4	27.6
1=male	1864	67.7	32.3

Note. IN="retained in NELM"; OUT="not retained in NELM"

^aEntire sample at the 2-year post-graduation follow-up, *N* = 2965.

^bEntire sample at the 5-year post-graduation follow-up, *N* = 3003.

Table 9

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 1(a): NELM Retention Status at the 2-year Post-Graduation Follow-up Interview, All NELM Academic Areas Combined (N = 2965)

variable ^a	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2LL)	Δ df	Improvement χ^2	df
constant	.93	.04	..	..	..	..	3536.42	2964	..	..	..	..
GROSS-EFFECT-OF-SEX MODEL	-.23	.08	7.23**	1	-.039	.80	3529.12	2963	7.30**	1	7.30**	1
NET-EFFECT-OF-SEX MODEL												
B1 program of study^b												
ENGINEERING (1=yes, 0=no)	.56	.11	28.27***	1	.086	1.75						
LIFE SCIENCE (1=yes, 0=no)	1.67	.13	170.29***	1	.218	5.33						
MATHEMATICS (1=yes, 0=no)	.33	.12	7.64**	1	.040	1.39						
B2 sex (1=male, 0=female)	.13	.10	1.84	1	.000	1.14	3328.89	2961	207.53***	3	207.53***	3
INTERACTIONS (tested post-hoc):							3327.05	2960	209.37***	4	1.84	1
B3 sex by program of study												
sex by ENGINEERING (1=yes, 0=no)	-.02	.28	.01	1	.000	.98						
sex by LIFE SCIENCE (1=yes, 0=no)	-.01	.27	.12	1	.000	.91						
sex by MATHEMATICS (1=yes, 0=no)	.11	.25	.19	1	.000	1.12						
			.48	3	.000		3326.57	2957	209.85***	7	.48	3

Note. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis); LIFE SCIENCE = Life Science/Health Professions; MATHEMATICS = Mathematics/Computer Science.

^aRefer to Table 6 for a complete summary of predictor variable coding. ^bprogram of study' is a set of three design variables, with 'Natural Science', which had the lowest retention-rate, serving as the reference group (Hosmer & Lemeshow, 1989, p. 48). 'Refer to Chapter 3: Analysis of the Data (footnote 26) for an explanation as to why this finding (from the 2-tailed test) is reported.

p < .01 (significant); *p < .001 (highly significant).

Table 10
Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 1(b): NELM Retention Status at the 5-year Post-Graduation Follow-up Interview, All NELM Academic Areas Combined (N = 3003)

variable ^a	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2LL)	Δ df	Improvement χ^2	df
constant	.82	.04	..	..	..	..	3695.72	3002	..	..	..	..
GROSS-EFFECT-OF-SEX MODEL												
	-.23	.08	7.61**	1	-.039	.80	3688.04	3001	7.68**	1	7.68**	1
NET-EFFECT-OF-SEX MODEL												
B1 program of study ^b												
ENGINEERING (1=yes, 0=no)	.46	.10	20.15***	1	.070	1.58						
LIFE SCIENCE (1=yes, 0=no)	1.55	.12	161.67***	1	.208	4.72						
MATHEMATICS (1=yes, 0=no)	.43	.12	13.01**	1	.055	1.54						
B2 sex (1=male, 0=female)	.13	.10	1.86	1	.000	1.14	3506.51	2999	189.21***	3	189.21***	3
							3504.65	2998	191.07***	4	1.86	1
post-hoc model fitting (interactions):												
B3 sex by program of study												
sex by ENGINEERING (1=yes, 0=no)	-.19	.28	.49	1	.000	.82						
sex by LIFE SCIENCE (1=yes, 0=no)	-.22	.26	.76	1	.000	.80						
sex by MATHEMATICS (1=yes, 0=no)	.07	.25	.08	1	.000	1.07						
			1.52	3	.000		3503.14	2995	192.58***	7	1.51	3

Note. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis); LIFE SCIENCE = Life Science/Health Professions; MATHEMATICS = Mathematics/Computer Science.
^aRefer to Table 6 for a complete summary of predictor variable coding. ^bprogram of study' is a set of three design variables, with 'Natural Science', which had the lowest retention-rate, serving as the reference group (Hosmer & Lemeshow, 1989, p. 48). ^cRefer to Chapter 3: Analysis of the Data (footnote 26) for an explanation as to why this finding (from the 2-tailed test) is reported.
 p < .01 (significant); *p < .001 (highly significant).

significant improvement in the prediction of NELM retention status at 2-years over the immediately preceding model--in this case, the constant-only model.

As discussed in Appendix O, any finding of a reliable difference between a constant-only model and a full model signifies a relationship between the predictor(s) in the full model and the outcome variable, thereby requiring the researcher to determine *which* variable(s) are predicting the outcome and to interpret *how* they are affecting it. Given that, in the present case, sex was the *only* predictor contained in the full model, it was credited with predicting the outcome. Based on the Wald criterion, the predictor variable sex reliably distinguished between retention and non-retention in NELM at the 2-year post-graduation follow-up interview ($p < .01$). However, as shown in Table 9, test statistics indicative of *how* sex was affecting the outcome revealed unexpected findings. Specifically, negative B coefficients indicate that the predicted odds decrease as the predictor increases (Wright, 1995). Thus, given the coding of the predictor variable sex (i.e., 0="female"; 1="male"), its negative B coefficient indicated that, overall, men were actually *less* likely than women to be retained in NELM at post-graduation year-2. Moreover, based on the odds ratio, a respondent's relative chance (odds) of being retained in NELM at post-graduation year-2 actually *decreased* by a multiplicative factor of .80 if that respondent was male.

Net-effect-of-sex model. Model fit was also statistically significant when NELM retention status at 2-years was predicted by sex, with the effects of the variable NELM program of study statistically controlled. However, as indicated by the goodness-of-fit statistics for the sequential logistic regression models shown in Table 9, the statistically-significant fit of the full model was *not* attributable to the variable sex significantly *enhancing* prediction beyond the variable NELM program of study (as had been hypothesized); rather, it was due to the contribution of the predictor variable NELM program of study, itself.

As Table 9 shows, the test of the first nested model (at Block-1), against the constant-only model, yielded a statistically-significant result. That is, the Model χ^2 value at Block-1 was statistically-significant ($p < .01$), indicating better prediction of NELM retention status at 2-years than would be expected by chance ($p < .01$). The Improvement χ^2 value at Block-1 was also statistically significant ($p < .01$), indicating that the addition of NELM program

of study to the model had resulted in a significant improvement in the prediction of NELM retention status at 2-years over the immediately preceding constant-only model. Similarly, according to the Wald criterion for the NELM program of study predictor variable as a whole, retention versus non-retention in NELM at the 2-year post-graduation follow-up interview could be reliably distinguished, on the basis of this predictor variable ($p < .01$).

NELM program of study was originally a discrete, nominal-level variable with four categories: 1="Natural Science program of study"; 2="Engineering program of study"; 3="Life Science/Health Professions program of study"; 4="Mathematics/Computer Science program of study". It was inappropriate to include this variable in the analysis "as is" (i.e., as if it were interval scaled), because the numbers used to represent the various programs of study were merely identifiers, and had no numeric significance (Hosmer & Lemeshow, 1989). Therefore, for the purpose of the sequential logistic regression analyses, NELM program of study was recoded into a set of three "design variables" to represent the categories of the variable, thereby avoiding a linear dependency (Hosmer & Lemeshow, 1989, p. 48). As shown in Table 9, the design variables were labelled *ENGINEERING*; *LIFE SCIENCE*; and *MATHEMATICS*. Because it had the lowest retention rate overall, the Natural Science category was chosen to serve as the "reference group", thus making the coefficients of the design variables positive (Hosmer & Lemeshow, 1989, p. 48).

In this analysis, as Table 9 shows, all three of the design variables derived from the NELM program of study variable were found, individually, to be statistically-significant predictors, according to the Wald criterion ($p < .01$). Positive B coefficients indicate that the predicted odds increase as the predictor increases (Wright, 1995). Given the coding of the three design variables (i.e., 0="no"; 1="yes"), the positive B coefficients indicated that, in each case, graduates from Engineering, Life Science/Health Professions, and Mathematics/Computer Science programs of study were *more* likely than Natural Science program of study graduates to be retained in NELM at post-graduation year-2. The odds ratio of 1.75 associated with the design variable *ENGINEERING* indicated that, with a bachelor's degree in Engineering (as opposed to the reference category: Natural Science program of study), a respondent's relative chance of being retained in NELM at post-graduation year-2 *increased* by a multiplicative factor

of 1.75. The odds ratio of 5.33 associated with the design variable *LIFE SCIENCE* indicated that, with a bachelor's degree in Life Science/Health Professions (as opposed to Natural Science), a respondent's relative chance of being retained in NELM at post-graduation year-2 *increased* by a multiplicative factor of 5.33. The odds ratio of 1.39 associated with the design variable *MATHEMATICS* indicated that, with a bachelor's degree in Mathematics/Computer Science (as opposed to Natural Science), a respondent's relative chance of being retained in NELM at post-graduation year-two *increased* by a multiplicative factor of 1.39.

With the addition of the predictor variable sex at Block-2, however, the **Improvement χ^2** value was non-significant ($p > .01$), indicating that adding the predictor variable sex to the model failed to make any improvement in the prediction of NELM retention status at 2-years over Block-1. Similarly, according to the Wald criterion, the predictor variable sex did not reliably distinguish between retention and non-retention at the 2-year post-graduation follow-up interview ($p > .01$). Although the Model χ^2 value for the nested full model tested at Block-2 was statistically-significant ($p < .01$, indicating that this full model yielded significantly better prediction of NELM retention status at 2-years than did the constant-only model), this finding was *not* due to any enhancement in prediction by the addition of the variable sex (i.e., a "net" effect of sex). Rather, it was attributable solely to the contribution of the NELM program of study variable, entered at Block-1.

Finally, in order to test, post-hoc, the speculation that the design variables derived from NELM program of study could potentially operate differently, for women versus men, in the prediction of NELM retention status at 2-years, the interaction term of sex by program of study (i.e., sex by *ENGINEERING*; sex by *LIFE SCIENCE*; and, sex by *MATHEMATICS*) was subsequently entered into the sequential logistic regression model (i.e., post-hoc, at Block-3). These interactions, however, were found to be non-significant ($ps > .01$).

Hypothesis 1(b): NELM Retention Status at the 5-year Post-graduation Follow-up Interview

Gross-effect-of-sex model. Results were highly similar when the 5-year post-graduation follow-up interview data were analyzed. As shown in Table 10, for the entire sample of NELM bachelor's degree holders, model fit was statistically significant when the dependent variable

NELM retention status at 5-years was predicted based on the full model (containing the independent variable sex, only). As was the case in the analysis of the 2-year post-graduation follow-up interview data (above), the Model χ^2 value, Improvement χ^2 value, and Wald's test were each statistically significant ($ps<.01$). Again, given the coding of the variable sex (i.e., 0="female"; 1="male"), the negative B coefficient indicated that, overall, men were actually *less* likely than women to be retained in NELM at post-graduation year-5. Based on the odds ratio, a respondent's relative chance of being retained in NELM at post-graduation year-5 also *decreased* by a multiplicative factor of .80 if that respondent was male.

Net-effect-of-sex model. Model fit was also statistically significant when NELM retention status at 5-years was predicted by sex, with the effects of the variable NELM program of study statistically controlled. However, as indicated by the goodness-of-fit statistics for the sequential logistic regression models presented in Table 10, the statistically-significant fit of the full model was *not* attributable to the variable sex significantly enhancing prediction beyond the variable NELM program of study, as had been hypothesized. Rather, it was (again) due to the contribution of the predictor variable NELM program of study.

As shown in Table 10, the test of the first nested model (at Block-1), against the constant-only model, yielded a statistically-significant result. Specifically (as was the case in the preceding analysis of 2-year post-graduation follow-up interview data), the Model χ^2 value, Improvement χ^2 value and Wald test were each statistically significant ($ps<.01$).

Similarly, in this analysis (as shown in Table 10), all three of the design variables derived from NELM program of study were, again, found to be individually statistically-significant predictors, according to the Wald criterion ($ps<.01$). Given the coding of the three design variables (i.e., 0="no"; 1="yes"), the positive B coefficients indicated that, in each case, graduates from Engineering, Life Science/Health Professions, and Mathematics/Computer Science programs of study were *more* likely than those from the reference category (i.e., Natural Science bachelor's degree holders) to be retained in NELM at post-graduation year-5. Further, the odds ratios associated with the design variables *ENGINEERING*, *LIFE SCIENCE*, and *MATHEMATICS*, respectively, indicated that, with a bachelor's degree in these three respective disciplines (as opposed to the reference group of Natural Science), a respondent's relative chance

of being retained in NELM at post-graduation year-five *increased* by a multiplicative factor of 1.58, 4.72, and 1.54, respectively.

With the addition of the variable sex at Block-2, both the **Improvement χ^2** value and **Wald** criterion were, again, non-significant ($p>.01$). Thus, as was the case when the 2-year post-graduation follow-up interview data were analyzed, adding sex to the model failed to make any improvement in the prediction of NELM retention status at 5-years over Block-1; sex did *not* reliably distinguish between retention and non-retention at 5-years. Although the **Model χ^2** value for the nested full-model tested at Block-2 was statistically significant ($p<.01$), this finding was *not* attributable to sex, but to the contribution of the NELM program of study variable (entered at Block-1).

To once again test, post-hoc, the speculation that the design variables derived from NELM program of study could potentially operate differently, for women versus men, this time in the prediction of NELM retention status at 5-years, the interaction term of sex by program of study (i.e., sex by *ENGINEERING*; sex by *LIFE SCIENCE*; and, sex by *MATHEMATICS*) was subsequently entered into the sequential logistic regression model (i.e., post-hoc, at Block-3). These interactions, were (again) found to be non-significant ($p>.01$).

Conclusion

These findings resulted in a failure to reject either null Hypothesis 1(a) or 1(b), that is:

$$H_0 : P_{\text{retention in NELM @ 2-years}} (\text{females}) - P_{\text{retention in NELM @ 2-years}} (\text{males}) \geq 0$$

$$H_0 : P_{\text{retention in NELM @ 5-years}} (\text{females}) - P_{\text{retention in NELM @ 5-years}} (\text{males}) \geq 0$$

Upon considering the *entire* sample of NELM bachelor's degree holders as a whole, the probability of being retained in NELM was *not* found to be *lower* for young women than for young men, at either the 2-year or 5-year post-graduation follow-up interviews.

Test of Hypothesis 2

IT HAD BEEN HYPOTHESIZED THAT, UPON CONSIDERING EACH OF THE FOUR NELM GROUPS OF BACHELOR'S DEGREE HOLDERS SEPARATELY THE PROBABILITY OF BEING RETAINED

IN NELM AT THE 5-YEAR POST-GRADUATION FOLLOW-UP INTERVIEW WOULD BE LOWER FOR YOUNG WOMEN THAN FOR YOUNG MEN IN THE "N", "E" AND "M" GROUPS (AND WOULD BE DIFFERENT FOR YOUNG WOMEN VS. YOUNG MEN IN THE "L" GROUP). Hypothesis 2(a) was tested first, utilizing the sub-set of 5-year follow-up interview data for graduates in the Natural Science academic area and the procedure described below; this procedure was then repeated three times, utilizing sub-sets of the 5-year follow-up interview data for graduates in the Engineering, Life Science/Health Professions, and Mathematics/Computer Science academic areas to test Hypothesis 2(b), 2(c), and 2(d), respectively.

The first question to be addressed was whether sex, by itself, was a reliable predictor of NELM retention status among Natural Science bachelor's degree holders (i.e., the gross-effect-of-sex model). To address this question, a direct logistic regression analysis was conducted (in phase one) to assess prediction of NELM retention status at 5-years among Natural Science bachelor's degree holders on the basis of the variable sex, only.

The second question to be addressed was whether the variable sex would be a reliable predictor of NELM retention status at 5-years, after adjusting for the effects of the other available predictor variables (i.e., the net-effect-of-sex model). To address this question, a sequential logistic regression analysis was conducted (in phase two) to assess the prediction of NELM retention status at 5-years among Natural Science bachelor's degree holders on the basis of the following variables³³: mother's level of education (entered at Block-1); father's level of education (entered at Block-2); respondents' age at 2-years (entered at Block-3); marital status at 2-years (entered at Block-4); number of dependent children at 2-years (entered at Block-5); intrinsic motivation for having originally enrolled in a Natural Science program of study (entered at Block-6); extrinsic motivation for having originally enrolled in a Natural Science program of study (entered at Block-7)³⁴; and, sex (entered last, at Block-8).

The goal of this sequential logistic regression analysis was to investigate the relationship

³³See Table 6 for a summary of predictor variable coding.

³⁴In subsequent analyses of the sub-samples of E, L, and M bachelor's degree holders, the variables entered at Block-6 and Block-7 measured the respondents' intrinsic/extrinsic motivation for having originally enrolled in an Engineering, Life Science/Health Professions, or Mathematics/Computer Science program of study, respectively.

between the dichotomous dependent variable NELM retention status at 5-years and the independent variable sex, with the effects of the other predictor variables (i.e., those entered at Blocks 1 to 7) statistically controlled. Simply put, the major question was whether sex would significantly *enhance* prediction of retention versus non-retention in NELM at the 5-year post-graduation follow-up interview in the sub-sample of Natural Science (Engineering; Life Science/Health Professions; or, Mathematics/Computer Science) bachelor's degree holders, once the other available antecedent variables had been taken into account.

Figure 6 presents a summary of retention rates at the 5-year post-graduation follow-up interview, by academic area and by sex. From this figure, considerable variability was apparent in retention rates across academic areas, ranging from approximately 55% in Natural Science to more than 85% in Life Science/Health Professions. Across gender, however, retention rates were highly similar within academic areas. Women had slightly lower retention rates than men among Natural Science bachelor's degree holders (4.7% lower) and among Mathematics/Computer Science bachelor's degree holders (5.9% lower). Retention rates were almost identical among Engineering and Life Science/Health Professions bachelor's degree holders.

Table 11 presents a summary of relevant descriptive statistics for the predictor variables entered into the sequential logistic regression analyses, by NELM academic area and by NELM retention status at 5-years. The direct and sequential logistic regression findings for the sub-samples of bachelor's degree holders from the N, E, L, and M academic areas are summarized in Tables 12 to 15, respectively.

Hypothesis 2(a): Natural Science Bachelor's Degree holders - NELM Retention Status at Year-5

Gross-effect-of-sex model. As shown in Table 12, for the sub-sample of Natural Science bachelor's degree holders, model-fit was very poor (and statistically non-significant) when the dependent variable NELM retention status at 5-years was predicted based on the full model containing the variable sex only. The Model χ^2 value resulting from this analysis indicated no better prediction of NELM retention status at 5-years than would be expected by chance ($p > .01$). The Improvement χ^2 value (associated with the variable sex in this analysis) was statistically

Figure 6. Retention rates at the 5-year post-graduation follow-up interview, by academic area and by sex, for the entire sample (N = 3003)

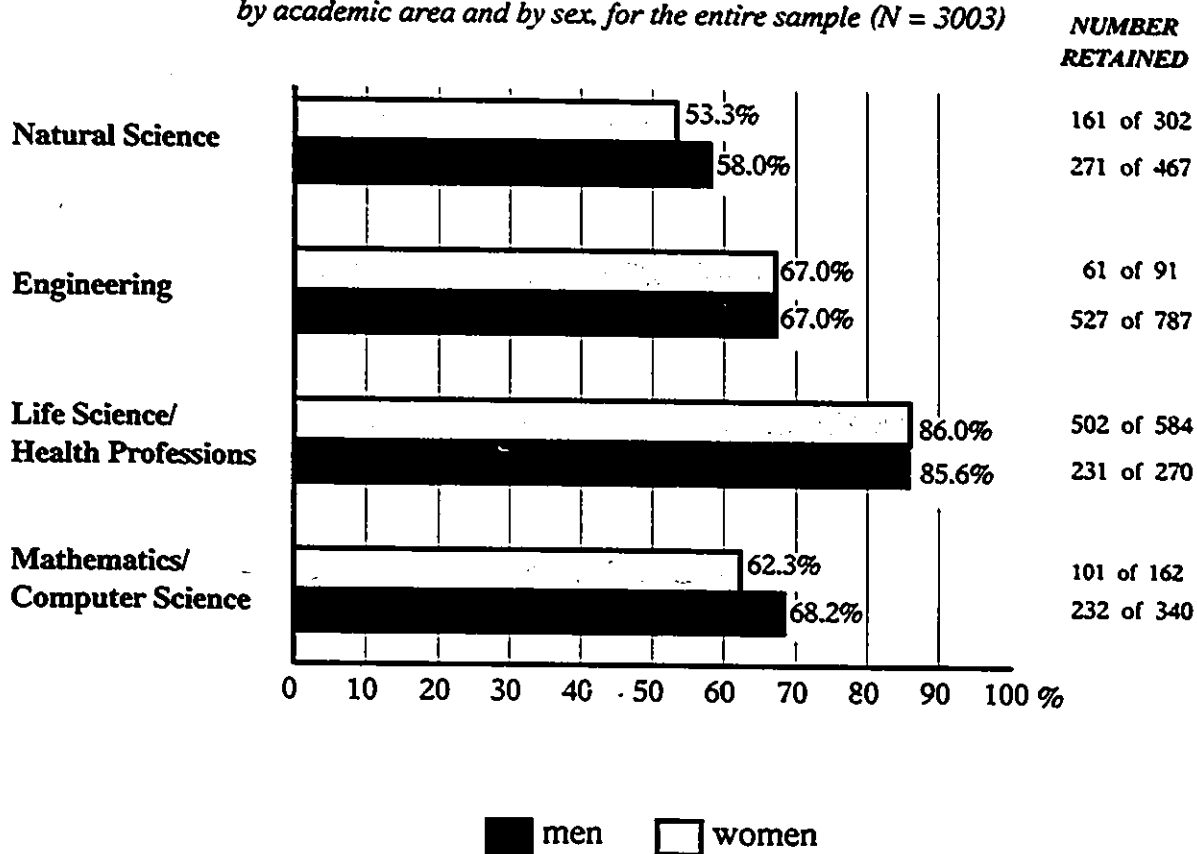


Table 11

*Hypothesis 2 (all bachelor's degree-holders, considering each NELM academic area separately):
Descriptive Statistics^a for Predictor Variables Entered in the Direct and Sequential Logistic Regression Analyses,
by NELM Academic Area and by NELM Retention Status at Year-5 (N=3003)*

variable ^b		natural science		engineering		life science / health professions		mathematics / computer science	
		IN	OUT	IN	OUT	IN	OUT	IN	OUT
		<i>n</i>							
	%	56.18	43.82	66.97	33.03	85.83	14.17	66.33	33.67
mother's education	<i>M</i>	2.56	2.46	2.40	2.34	2.52	2.20	2.31	2.28
	<i>SD</i>	1.19	1.18	1.15	1.20	1.16	1.10	1.16	1.11
father's education	<i>M</i>	2.93	2.77	2.62	2.73	2.80	2.31	2.58	2.38
	<i>SD</i>	1.46	1.45	1.41	1.44	1.47	1.31	1.39	1.28
age (category) @ year-2	<i>M</i>	2.67	2.82	3.28	3.39	3.78	3.62	3.25	3.18
	<i>SD</i>	1.61	1.63	1.54	1.53	1.75	1.85	1.66	1.68
marital status @ year-2 (%)									
	0=other	80.30	72.70	65.50	62.40	57.30	60.30	69.70	70.40
	1=married/common law	19.70	27.30	34.50	37.60	42.70	39.70	30.30	29.60
number of children @ year-2	<i>M</i>	.06	.11	.12	.12	.29	.26	.14	.16
	<i>SD</i>	.29	.46	.43	.44	.74	.68	.48	.50
intrinsic motivation	<i>M</i>	3.45	3.44	3.43	3.40	3.59	3.50	3.39	3.27
	<i>SD</i>	.62	.60	.58	.57	.55	.59	.62	.67
extrinsic motivation	<i>M</i>	3.25	3.23	3.38	3.38	3.41	3.39	3.39	3.28
	<i>SD</i>	.73	.72	.64	.63	.57	.62	.66	.74
sex (%)									
	0=female	37.30	41.80	10.40	10.30	68.50	67.80	30.30	36.10
	1=male	62.70	58.20	89.60	89.70	31.50	32.20	69.70	63.90

Note. IN="retained in NELM at the 5-year post-graduation follow-up interview"; OUT="not retained in NELM at the 5-year post-graduation follow-up interview"

^aMeans (*M*s) and standard deviations (*SD*s) are presented for interval-level variables. Percentages (%) are presented for nominal-level variables.

^bRefer to Table 6 for a complete summary of predictor variable coding.

Table 12

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 2(a): NELM Retention Status at Post-Graduation Year-5 Among Natural Science Bachelor's Degree-Holders (n=769)

variable ^a	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2LL)	Δ df	Improvement χ^2	df
constant	.25	.07	..	..	..	..	1054.29	768	..	..	..	..
GROSS-EFFECT-OF-SEX MODEL	.19	.15	1.66	1	.000	1.21	1052.64	767	1.66	1	1.66	1
NET-EFFECT-OF-SEX MODEL												
B1 mother's education	.07	.06	1.43	1	.000	1.08	1052.86	767	1.44	1	1.44	1
B2 father's education	.06	.06	.98	1	.000	1.06	1051.88	766	2.42	2	.98	1
B3 age (category) @ year-2	-.05	.05	1.18	1	.000	.95	1050.69	765	3.60	3	1.18	1
B4 marital status @ year-2 (1=married, 0=other)	-.39	.18	4.67*	1	-.050	.68	1046.02	764	8.28	4	4.68*	1
B5 number of children @ year-2	-.18	.22	.72	1	.000	.83	1045.28	763	9.02	5	.74	1
B6 intrinsic motivation	.04	.12	.13	1	.000	1.04	1045.15	762	9.15	6	.13	1
B7 extrinsic motivation	.04	.11	.12	1	.000	1.04	1045.03	761	9.26	7	.12	1
B8 sex (1=male, 0=female)	.25	.15	2.63	1	.025	1.28	1042.40	760	11.89	8	2.63	1
INTERACTIONS (tested post-hoc):												
B9 sex by marital status @ year-2 (1=married, 0=other)	.56	.37	2.45	1	.021	1.78	1039.93	759	14.37	9	2.48	1

Note. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis).
^aRefer to Table 6 for a complete summary of predictor variable coding.
 *p < .05 (marginally significant).

Table 13

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 2(b): NELM Retention Status at Post-Graduation Year-5 Among Engineering Bachelor's Degree-Holders (n = 878)

variable ^a	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2LL)	Δ df	Improvement χ^2	df
constant	.71	.07	..	..	..	..	1113.99	877	..	..	..	..
GROSS-EFFECT-OF-SEX MODEL												
	.00	.24	.00	1	.000	1.00	1113.99	876	.00	1	.00	1
NET-EFFECT-OF-SEX MODEL												
B1 mother's education	.04	.06	.49	1	.000	1.04	1113.50	876	.49	1	.49	1
B2 father's education	-.11	.06	3.40	1	-.036	.89	1110.09	875	3.90	2	3.41	1
B3 age (category) @ year-2	-.04	.05	.76	1	.000	.96	1109.34	874	4.65	3	.76	1
B4 marital status @ year-2 (1=named, 0=other)	-.10	.15	.37	1	.000	.91	1108.96	873	5.03	4	.37	1
B5 number of children @ year-2	.08	.18	.22	1	.000	1.09	1108.74	872	5.25	5	.22	1
B6 intrinsic motivation	.07	.12	.32	1	.000	1.07	1108.43	871	5.56	6	.31	1
B7 extrinsic motivation	-.03	.12	.06	1	.000	.97	1108.37	870	5.62	7	.06	1
B8 sex (1=male, 0=female)	.00	.24	.00	1	.000	1.00	1108.37	869	5.62	8	.00	1

Note. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis).
^aRefer to Table 6 for a complete summary of predictor variable coding.

Table 14

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 2(c): NELM Retention Status at Post-Graduation Year-5 Among Life Science/Health Professions Bachelor's Degree-Holders (n=854)

variable*	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2 LL)	Δ df	Improvement χ^2	df
constant	1.80	.10	..	..	..	..	696.89	853	..	..	..	..
GROSS-EFFECT-OF-SEX MODEL	-.03	.21	.02	1	.000	.97	696.86	852	.03	1	.03	1
NET-EFFECT-OF-SEX MODEL												
B1 mother's education	.25	.09	8.01**	1	.093	1.29	688.55	852	8.34**	1	8.34*	1
B2 father's education	.19	.08	4.98*	1	.066	1.21	683.47	851	13.42**	2	5.08	1
B3 age (category) @ year-2	.08	.06	1.78	1	.000	1.08	681.68	850	15.21**	3	1.79	1
B4 marital status @ year-2 (1=married, 0=other)	.09	.21	.20	1	.000	1.10	681.48	849	15.41**	4	.20	1
B5 number of children @ year-2	-.02	.16	.01	1	.000	.98	681.47	848	15.42**	5	.01	1
B6 intrinsic motivation	.28	.17	2.78	1	.034	1.33	678.80	847	18.09**	6	2.67	1
B7 extrinsic motivation	-.04	.19	.04	1	.000	.96	678.76	846	18.13**	7	.04	1
B8 sex (1=male, 0=female)	-.15	.22	.49	1	.000	.86	678.27	845	18.62**	8	.49	1
INTERACTIONS (tested post-hoc):												
B9 sex by mother's education	.08	.19	.20	1	.000	1.09	678.07	844	18.82**	9	.20	1
B10 sex by father's education	.38	.16	5.88*	1	.076	1.47	672.06	843	22.83**	10	6.21*	1

Note. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis).
 *Refer to Table 6 for a complete summary of predictor variable coding.
 *p < .05 (marginally significant); **p < .01 (significant).

Table 15

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 2(d): NELM Retention Status at Post-Graduation Year-5 Among Mathematics/Computer Science Bachelor's Degree-Holders (n=502)

variable*	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2LL)	Δ df	Improvement χ^2	df
constant	.68	.09	..	..	..	..	641.35	501	..	..	..	..
GROSS-EFFECT-OF-SEX MODEL	.26	.20	1.70	1	.000	1.30	639.66	500	1.69	1	1.69	1
NET-EFFECT-OF-SEX MODEL												
B1 mother's education	.02	.08	.05	1	.000	1.02	641.29	500	.06	1	.06	1
B2 father's education	.14	.08	2.71	1	.033	1.15	638.55	499	2.80	2	2.74	1
B3 age (category) @ year-2	.03	.06	.33	1	.000	1.03	638.22	498	3.13	3	.33	1
B4 marital status @ year-2 (1=married, 0=other)	.00	.22	.00	1	.000	1.00	638.22	497	3.13	4	.00	1
B5 number of children @ year-2	-.16	.22	.51	1	.000	.86	637.71	496	3.64	5	.51	1
B6 intrinsic motivation	.31	.15	4.37*	1	.061	1.36	633.36	495	7.99	6	4.35*	1
B7 extrinsic motivation	.18	.14	1.54	1	.000	1.19	631.83	494	9.52	7	1.53	1
B8 sex (1=male, 0=female)	.31	.20	2.24	1	.020	1.36	629.60	493	11.75	8	2.23	1
INTERACTIONS (tested post-hoc):												
B9 sex by intrinsic motivation	-.76	.34	4.92*	1	-.068	.47	624.49	492	16.86	9	5.10*	1

Note. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis).
*Refer to Table 6 for a complete summary of predictor variable coding.
*p < .05 (marginally significant).

non-significant ($p > .01$), indicating that the addition of the predictor variable sex to the model failed to result in any significant improvement in the prediction of NELM retention status at 5-years over the immediately preceding constant-only model. Similarly, according to the Wald criterion, the predictor variable sex failed to reliably distinguish between retention and non-retention in NELM at the 5-year post-graduation follow-up interview ($p > .01$).

Net-effect-of-sex model. The full model fit was similarly poor (and statistically non-significant) when NELM retention status at 5-years was predicted for the sub-sample of Natural Science bachelor's degree holders by sex, with the effects of the 7 antecedent predictor variables statistically controlled. As indicated by the goodness-of-fit statistics for the sequential logistic regression models presented in Table 12, tests of the nested models (at each block), against the constant-only model, consistently yielded non-significant results. That is, all Model χ^2 values (for Blocks 1 to 8) were non-significant ($ps > .01$), indicating that, at each block, the model as a whole failed to reliably distinguish between retention and non-retention in NELM at the 5-year post-graduation follow-up interview. Thus, each of these models, having 1, more than 1, or all 8 predictors in, offered no better prediction of NELM retention status at 5-years than would be expected by chance (Hosmer & Lemeshow, 1989).

As indicated by the test statistics for the individual predictor variables presented in Table 12 (i.e., B coefficients, Wald's tests, and odds ratios), none of the individual variables were significant predictors of NELM retention status at 5-years. Further, all Improvement χ^2 values (for Blocks 1 to 8) were statistically non-significant ($ps > .01$), indicating that, at each sequential block, adding the specified variable to the model failed to make any improvement in the prediction of NELM retention status at 5-years over the immediately-preceding block. Thus, on the whole, none of the individual variables significantly enhanced the ability of the model to reliably distinguish between retention and non-retention in NELM at 5-years.

As shown in Table 12, the Improvement χ^2 value for marital status at 2-years (entered at Block-4) did indicate this predictor variable to be a marginally significant predictor of NELM retention status at 5-years ($p < .05$). This predictor variable also approached statistical significance according to the Wald criterion ($p < .05$). Given the coding of the variable (i.e., 0="other: single, widowed or divorced"; 1="married or living common law"), the negative B

coefficient signified that, among Natural Science bachelor's degree holders, respondents who had been married or living common law at post-graduation year-2 were *less* likely to be retained in NELM at post-graduation year-5 than were those who had been single, widowed, or divorced at post-graduation year-2. Based on the odds ratio, a respondent's relative chance of being retained in NELM at the 5-year post-graduation follow-up interview *decreased* by a multiplicative factor of .68 if she/he had been was married or living common law at post-graduation year-2 (vs. single, widowed, or divorced).

In order to check, post-hoc, the speculation that the variable marital status at 2-years could potentially operate differently for women versus men in the prediction of NELM retention status at 5-years, the interaction term of marital status at 2-years by sex was subsequently entered into the sequential logistic regression model (i.e., post-hoc, at Block-9). This interaction was found to be non-significant ($p > .01$).

Hypothesis 2(b): Engineering Bachelor's Degree holders - NELM Retention Status at Year-5

Gross-effect-of-sex model. Results were highly similar in the sub-sample of Engineering bachelor's degree holders. As shown in Table 13, model fit was also very poor (and statistically non-significant) when the dependent variable NELM retention status at 5-years was predicted based on the full model containing the independent variable sex, only. The Model χ^2 value, Improvement χ^2 value, and Wald's test were each statistically non-significant ($ps > .01$), indicating that the predictor variable sex failed to reliably distinguish between retention and non-retention in NELM at 5-years.

Net-effect-of-sex model. Again, results were highly similar in the sub-sample of Engineering bachelor's degree holders³⁵. Full model fit was similarly poor (and statistically non-significant) when NELM retention status at 5-years was predicted by sex, with the effects of the 7 antecedent predictor variables statistically controlled. As indicated by the goodness-of-fit statistics for the sequential logistic regression models presented in Table 13, tests of the nested

³⁵For the sub-sample of Engineering bachelor's degree holders, however, the variable marital status at 2-years was *not* a marginally significant predictor of NELM retention-status at the 5-year post-graduation follow-up interview.

models (at each block), against the constant-only model, again yielded consistently non-significant results. That is, all Model χ^2 values and Improvement χ^2 values (for Blocks 1 to 8) were non-significant ($p > .01$). Thus, each of these models, having 1, more than 1, or all 8 predictors in, offered no better prediction of NELM retention status at 5-years than would be expected by chance (Hosmer & Lemeshow, 1989).

As the test statistics for the individual variables (presented in Table 13) indicate, none of the variables was, individually, a statistically significant predictor of NELM retention status at 5-years. Thus, on the whole (as was case, above, in the sub-sample of Natural Science bachelor's degree holders), none of the individual variables--including sex--significantly enhanced the model's ability to reliably distinguish between retention and non-retention in NELM at 5-years, among Engineering bachelor's degree holders.

Hypothesis 2(c): Life Science/Health Professions Bachelor's Degree holders - NELM Retention Status at Year-5

Gross-effect-of-sex model. Results for the sub-sample of Life Science/Health Professions bachelor's degree holders were highly similar to those reported above for the previous two sub-samples. As shown in Table 14, model fit was, again, very poor (and statistically non-significant) when the dependent variable NELM retention status at 5-years was predicted based on the full model containing the independent variable sex, only. The Model χ^2 value, Improvement χ^2 value, and Wald's test were, again, each statistically non-significant ($p > .01$), indicating that the predictor variable sex failed to reliably distinguish between retention and non-retention in NELM at 5-years.

Net-effect-of-sex model. By contrast, results for the sub-sample of Life Science/Health Professions bachelor's degree holders differed somewhat from those reported above for the previous two sub-samples, although, as detailed below, these differences failed to lend support to Hypothesis 2(c). Specifically, in the case of this third sub-sample of bachelor's degree holders, model fit was notably superior (and was, in fact, statistically significant, $p < .01$) when NELM retention status at 5-years was predicted based on the full model containing sex, adjusted for the effects of the 7 antecedent predictor variables. As indicated by the goodness-of-fit statistics for

the sequential logistic regression models presented in Table 14, tests of the nested models (at each block), against the constant-only model, yielded consistently statistically-significant results. That is, all Model χ^2 values (for Blocks 1 to 8) were statistically significant ($p < .01$). Thus, each of these models, having 1, more than 1, or all 8 predictors in, offered better prediction of NELM retention status at 5-years than would be expected by chance (Hosmer & Lemeshow, 1989).

Accounting for these statistically significant findings required an examination of the test statistics for each of the individual predictor variables. Therein, one can see that, contrary to what had been hypothesized, the statistical-significance of the full model (at Block-8) was *not* attributable to the variable sex *enhancing* prediction beyond the other variables in the model. Rather, the statistically significant fit of each of the nested models was due to the early contribution of the significant predictor variable mother's level of education (entered at Block-1), and, to a lesser extent, to the contribution of the marginally significant predictor variable father's level of education (entered at Block-2).

Specifically, as test statistics for the individual predictor variables presented in Table 14 show, mother's level of education was the only statistically-significant predictor of NELM retention status at 5-years, according to the Wald criterion ($p < .01$). As evidenced by the **Improvement χ^2** value associated with this predictor variable, this was also the only variable that made a statistically-significant improvement in prediction over the immediately-preceding block (in this case, as it was entered at Block-1, beyond the constant-only model). Given the coding of the variable (i.e., higher scores represented higher levels of mother's education), the positive **B** coefficient signified that, among Life Science/Health Professions bachelor's degree holders, respondents with more highly educated mothers were *more* likely to be retained in NELM at post-graduation year-5. The **odds ratio** associated with this variable indicated that, with each unit change in mother's level of education, a respondent's relative chance of being retained in NELM *increased* by a multiplicative factor of 1.29.

Test statistics for the variable father's level of education showed it to be a marginally significant predictor of NELM retention status at 5-years, according to the Wald criterion ($p < .05$). Entered at Block-2, this variable made a marginally significant improvement in prediction over Block-1, as evidenced by its **Improvement χ^2** value ($p < .05$). Given the coding

of the variable (i.e., higher scores represented higher levels of father's education), the positive B coefficient signified that, among Life Science/Health Professions bachelor's degree holders, respondents with more highly educated fathers were also *more* likely to be retained in NELM at post-graduation year-5. The **odds ratio** associated with father's level of education indicated that, with each unit change in father's level of education, a respondent's relative chance of being retained in NELM *increased* by a multiplicative factor of 1.21.

As shown in Table 14, other than these two predictor variables--both of which related to level of education of the respondents' parents--none of the other individual variables in the nested model(s), including sex, contributed to the prediction of NELM retention status at 5-years. All subsequent **Improvement χ^2** values (for Blocks 3 to 8) were non-significant ($p>.01$), indicating that, at each sequential block, adding the specified variable to the model failed to make any improvement in the prediction of NELM retention status at 5-years over the immediately-preceding block. Thus, on the whole, none of the other individual predictor variables--including sex--significantly enhanced the ability of the model to reliably distinguish between retention and non-retention in NELM at 5-years.

To examine, post-hoc, the possibility that the variables mother's level of education and father's level of education could potentially operate differently, for women versus men, in the prediction of retention status at 5-years, the interaction terms of mother's level of education by sex and of father's level of education by sex were subsequently entered into the sequential logistic regression model (i.e., post-hoc, at Block-10 and Block-11). These interactions were found to be non-significant³⁶ ($p>.01$).

Hypothesis 2(d): Mathematics/Computer Science Bachelor's Degree holders - NELM Retention Status at Year-5

Gross-effect-of-sex model. Once again, results for the sub-sample of Mathematics/Computer Science bachelor's degree holders were highly similar to those reported

³⁶The interaction of father's level of education by sex was only marginally significant ($p<.05$). Among men, those who were "retained" had fathers with higher levels of education than did those who were "not retained" ($M=3.16, SD=1.5$ and $M=2.08, SD=1.2$, respectively). By contrast, among women, father's level of education was highly similar, whether they were "retained" or "not retained" ($M=2.63, SD=1.4$ and $M=2.41; SD=1.4$, respectively).

above for the previous three sub-samples of bachelor's degree holders. As shown in Table 15, model fit was, again, very poor (and statistically non-significant) when the dependent variable NELM retention status at 5-years was predicted based on the full model containing the independent variable sex, only. The Model χ^2 value, Improvement χ^2 value, and Wald's test were each statistically non-significant ($p>.01$), indicating that the predictor variable sex again failed to reliably distinguish between retention and non-retention in NELM at 5-years.

Net-effect-of-sex model. Results for the sub-sample of Mathematics/Computer Science bachelor's degree holders varied only slightly from those reported (above) for the first two sub-samples of respondents (i.e., the cohorts of Natural Science and Engineering bachelor's degree holders). Specifically, full model fit was similarly poor (and statistically non-significant) when NELM retention status at 5-years was predicted, by sex, with the effects of the 7 antecedent predictor variables statistically controlled. As indicated by the goodness-of-fit statistics for the sequential logistic regression models presented in Table 15, tests of the nested models (at each block), against the constant-only model, again yielded consistently non-significant results. That is, all Model χ^2 values and Improvement χ^2 values (for Blocks 1 to 8) were non-significant ($p>.01$). Thus, each of these models, having 1, more than 1, or all 8 predictors in, offered no better prediction of NELM retention status at 5-years than would be expected by chance (Hosmer & Lemeshow, 1989).

As indicated by the test statistics for the individual variables (presented in Table 15), none of the individual variables was a statistically significant predictor of retention status at 5-years ($p>.01$). Thus, on the whole (as was the case, above, in the sub-samples of Natural Science and of Engineering bachelor's degree holders), none of the individual variables—including sex—significantly enhanced the ability of the model to reliably distinguish between retention and non-retention at 5-years, for this sub-sample of Mathematics/Computer Science bachelor's degree holders.

As shown in Table 15, a variation in the results for this final sub-sample was the marginally significant Improvement χ^2 value ($p<.05$) for the predictor variable entered at Block-6 (i.e., intrinsic motivation for having originally enrolled in a Mathematics/Computer Science program of study), indicating its addition to the model made a marginally significant

improvement in the prediction of NELM retention status at 5-years over the immediately preceding nested model (i.e., Block-5). This variable was also a marginally significant predictor according to the Wald criterion ($p < .05$). Given the coding of the variable (i.e., higher scores represented higher levels of intrinsic motivation), the positive **B** coefficient signified that, among Mathematics/Computer Science bachelor's degree holders, respondents having higher intrinsic motivation for having originally enrolled in a Mathematics/Computer Science program of study were *more* likely to be retained in NELM at post-graduation year-5. The odds ratio associated with this variable indicated that, with each unit change in intrinsic motivation for having originally enrolled in a Mathematics/Computer Science program of study, a respondent's relative chance of being retained in NELM *increased* by a multiplicative factor of 1.36.

On the post-hoc speculation that the intrinsic motivation variable could potentially have been operating differently, for women versus men, in the prediction of NELM retention status at 5-years in this sub-sample of bachelor's degree holders, the interaction term of intrinsic motivation by sex was subsequently entered into the sequential logistic regression model (i.e., post-hoc, at Block-9). This interaction was found to be non-significant³⁷ ($p > .01$).

Conclusion

These findings resulted in a failure to reject null Hypothesis 2(a), 2(b), 2(c), and 2(d), that is:

$$H_0 : P_{\text{retention in NELM @ 5-years}} (\text{female "N" graduates}) - P_{\text{retention in NELM @ 5-years}} (\text{male "N" graduates}) \geq 0$$

$$H_0 : P_{\text{retention in NELM @ 5-years}} (\text{female "E" graduates}) - P_{\text{retention in NELM @ 5-years}} (\text{male "E" graduates}) \geq 0$$

$$H_0 : P_{\text{retention in NELM @ 5-years}} (\text{female "L" graduates}) - P_{\text{retention in NELM @ 5-years}} (\text{male "L" graduates}) = 0$$

$$H_0 : P_{\text{retention in NELM @ 5-years}} (\text{female "M" graduates}) - P_{\text{retention in NELM @ 5-years}} (\text{male "M" graduates}) \geq 0$$

Upon considering each of the four NELM groups of bachelor's degree holders *separately*, the probability of being retained in NELM at the 5-year post-graduation follow-up interview was *not*

³⁷The interaction of intrinsic motivation by sex was only marginally significant ($p < .05$). Among women, those "retained" in NELM were noticeably more intrinsically motivated than those "not retained" in NELM ($M=3.55, SD=.48$ and $M=3.27, SD=.72$, respectively). Whereas, among men, those "retained" in NELM were only slightly more intrinsically motivated than those "not retained" in NELM ($M=3.32, SD=.66$ and $M=3.27; SD=.64$, respectively). (Stated another way, non-retained women and men were approximately equally intrinsically motivated, whereas retained women were slightly more intrinsically motivated than were retained men).

found to be *lower* (or different) for young women than for young men, in *any* of the four NELM groups.

Test of Hypothesis 3

IT HAD BEEN HYPOTHESIZED THAT, UPON FURTHER REFINING THE SAMPLE UNDER CONSIDERATION TO INCLUDE ONLY THOSE BACHELOR'S DEGREE HOLDERS WHO WERE EMPLOYED AT BOTH THE 2-YEAR AND THE 5-YEAR POST-GRADUATION FOLLOW-UP INTERVIEWS, THE PROBABILITY OF BEING RETAINED IN NELM-RELATED EMPLOYMENT AT THE 5-YEAR POST-GRADUATION FOLLOW-UP INTERVIEW WOULD BE *LOWER* FOR YOUNG WOMEN THAN FOR YOUNG MEN, IN THE "N", "E", AND "M" GROUPS (AND WOULD BE *DIFFERENT* FOR YOUNG WOMEN VS. YOUNG MEN IN THE "L" GROUP). Hypothesis 3(a) was tested first, utilizing the sub-set of 5-year follow-up interview data for graduates in the Natural Science academic area who were employed (i.e., those who were working) at both post-graduation year-2 and year-5, and the procedure described below; this procedure was then repeated three times, utilizing sub-sets of the 5-year follow-up interview data for graduates in the Engineering, Life Science/Health Professions, and Mathematics/Computer Science academic areas who were employed at both post-graduation year-2 and year-5, to test Hypothesis 3(b), 3(c), and 3(d), respectively.

As in the tests of the two previous hypotheses, the first question to be addressed was whether sex, by itself, was a reliable predictor of NELM retention status among Natural Science bachelor's degree holders who were employed at both post-graduation year-2 and year-5 (i.e., the gross-effect-of-sex model). The direct logistic regression analysis conducted to test the gross-effect-of-sex model was actually identical to that employed above (see Hypothesis 2); the distinguishing feature in this case was the participation of the sub-group of Natural Science bachelor's degree holders who were *employed* at both post-graduation year-2 and year-5. (This sub-group of respondents are referred to hereafter as the sub-sample of "employed Natural Science bachelor's degree holders").

The second question to be addressed was whether the variable sex would be a reliable predictor of NELM retention status at 5-years, after adjusting for the effects of the other available

predictor variables (i.e., the net-effect-of-sex model). The sequential logistic regression analysis conducted to test this net-effect-of-sex model was also quite similar to that described above (see Hypothesis 2). In this case, however, in addition to the participation of the sub-sample of employed Natural Science bachelor's degree holders, a second distinguishing feature of this analysis was the inclusion of a number of additional employment- and training-related variables which served as predictors.

Specifically, the sequential logistic regression analysis conducted to assess the prediction of NELM retention status at 5-years (i.e., retention vs. non-retention) among employed Natural Science bachelor's degree holders used the following variables³⁸: mother's level of education (entered at Block-1); father's level of education (entered at Block-2); respondents' age at 2-years (entered at Block-3); marital status at 2-years (entered at Block-4); number of dependent children at 2-years (entered at Block-5); intrinsic motivation for having originally enrolled in a Natural Science program of study (entered at Block-6); extrinsic motivation for having originally enrolled in a Natural Science program of study (entered at Block-7)³⁹; further education at 2-years (entered at Block-8); income at 2-years (entered at Block-9); job satisfaction at 2-years (entered at Block-10); salary satisfaction at 2-years (entered at Block-11) and finally, sex (entered last, at Block-12).

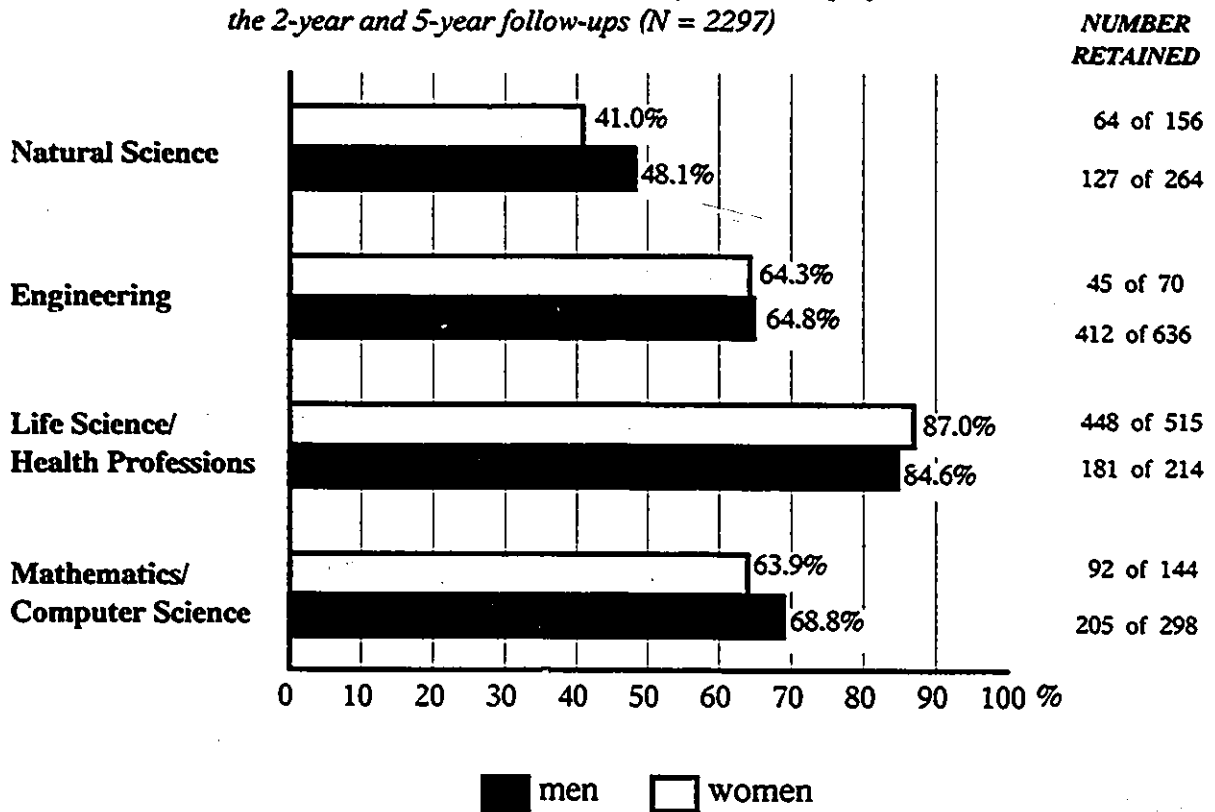
The goal of this sequential logistic regression analysis was, as before, to investigate the relationship between the dichotomous dependent variable NELM retention status at 5-years and the independent variable sex, with the effects of the other predictor variables (i.e., those entered at Blocks 1 to 11) statistically controlled.

Figure 7 presents a summary of retention rates at the 5-year post-graduation follow-up interview, by academic area and by sex, for respondents who were employed at both the 2-year and 5-year follow-up interviews. Not surprisingly, the findings presented in this figure for the

³⁸See Table 6 for a summary of predictor variable coding.

³⁹In subsequent analyses of the sub-samples of E, L, and M bachelor's degree holders, the variables entered at Block-6 and Block-7 measured the respondents' intrinsic and extrinsic motivation for having originally enrolled in an Engineering, Life Science/Health Professions, or Mathematics/Computer Science program of study, respectively.

Figure 7. Retention rates at the 5-year post-graduation follow-up interview, by academic area and by sex, for respondents employed at both the 2-year and 5-year follow-ups (N = 2297)



sub-samples of employed respondents are quite similar to presented in Figure 6 for the *entire* NELM sample. Based on Figure 7, considerable variability existed in retention rates across academic areas, ranging from approximately 45% in Natural Science to greater than 85% in Life Science/Health Professions. Retention rates across gender were, once again, very similar within academic areas. Whereas the rate of retention for women was marginally lower than men among Natural Science (7.1%) and Mathematics/Computer Science (4.9%) bachelor's degree holders, among Life Science/Health Professions bachelor's degree holders the rate of retention for women exceeded that of men (by 2.4%). Again, retention rates were almost identical among Engineering bachelor's degree holders.

Table 16 presents a summary of relevant descriptive statistics for the predictor variables entered in the direct and sequential logistic regression analyses, by NELM academic area and by NELM retention status at 5-years. The direct and sequential logistic regression findings for the sub-samples of employed bachelor's degree holders from the N, E, L, and M academic areas are summarized in Tables 17 to 20, respectively.

Hypothesis 3(a): Employed Natural Science Bachelor's Degree holders - NELM Retention Status at Year-5

Gross-effect-of-sex model. As shown in Table 17, for the sub-sample of employed Natural Science bachelor's degree holders, model-fit was very poor (and statistically non-significant) when the dependent variable NELM retention status at 5-years was predicted based on the full model containing the variable sex, only. The Model χ^2 value resulting from this analysis indicated no better prediction of NELM retention status at 5-years than would be expected by chance ($p > .01$). The Improvement χ^2 value (associated with the variable sex in this analysis) was statistically non-significant ($p > .01$), indicating that the addition of the variable sex to the model failed to result in any significant improvement in the prediction of NELM retention status at 5-years over the immediately preceding constant-only model. Similarly, according to the Wald criterion, the predictor variable sex failed to reliably distinguish between retention and non-retention in NELM at the 5-year post-graduation follow-up interview ($p > .01$).

Net-effect-of-sex model. By contrast, model fit was notably superior (and was, in fact,

Table 16

Hypothesis 3 (bachelor's degree-holders employed at both the 2- and 5-year post-graduation follow-up interviews): Descriptive Statistics^a for Predictor Variables Entered in the Direct and Sequential Logistic Regression Analyses, by NELM Academic Area and by NELM Retention Status at Year-5 (N=2297)

variable ^b	n	natural science		engineering		life science / health professions		mathematics / computer science	
		IN	OUT	IN	OUT	IN	OUT	IN	OUT
	%	191 45.48	229 54.52	457 64.73	249 35.27	629 86.28	100 13.72	297 67.19	145 32.18
mother's education	<i>M</i>	2.32	2.38	2.38	2.30	2.46	2.22	2.27	2.29
	<i>SD</i>	1.08	1.14	1.13	1.18	1.16	1.12	1.14	1.11
father's education	<i>M</i>	2.65	2.63	2.55	2.66	2.72	2.27	2.53	2.36
	<i>SD</i>	1.42	1.42	1.38	1.41	1.46	1.29	1.36	1.27
age (category) @ year-2	<i>M</i>	3.08	3.02	3.36	3.43	3.90	3.27	3.35	3.19
	<i>SD</i>	1.70	1.70	1.52	1.53	1.74	1.86	1.65	1.66
marital status @ year-2 (%)									
0=other		76.40	68.10	61.50	59.80	55.00	60.00	68.40	69.70
1=married/common law		23.60	31.90	38.50	40.20	45.00	40.00	31.60	30.30
number of children @ year-2	<i>M</i>	.10	.13	.14	.13	.31	.30	.15	.17
	<i>SD</i>	.40	.51	.46	.47	.76	.72	.50	.52
intrinsic motivation	<i>M</i>	3.39	3.38	3.43	3.39	3.58	3.47	3.40	3.28
	<i>SD</i>	.66	.62	.57	.58	.55	.61	.62	.65
extrinsic motivation	<i>M</i>	3.28	3.25	3.41	3.41	3.40	3.40	3.43	3.28
	<i>SD</i>	.75	.71	.61	.62	.58	.63	.61	.73
further education @ year-2 (%)									
0=none		56.50	47.60	70.20	71.10	67.20	60.00	77.80	60.70
1=NELM-related		28.30	8.70	19.00	10.40	25.00	17.00	9.10	11.00
2=non-NELM-related		15.20	43.70	10.70	18.50	7.80	23.00	13.10	28.30
income (category) @ year-2	<i>M</i>	2.68	2.54	4.12	4.06	4.40	3.78	3.84	3.48
	<i>SD</i>	1.53	1.62	1.40	1.49	1.29	1.80	1.31	1.56
job satisfaction @ year-2	<i>M</i>	3.39	3.26	3.49	3.34	3.45	3.43	3.38	3.34
	<i>SD</i>	.72	.69	.58	.75	.62	.67	.67	.67
salary satisfaction @ year-2	<i>M</i>	2.96	2.85	3.05	2.94	2.84	2.89	3.06	2.97
	<i>SD</i>	.77	.77	.62	.76	.73	.78	.61	.65
sex (%)									
0=female		33.50	40.20	9.80	10.00	71.20	67.00	31.00	35.90
1=male		66.50	59.80	90.20	90.00	28.80	33.00	69.00	64.10

Note. IN="retained in NELM at the 5-year post-graduation follow-up interview"; OUT="not retained in NELM at the 5-year post-graduation follow-up interview"

^aMeans (*M*s) and standard deviations (*SD*s) are presented for interval-level variables. Percentages are (%) presented for nominal-level variables. ^bRefer to Table 6 for a complete summary of predictor variable coding.

Table 17

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 3(a): NELM Retention Status at Post-Graduation Year-5 Among Employed Natural Science Bachelor's Degree-Holders (n=420)

variable ^a	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 ($\Delta -2LL$)	Δ df	Δ Improvement χ^2	df
constant	-.18	.10	..	..	..	..	578.80	419	..	..	..	..
GROSS-EFFECT-OF-SEX MODEL	.29	.20	1.98	1	.000	1.33	576.81	418	1.99	1	1.99	1
NET-EFFECT-OF-SEX MODEL												
B1 mother's education	-.04	.09	.22	1	.000	.96	578.58	418	.22	1	.22	1
B2 father's education	.04	.08	.27	1	.000	1.04	578.31	417	.49	2	.27	1
B3 age (category) @ year-2	.02	.06	.12	1	.000	1.02	578.18	416	.62	3	.12	1
B4 marital status @ year-2 (1=married, 0=other)	-.46	.23	3.98*	1	-.059	.63	574.14	415	4.66	4	4.04*	1
B5 number of children @ year-2	-.01	.24	.00	1	.000	.99	574.14	414	4.66	5	.00	1
B6 intrinsic motivation	.04	.16	.06	1	.000	1.04	574.08	413	4.72	6	.06	1
B7 extrinsic motivation	.09	.15	.40	1	.000	1.10	573.68	412	5.12	7	.40	1
B8 further education @ year-2 ^b												
NELM-related (1=yes, 0=no)	.98	.30	10.44***	1	.121	2.67						
non-NELM-related (1=yes, 0=no)	-1.27	.26	24.00***	1	-.196	.28						
			47.04***	2	.274		519.13	410	59.67***	9	54.55***	2
B9 income (category) @ year-2	.06	.07	.72	1	.000	1.06	518.41	409	60.39***	10	.72	1
B10 job satisfaction @ year-2	.29	.16	3.40	1	.052	1.34	514.92	408	63.89***	11	3.50	1
B11 salary satisfaction @ year-2	.04	.16	.07	1	.000	1.04	514.85	407	63.95***	12	.07	1

Table 17 Cont'd

variable ^a	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2LL)	Δ Improvement χ^2	df	
B12 sex (1=male, 0=female)	.22	.23	.87	1	.000	1.24	513.98	406	64.82***	13	.87	1
<i>INTERACTIONS (tested post-hoc):</i>												
B13 sex by marital status @ year-2	.24	.51	.22	1	.000	1.27	513.76	405	65.05***	14	.22	1
B14 sex by further education @ year-2												
sex by <i>NELM-related</i> (1=yes, 0=no)	.10	.54	.04	1	.000	1.11						
sex by <i>non-NELM-related</i> (1=yes, 0=no)	.09	.63	.02	1	.000	1.09						
			.05	2	.000		513.71	403	65.10***	16	.05	2

Note. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis).
^aRefer to Table 6 for a complete summary of predictor variable coding. ^bfurther education @ year-2 is a set of two design variables, with 'no further education @ year-2' serving as the reference group (Hosmer & Lemeshow, 1989, p. 48).
 * $p < .05$ (marginally significant); *** $p < .001$ (highly significant).

Table 18

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 3(b): NELM Retention Status at Post-Graduation Year-5 Among Employed Engineering Bachelor's Degree-Holders (n=706)

variable ^a	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2LL)	Δ df	Improvement χ^2	df
constant	.61	.08	..	..	..	..	916.52	705	..	..	..	..
GROSS-EFFECT-OF-SEX MODEL												
	.02	.26	.01	1	.000	1.02	916.52	704	.01	1	.01	1
NET-EFFECT-OF-SEX MODEL												
B1 mother's education	.07	.07	.89	1	.000	1.07	915.63	704	.90	1	.90	1
B2 father's education	-.12	.07	3.09	1	-.035	.89	912.53	703	3.99	2	3.10	1
B3 age (category) @ year-2	-.03	.05	.24	1	.000	.97	912.28	702	4.24	3	.24	1
B4 marital status @ year-2 (1=married, 0=other)	-.04	.17	.04	1	.000	.97	912.24	701	4.28	4	.04	1
B5 number of children @ year-2	.09	.19	.23	1	.000	1.09	912.00	700	4.52	5	.24	1
B6 intrinsic motivation	.10	.14	.56	1	.000	1.11	911.45	699	5.07	6	.56	1
B7 extrinsic motivation	-.05	.14	.11	1	.000	.96	911.34	698	5.18	7	.11	1
B8 further education @ year-2 ^b												
NELM-related (1=yes, 0=no)	.61	.24	6.26*	1	.068	1.84						
non-NELM-related (1=yes, 0=no)	-.55	.23	5.73*	1	-.064	.58						
			14.26***	2	.106		896.44	696	20.08*	9	14.90***	2
B9 income (category) @ year-2	.05	.06	.63	1	.000	1.05	895.81	695	20.71*	10	.63	1
B10 job satisfaction @ year-2	.37	.13	8.80**	1	.087	1.45	886.96	694	29.56**	11	8.84**	1
B11 salary satisfaction @ year-2	.13	.13	1.00	1	.000	1.14	885.96	693	30.56**	12	1.00	1

Table 18 Cont'd

variable ^a	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2LL)	Δ df	Improvement χ^2	df
B12 sex (1=male, 0=female)	.04		.03	1	.000	1.05	885.93	692	30.59**	13	.03	1
<i>INTERACTIONS (tested post-hoc):</i>												
B13 sex by further education @ year-2												
sex by <i>NELM-related</i> (1=yes, 0=no)	-.51	.77	.43	1	.000	1.25						
sex by <i>non-NELM-related</i> (1=yes, 0=no)	.23	.76	.09	1	.000	.60						
B14 sex by job satisfaction @ year-2	-.12	.42	.63	2	.000	.89	885.27	690	31.25**	15	.66	2
			.08	1	.000		855.19	689	31.33**	16	.08	1

Note. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis).
^aRefer to Table 6 for a complete summary of predictor variable coding. ^bfurther education @ year-2' is a set of two design variables, with 'no further education @ year-2' serving as the reference group (Hosmer & Lemeshow, 1989, p. 48).
 * $p < .05$ (marginally significant); ** $p < .01$ (significant); *** $p < .001$ (highly significant).

Table 19

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 3(c): NELM Retention Status at Post-Graduation Year-5 Among Employed Life Science/Health Professions Bachelor's Degree-Holders (n=729)

variable ^a	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2LL)	Δ df	Improvement χ^2	df
constant	1.84	.11	..	..	..	..	582.91	728	..	..	..	..
GROSS-EFFECT-OF-SEX MODEL	-.20	.23	.74	1	.000	.82	582.18	727	.73	1	.73	1
NET-EFFECT-OF-SEX MODEL												
B1 mother's education	.19	.10	3.74	1	.055	1.21	579.07	727	3.84*	1	3.84	1
B2 father's education	.20	.09	4.82*	1	.070	1.22	574.12	726	8.79*	2	4.94*	1
B3 age (category) @ year-2	.07	.06	1.31	1	.000	1.07	572.81	725	10.10*	3	1.32	1
B4 marital status @ year-2 (1=married, 0=other)	.17	.23	.53	1	.000	1.18	572.27	724	10.64*	4	.53	1
B5 number of children @ year-2	-.07	.17	.18	1	.000	.93	572.10	723	10.81	5	.18	1
B6 intrinsic motivation	.35	.18	3.96*	1	.059	1.42	568.33	722	14.58*	6	3.76	1
B7 extrinsic motivation	-.14	.21	.44	1	.000	.87	567.88	721	15.03*	7	.45	1
B8 further education @ year-2 ^b												
NELM-related (1=yes, 0=no)	.18	.29	.36	1	.000	1.19						
non-NELM-related (1=yes, 0=no)	-1.25	.30	17.80***	1	-.167	.29						
			20.44***	2	.170		549.48	719	33.43***	9	18.40***	2
B9 income (category) @ year-2	.26	.08	11.54***	1	.132	1.30	538.07	718	44.84***	10	11.41***	1
B10 job satisfaction @ year-2	-.08	.18	.20	1	.000	.92	537.87	717	45.04***	11	.20	1
B11 salary satisfaction @ year-2	-.17	.16	1.09	1	.000	.84	536.76	716	46.04***	12	1.11	1

Table 19 Cont'd

variable'	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 ($\Delta -2LL$)	Δ df	Improvement χ^2	df
B12 sex (1=male, 0=female)	-.56	.26	4.49*	1	-.068	.57	532.36	715	50.55***	13	4.40*	1
<i>INTERACTIONS (tested post-hoc):</i>												
B13 sex by father's education	.37	.18	4.18*	1	.064	1.45	527.95	714	54.95***	14	4.41*	1
B14 sex by intrinsic motivation	.17	.40	.18	1	.000	1.18	527.78	713	55.13***	15	.18	1
B15 sex by further education @ year-2												
sex by NELM-related (1=yes, 0=no)	.64	.66	.94	1	.000	1.90						
sex by non-NELM-related (1=yes, 0=no)	-.68	.71	.93	1	.000	.51						
B16 sex by income@ year-2	-.17	.17	2.34	2	.000	.85	525.36	711	57.55***	17	2.41	2
			.90	1	.000		524.46	710	58.45***	18	.91	1

Note. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis).
 *Refer to Table 6 for a complete summary of predictor variable coding. ^afurther education @ year-2' is a set of two design variables, with 'no further education @ year-2' serving as the reference group (Hosmer & Lemeshow, 1989, p. 48).
 *p < .05 (marginally significant); ***p < .001 (highly significant).

Table 20

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 3(d): NELM Retention Status at Post-Graduation Year-5 Among Employed Mathematics/Computer Science Bachelor's Degree-Holders (n=442)

variable*	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2LL)	Δ Improvement χ^2	df	
constant	.72	.10	..	..	..	..	559.39	441	..	..	..
GROSS-EFFECT-OF-SEX MODEL	.22	.21	1.06	1	.000	1.25	558.34	440	1.05	1	1.05	
NET-EFFECT-OF-SEX MODEL												
B1 mother's education	-.02	.09	.03	1	.000	.98	559.36	440	.03	1	.03	
B2 father's education	.15	.09	2.58	1	.032	1.16	556.74	439	2.65	2	2.62	
B3 age (category) @ year-2	.06	.06	1.00	1	.000	1.06	555.73	438	3.66	3	1.01	
B4 marital status @ year-2 (1=married, 0=other)	-.02	.23	.01	1	.000	.98	555.72	437	3.67	4	.01	
B5 number of children @ year-2	-.20	.23	.82	1	.000	.82	554.92	436	4.47	5	.80	
B6 intrinsic motivation	.32	.16	3.92*	1	.059	1.37	551.02	435	8.37	6	3.90*	
B7 extrinsic motivation	.30	.16	3.41	1	.051	1.34	547.63	434	11.76	7	3.39	
B8 further education @ year-2 ^b												
NELM-related (1=yes, 0=no)	-.42	.35	1.45	1	.000	.66						
non-NELM-related (1=yes, 0=no)	-1.03	.26	15.42***	1	-.157	.36						
			15.66***	2	.146		532.00	432	27.39**	9	15.63***	
B9 income (category) @ year-2	.12	.08	2.51	1	.031	1.13	529.48	431	29.91***	10	2.52	
B10 job satisfaction @ year-2	-.07	.16	.21	1	.000	.93	529.26	430	30.13**	11	.21	
B11 salary satisfaction @ year-2	.14	.18	.56	1	.000	1.15	528.70	429	30.69**	12	.56	

Table 20 Cont'd

variable ^a	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 ($\Delta -2LL$)	Δ Improvement χ^2	df	
B12 sex (1=male, 0=female)	.22	.23	.90	1	.000	1.24	527.81	428	31.58**	13	.89	1
<i>INTERACTIONS (tested post-hoc):</i>												
B13 sex by intrinsic motivation	-.79	.38	4.41	1	-.068	.45	523.26	427	36.13***	14	4.55	1
B14 sex by further education @ year-2												
sex by NELM-related (1=yes, 0=no)	-2.06	1.16	3.17	1	-.047	.13						
sex by non-NELM-related (1=yes, 0=no)	.31	.56	.31	1	.000	1.37						
			3.78	2	.000		518.12	425	41.27***	12	5.14	2

Note. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis).
^aRefer to Table 6 for a complete summary of predictor variable coding. ^bfurther education @ year-2' is a set of two design variables, with 'no further education @ year-2' serving as the reference group (Hosmer & Lemeshow, 1989, p. 48).
 * $p < .05$ (marginally significant); ** $p < .01$ (significant); *** $p < .001$ (highly significant).

highly statistically significant, $p < .001$) when NELM retention status at 5-years was predicted for the sub-sample of employed Natural Science bachelor's degree holders based on the full model containing sex, adjusted for the effects of the 11 antecedent variables. However, as detailed below, this finding in fact failed to support Hypothesis 3, as it was not attributable to the variable sex significantly *enhancing* prediction beyond the other variables in the model (as had been hypothesized); rather, it was due to the predictor variable further education at 2-years.

As indicated by the goodness-of-fit statistics for the sequential logistic regression models presented in Table 17, tests of the first 7 nested models (at each block), against the constant-only model, consistently yielded non-significant results. That is, all Model χ^2 values (for Blocks 1 to 7) were non-significant ($p > .01$). Thus, each of these models, containing between 1 and 7 predictor variables, offered no better prediction of NELM retention status at 5-years than would be expected by chance (Hosmer & Lemeshow, 1989).

At Block-8, however, the addition of the predictor variable further education at 2-years resulted in a Model χ^2 value and an Improvement χ^2 value that were both highly statistically-significant ($p < .001$), indicating that the addition this variable to the model had resulted in a significant improvement in the prediction of NELM retention status at 5-years over the immediately-preceding block (i.e., Block-7). All subsequent Model χ^2 values (for Blocks 9 to 12) were also highly significant ($p < .001$), indicating that, at each block, the model as a whole reliably distinguished between retention and non-retention in NELM at the 5-year post-graduation follow-up interview. Thus, each of these models, containing 8, more than 8, or all 12 predictor variables, offered better prediction of NELM retention status at 5-years than would be expected by chance (Hosmer & Lemeshow, 1989).

Accounting for these statistically significant findings required an examination of the test statistics for each of the individual predictor variables. There, one can see that, contrary to what had been hypothesized, the statistical significance of the full model (at Block 12) was *not* attributable to the variable sex *enhancing* prediction beyond the other variables in the model. Rather, the statistically significant fit of the nested models and of the full model, having 8, more than 8, or all 12 predictors in, was due to the contribution of the significant predictor variable further education at 2-years (entered at Block-8).

Further education at 2-years was originally a discrete, nominal-level variable with three categories: 0="no further education pursued since 1986"; 1="some further-NELM-related pursued education since 1986"; and, 2="some further-non-NELM-related education pursued since 1986". It was inappropriate to include this variable in the analysis "as is" (i.e., as if it were interval scaled), because the numbers used to represent the various categories were merely identifiers, and had no numeric significance (Hosmer & Lemeshow, 1989). Therefore, for the purpose of the sequential logistic regression analyses, further education at 2-years was recoded into a pair of "design variables" to represent the categories of the variable (Hosmer & Lemeshow, 1989, p. 48). As shown in Table 17, the design variables were labelled *NELM-related* and *non-NELM-related*: the category "no further education pursued since 1986" served as the "reference group" (Hosmer & Lemeshow, 1989, p. 48).

In this analysis, as Table 17 shows, the variable further education at 2-years (as a whole), as well as each of the design variables derived from it (individually), were found to be highly statistically significant predictors, according to the Wald criterion ($p < .001$). As discussed above, positive **B** coefficients indicate that the predicted odds *increase* as the predictor increases, whereas negative **B** coefficients indicate that the predicted odd *decrease* as the predictor increases (Wright, 1995). Given the coding of the two design variables (i.e., 0="no"; 1="yes"), the positive *NELM-related* **B** coefficient indicated that employed Natural Science bachelor's degree holders who had pursued further education *related* to NELM by post-graduation year-2 were *more* likely to be retained in NELM at post-graduation year-5 (than were those who had not pursued any further education); by contrast, the negative *non-NELM-related* **B** coefficient indicated that employed Natural Science bachelor's degree holders who had pursued further education *unrelated* to NELM by post-graduation year-2 were *less* likely to be retained in NELM at post-graduation year-5 (than were those who had not pursued any further education). The **odds ratio** associated with the design variable *NELM-related* indicated that, with NELM-related further education at 2-years (as opposed to no further education), a respondent's relative chance of being retained in NELM at post-graduation year-5 *increased* by a multiplicative factor of 2.67. The **odds ratio** associated with the design variable *non-NELM-related* indicated that, with non-NELM-related further education at 2-years (as opposed to no further education), a

respondent's relative chance of being retained in NELM at post-graduation year-5 *decreased* by a multiplicative factor of .28.

As noted above, each of the **Model** χ^2 values for the nested models tested after Block-8 (i.e., Blocks 9 to 12) were also highly statistically-significant ($ps < .001$). This was the case, despite the finding that none of the subsequent **Improvement** χ^2 values nor **Wald's tests** were statistically significant ($ps > .01$). Therefore, the statistical-significance of the nested models tested after Block-8 and of the full-model tested at Block-12 was also attributable to the contribution of the highly statistically-significant predictor variable further education at 2-years. Thus, on the whole, the pair of design variables measuring further education at 2-years were the only variables that significantly enhanced the ability of the model to reliably distinguish between retention and non-retention in NELM at the 5-year post-graduation follow-up interview, in the sub-sample of employed Natural Science respondents.

As shown in Table 17, there was one exception to this finding, as the **Improvement** χ^2 value for marital status at 2-years (entered at Block-4) indicated this variable to be a marginally significant predictor of NELM retention status at 5-years ($p < .05$)⁴⁰. This variable also approached statistical significance according to the Wald criterion ($p < .05$). Given the coding of this variable (i.e., 0="other: single, widowed or divorced"; 1="married or living common law"), its negative **B** coefficient signified that, among employed Natural Science bachelor's degree holders, respondents who had been married or living common law at post-graduation year-2 were *less* likely to be retained in NELM at post-graduation year-5 than were those who had been single, widowed, or divorced at post-graduation year-2. Based on the odds ratio, a respondent's relative chance of being retained in NELM at the 5-year post-graduation follow-up interview *decreased* by a multiplicative factor of .63 if she/he had been married or living common law at post-graduation year-2 (vs. single, widowed, or divorced).

To examine, post-hoc, the possibility that the variables marital status at 2-years and further education at 2-years could potentially operate differently, for women versus men, in the

⁴⁰This finding was not unexpected given that, in the test of Hypothesis 2, marital status at 2-years was found to be a marginally significant predictor in the *full* sample of Natural Science bachelor's degree holders.

prediction of NELM retention status at 5-years, the interaction terms of sex by marital status at 2-years and sex by further education at 2-years (i.e., sex by *NELM-related* and sex by *non-NELM-related*) were subsequently entered into the sequential logistic regression model (i.e., post-hoc, at Block-13 and Block-14, respectively). These interactions were found to be non-significant ($p > .01$).

Hypothesis 3(b): Employed Engineering Bachelor's Degree holders - NELM Retention Status at Year-5

Gross-effect-of-sex model. Results for the sub-sample of employed Engineering bachelor's degree holders were highly similar to those reported above for employed Natural Science bachelor's degree holders. As shown in Table 18, model-fit was again very poor (and statistically non-significant) when the dependent variable NELM retention status at 5-years was predicted based on the full model containing the variable sex, only. The **Model χ^2** value, **Improvement χ^2** value, and **Wald's test** were each statistically non-significant ($p > .01$), indicating that the predictor variable sex failed to reliably distinguish between retention and non-retention in NELM at 5-years.

Net-effect-of-sex model. Although there was some variation, results for the sub-sample of employed Engineering bachelor's degree holders were quite similar to those reported above for employed Natural Science bachelor's degree holders. Model fit was, again, notably superior (and was, in fact, statistically significant, $p < .01$) when NELM retention status at 5-years was predicted in this sub-sample based on the full model containing sex, adjusted for the effects of the 11 antecedent variables. However--as detailed below--this finding also failed to support Hypothesis 3, as it was not attributable to the variable sex significantly *enhancing* prediction beyond the other variables in the model (as had been hypothesized); rather, it was again due to the contribution of the predictor variable further education at 2-years, as well as to the contribution of the predictor variable job satisfaction at 2-years, in this case.

As indicated by the goodness-of-fit statistics for the sequential logistic regression models presented in Table 18, tests of the first 7 nested models (at each block), against the constant-only model, again yielded consistently non-significant results. All **Model χ^2** values (for Blocks 1 to

7) were non-significant ($p > .01$).

At Block-8, however, the addition of the predictor variable further education at 2-years resulted in a marginally significant Model χ^2 value ($p < .05$) and a highly significant Improvement χ^2 value ($p < .001$), indicating that the addition this variable to the model had resulted in a significant improvement in the prediction of NELM retention status at 5-years over the immediately-preceding block (i.e., Block-7). The subsequent Model χ^2 value was also marginally significant ($p < .05$), and the Model χ^2 values for Blocks 10 to 12 were each statistically significant ($p < .01$). Thus, all three of the final models tested (i.e., at Block-10, Block-11, and Block-12) offered better prediction of NELM retention status at 5-years than would be expected by chance (Hosmer & Lemeshow, 1989).

Accounting for these findings again required an examination of the test statistics for each of the individual predictor variables. There, one can see that, contrary to what had been hypothesized, the statistical significance of the full model (at Block 12) was, again, *not* attributable to the variable *sex enhancing* prediction beyond the other variables in the model. Rather, in this sub-sample of employed Engineering bachelor's degree holders, the statistically significant fit of the two nested models and of the full model, containing 10, 11 or all 12 predictors, was due to the statistically significant contributions of the predictor variables further education at 2-years (entered at Block-8) and job satisfaction at 2-years (entered at Block-10).

Specifically, as Table 18 shows, the variable further education at 2-years (as a whole) was a highly significant predictor, according to the Wald criterion ($p < .001$); each of the design variables derived from it (individually), were marginally significant predictors ($p < .05$). Given the coding of the two design variables (i.e., 0="no"; 1="yes"), the positive *NELM-related B* coefficient indicated that employed Engineering bachelor's degree holders who had pursued further NELM-related education were *more* likely to be retained in NELM at post-graduation year-5 (vs. those who had pursued no further education); the negative *non-NELM-related B* coefficient indicated that employed Engineering bachelor's degree holders who had pursued further non-NELM-related education were *less* likely to be retained in NELM at post-graduation year-5 (vs. those who had pursued no further education). The odds ratio associated with the design variable *NELM-related* indicated that, with further NELM-related education at 2-years (as

opposed to no further education), a respondent's relative chance of being retained in NELM at 5-years *increased* by a multiplicative factor of 1.84. The odds ratio associated with the design variable *non-NELM-related* indicated that, with further non-NELM-related education at 2-years (as opposed to no further education), a respondent's relative chance of being retained in NELM at 5-years *decreased* by a multiplicative factor of .58.

The addition of the predictor variable job satisfaction at 2-years (at Block-10) also made a statistically significant improvement in the prediction of NELM retention status at 5-years over Block-9, as evidenced by both the Improvement χ^2 value and the Wald's test ($ps < .01$). Given the coding of this variable (i.e., higher scores represented higher job satisfaction at 2-years), its positive B coefficient signified that, among employed Engineering bachelor's degree holders, respondents with higher job satisfaction at year-2 were *more* likely to be retained in NELM at post-graduation year-5. The odds ratio associated with this variable indicated that, with each unit increase in level of job satisfaction at 2-years, a respondent's relative chance of being retained in NELM at post-graduation year-5 *increased* by a multiplicative factor of 1.45.

As noted above, each of the Model χ^2 values for the models tested after Block-10 (i.e., at Blocks 11 and 12) were also statistically-significant ($ps < .01$). This was the case, despite the fact that the Improvement χ^2 values at Block-11 and Block-12 were not statistically-significant ($ps > .01$), indicating that neither the addition of the variable salary satisfaction at 2-years nor sex made any improvement in the prediction of NELM retention status at 5-years over the immediately-preceding block. Therefore, the statistical significance of the nested model at Block-11 and of the full model at Block-12 was also attributable to the earlier contribution of the variables further education at 2-years and job satisfaction at 2-years. In fact, as the test statistics for the individual variables presented in Table 18 indicate, these were the only variables that enhanced the ability of the model to reliably distinguish between retention and non-retention in NELM at 5-years, in the sub-sample of employed Engineering bachelor's degree holders.

On the post-hoc speculation that the variables further education at 2-years and job satisfaction at 2-years could potentially operate differently, for women versus men, in the prediction of NELM retention status at 5-years, the interaction terms of sex by further education at 2-years (i.e., sex by *NELM-related* and sex by *non-NELM-related*) and of sex by job

satisfaction at 2-years were subsequently entered into the sequential logistic regression model (i.e., post-hoc, at Block-13 and Block-14, respectively). These interactions were found to be non-significant ($ps>.01$).

Hypothesis 3(c): Employed Life Science/Health Professions Bachelor's Degree holders - NELM Retention Status at Year-5

Gross-effect-of-sex model. Results for the sub-sample of employed Life Science/Health Professions bachelor's degree holders were highly similar to those reported (above) for the two previous sub-samples of bachelor's degree holders. As shown in Table 19, model-fit was again very poor (and statistically non-significant) when the dependent variable NELM retention status at 5-years was predicted based on the full model containing the variable sex, only. The Model χ^2 value, Improvement χ^2 value, and Wald's test were each statistically non-significant ($ps>.01$), indicating that the predictor variable sex failed to reliably distinguish between retention and non-retention in NELM at 5-years.

Net-effect-of-sex model. Although there were variations in results for the sub-sample of employed Life Science/Health Professions bachelor's degree holders (discussed below), findings were, again, rather similar to those reported for the previous two sub-samples. Model fit was, again, notably superior (and was, in fact, highly statistically significant, $p<.001$) when NELM retention status at 5-years was predicted in this sub-sample based on the full model containing sex, adjusted for the effects of the 11 antecedent variables. However--as detailed below--this finding also failed to support Hypothesis 3, as it was not attributable to the variable sex significantly *enhancing* prediction beyond the other variables in the model (as had been hypothesized); rather, it was again due to the contribution of the variable further education at 2-years, as well as to the contribution of the predictor variable income at 2-years, in this case.

As indicated by the goodness-of-fit statistics for the sequential logistic regression models presented in Table 19, a first variation in the results for this sub-sample occurred when the tests of the first 7 nested models (at each block), against the constant-only model, yielded consistently marginally significant results; all Model χ^2 values (for Blocks 1 to 7) were found to be marginally significant ($ps<.05$). According to the Wald criterion, two variables--namely, father's

level of education (entered at Block-2) and intrinsic motivation for having originally enrolled in a Life Science/Health Professions program of study (entered at Block-6)--were, to this point, marginally significant predictors of NELM retention status at 5-years ($p < .05$). The **Improvement χ^2** values for these two variables were also marginally significant ($p < .05$). Given the coding of these two variables (i.e., higher scores represented higher levels of father's education/intrinsic motivation), their positive **B** coefficients signified that, among employed Life Science/Health Professions bachelor's degree holders, respondents with more highly educated fathers were *more* likely to be retained in NELM at post-graduation year-5, as were respondents who exhibited higher levels of intrinsic motivation for having originally enrolled in a Life Science/Health Profession program of study. The **odds ratio** associated with the variable father's level of education indicated that, with each unit change in father's level of education, a respondent's relative chance of being retained in NELM at 5-years *increased* by a multiplicative factor of 1.42. The **odds ratio** associated with the variable intrinsic motivation indicated that, with each unit change in intrinsic motivation for having originally enrolled in a Life Science/Health Professions program of study, a respondent's relative chance of being retained in NELM at 5-years *increased* by a multiplicative factor of 1.22.

At Block-8, the addition of the predictor variable further education at 2-years resulted in a highly significant **Model χ^2** value and **Improvement χ^2** value ($p < .001$), indicating that the addition this variable to the model had resulted in a highly significant improvement in the prediction of NELM retention status at 5-years over the immediately-preceding block (i.e., Block-7). All subsequent **Model χ^2** values were also highly significant ($p < .001$), indicating that, at each block, the model as a whole reliably distinguished between retention and non-retention in NELM at the 5-year post-graduation follow-up interview. Thus, each of these models, containing 8, more than 8, or all 12 predictor variables, offered better prediction of NELM retention status at 5-years than would be expected by chance (Hosmer & Lemeshow, 1989).

Accounting for these findings again required an examination of the test statistics for each of the individual predictor variables. There, one can see that, contrary to what had been hypothesized, the statistical significance of the full model (at Block 12) was, once again, *not* attributable to the variable sex significantly *enhancing* prediction beyond the other variables in

the model. Rather, in this sub-sample of employed Life Science/Health Professions bachelor's degree holders, the statistically significant fit of the nested models and of the full model, having 8, more than 8, or all 12 predictor variables, was due to the statistically significant contributions of the predictor variables further non-NELM-related education at 2-years (entered at Block-8) and income at 2-years (entered at Block-9)⁴¹.

Specifically, as Table 19 shows, although, according to the Wald criterion, the variable further education at 2-years (as a whole) was a highly significant predictor ($p < .001$), only one of the design variables derived from it--namely, *non-NELM-related* further education at 2-years--was a statistically significant predictor, individually ($p < .001$). Given the coding of this design variable (i.e., 0="no"; 1="yes"), its negative B coefficient indicated that, among employed Life Science/Health Profession bachelor's degree holders, respondents who had pursued further non-NELM-related education were *less* likely to be retained in NELM at post-graduation year-5 (vs. those who had pursued no further education). The odds ratio associated with the design variable *non-NELM-related* indicated that, with further non-NELM-related education at 2-years (as opposed to no further education), a respondent's relative chance of being retained in NELM at 5-years *decreased* by a multiplicative factor of .29.

The addition of the predictor variable income at 2-years (at Block-9) also made a significant improvement in the prediction of NELM retention status at 5-years (over Block-8), as evidenced by the Improvement χ^2 value and the Wald's test ($p < .001$). Given the coding of this variable (i.e., higher scores represented higher income category at 2-years), its positive B coefficient signified that, among employed Life Science/Health Professions bachelor's degree holders, respondents with higher incomes at year-2 were *more* likely to be retained in NELM at post-graduation year-5. The odds ratio associated with this variable indicated that, with each unit increase in income (category) at 2-years, a respondent's relative chance of being retained in NELM at post-graduation year-5 *increased* by a multiplicative factor of 1.30.

As noted above, each of the Model χ^2 values for the nested-models tested after Block-8

⁴¹As well as, to a lesser extent, to the marginally significant contributions of the predictor variables father's level of education (entered at Block-1) and intrinsic motivation (entered at Block-6).

(i.e., at Blocks 9 to 11) were also highly statistically-significant ($p < .001$). This was the case, despite the finding that the Improvement χ^2 values were not statistically-significant ($p > .01$). Therefore, the statistical significance of the subsequently tested nested models was also attributable to the earlier contribution of the variables further non-NELM-related education at 2-years and income at 2-years.

In the case of the full model tested at Block-12, however, not only was the Model χ^2 value highly statistically significant ($p < .001$), but the Improvement χ^2 value and Wald's test were also marginally significant ($p < .05$), indicating that the addition of sex to the model had resulted in a *marginally* significant improvement in the prediction of NELM retention status at 5-years over the immediately preceding block, and, that on the basis of the predictor variable sex, retention versus non-retention in NELM at 5-years could be (marginally) reliably distinguished. According to test statistics (shown in Table 19) indicative of *how* sex was affecting the outcome, given the coding of sex (i.e., 0="female"; 1="male"), its negative B coefficient indicated that, among employed Life Science/Health Professions bachelor's degree holders, men were actually *less* likely than women to be retained in NELM at the 5-year post-graduation follow-up interview. Based on the odds ratio, a respondent's relative chance of being retained in NELM at post-graduation year-2 *decreased* by a multiplicative factor of .57 if that respondent was male.

On the post-hoc speculation that the variables father's level of education, intrinsic motivation, further education at 2-years, and income at 2-years could potentially operate differently, for women versus men, in the prediction of NELM retention status at 5-years, the interaction terms of sex by father's education, sex by intrinsic motivation, sex by further education at 2-years (i.e., sex by *NELM-related* and sex by *non-NELM-related*), and of sex by income at 2-years were subsequently entered into the sequential logistic regression model (i.e., post-hoc, at Block-13, Block-14, and Block-15, respectively). These interactions were found to be non-significant⁴² ($p > .01$).

⁴²The interaction of father's level of education by sex was only marginally significant ($p < .05$). Among men, those who were "retained" had fathers with higher levels of education than did those who were "not retained" ($M=3.09$, $SD=1.57$ and $M=2.00$, $SD=1.09$, respectively). By contrast, among women, father's level of education was highly similar, whether they were "retained" or "not retained" ($M=2.57$, $SD=1.39$ and $M=2.40$, $SD=1.36$, respectively).

Hypothesis 3(d): Employed Mathematics/Computer Science Bachelor's Degree holders - NELM Retention Status at Year-5

Gross-effect-of-sex model. Results for the sub-sample of employed Mathematics/Computer Science bachelor's degree holders were highly similar to those reported (above) for the three previous sub-samples of bachelor's degree holders. As shown in Table 20, model-fit was again very poor (and statistically non-significant) when the dependent variable NELM retention status at 5-years was predicted based on the full model containing the variable sex, only. The Model χ^2 value, Improvement χ^2 value, and Wald's test were each statistically non-significant ($p>.01$).

Net-effect-of-sex model. Although there was some variation, results for the sub-sample of employed Mathematics/Computer Science bachelor's degree holders were very similar to those reported (above) for the first two groups of employed bachelor's degree holders (i.e., the Natural Science and Engineering sub-samples). Model fit was, again, notably superior (and was, in fact, statistically significant, $p<.01$) when NELM retention status at 5-years was predicted in this sub-sample based on the full model containing sex, adjusted for the effects of the 11 antecedent variables. However--as detailed below--this finding failed to support Hypothesis 3 once again, as it was not attributable to the variable sex significantly *enhancing* prediction beyond the other variables in the model (as had been hypothesized); rather, it was again due to the contribution of the predictor variable further education at 2-years.

As indicated by the goodness-of-fit statistics for the sequential logistic regression models presented in Table 20, tests of the first 7 nested models (at each block), against the constant-only model, again yielded consistently non-significant results. All Model χ^2 values (for Blocks 1 to 7) were non-significant ($p>.01$).

At Block-8, however, the addition of the predictor variable further education at 2-years resulted in a statistically significant Model χ^2 value ($p<.01$) and a highly significant Improvement χ^2 value ($p<.001$), indicating that the addition of this variable to the model had resulted in a significant improvement in the prediction of NELM retention status at 5-years over the immediately-preceding block (i.e., Block-7). All subsequent Model χ^2 values (for Blocks 9 to 12) were also significant ($p<.01$). Thus, each of these models, containing 8, more than 8, or

all 12 predictor variables, offered better prediction of NELM retention status at 5-years than would be expected by chance (Hosmer & Lemeshow, 1989).

Accounting for these findings again required an examination of the test statistics for each of the individual predictor variables. There, one can see that, contrary to what had been hypothesized, the statistical significance of the full model (at Block 12) was, again, *not* attributable to the variable *sex enhancing* prediction beyond the other variables in the model. Rather, in this sub-sample of employed Mathematics/Computer Science bachelor's degree holders, the statistically significant fit of the models was due to the highly significant contribution of the predictor variable further education at 2-years (entered at Block-8).

Specifically, as Table 20 shows, although, according to the Wald criterion, the variable further education at 2-years (as a whole) was a highly significant predictor ($p < .001$), only one of the design variables derived from it—namely, non-NELM-related further education—was a statistically significant predictor, individually ($p < .001$). Given the coding of this design variable (i.e., 0="no"; 1="yes"), its negative B coefficient indicated that, among employed Mathematics/Computer Science bachelor's degree holders, respondents who had pursued further non-NELM-related education were *less* likely to be retained in NELM at post-graduation year-5 (vs. those who had pursued no further education). The odds ratio associated with the design variable "non-NELM-related" indicated that, with further non-NELM-related education at 2-years (as opposed to no further education), a respondent's relative chance of being retained in NELM at 5-years *decreased* by a multiplicative factor of .36.

As noted above, each of the Model χ^2 values for the models tested after Block-8 (i.e., at Blocks 9 to 12) were also statistically-significant ($ps < .01$). This was the case, despite the finding that none of the subsequent *Improvement* χ^2 values were statistically significant ($ps > .01$). Thus, the statistical significance of the nested models and of the full model was also attributable to the earlier contribution of the design variable further non-NELM-related education at 2-years. In fact, as the test statistics for the individual variables presented in Table 20 indicate, this was the only variable that enhanced the ability of the model to reliably distinguish between retention and non-retention in NELM at 5-years, in the sub-sample of employed Mathematics/Computer Science bachelor's degree holders.

As shown in Table 20, one exception to this finding⁴³ was the marginally significant Improvement χ^2 value ($p < .05$) for the predictor variable entered at Block-6 (i.e., intrinsic motivation for having originally enrolled in a Mathematics/Computer Science program of study). This variable also approached statistical significance according to the Wald criterion ($p < .05$). Given the coding of this variable (i.e., higher scores represented higher levels of intrinsic motivation), its positive B coefficient signified that, among employed Mathematics/Computer Science bachelor's degree holders, respondents having higher intrinsic motivation for having originally enrolled in a Mathematics/Computer Science program of study were *more* likely to be retained in NELM at post-graduation year-5. The odds ratio associated with this variable indicated that, with each unit change in intrinsic motivation, a respondent's relative chance of being retained in NELM at the 5-year post-graduation follow-up interview *increased* by a multiplicative factor of 1.37.

On the post-hoc speculation that the variables intrinsic motivation and further education at 2-years could potentially operate differently, for women versus men, in the prediction of NELM retention status at 5-years, the interaction terms of sex by intrinsic motivation and of sex by further education at 2-years (i.e. sex by *NELM-related* and sex by *non-NELM-related*) were subsequently entered into the sequential logistic regression model (i.e., post-hoc, at Block-13 and Block-14). These interactions were found to be non-significant ($p > .01$).

Conclusion

These findings resulted in a failure to reject null Hypotheses 3(a), 3(b), 3(c)⁴⁴, and 3(d), that is:

$$H_0 : P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed female "N" graduates}) - P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed male "N" graduates}) \geq 0$$

⁴³This finding was not unexpected given that, in the test of Hypothesis 2, intrinsic motivation was found to be a marginally significant predictor in the *full* sample of Mathematics/Computer Science bachelor's degree holders.

⁴⁴In light of the multiple statistical tests conducted in this investigation, the marginally significant findings with regard to sex were *not* considered to be sufficient to reject the non-directional null Hypothesis 3(c).

$$H_o : P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed female "E" graduates}) \\ - P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed male "E" graduates}) \geq 0$$

$$H_o : P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed female "L" graduates}) \\ - P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed male "L" graduates}) = 0$$

$$H_o : P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed female "M" graduates}) \\ - P_{\text{retention in NELM-related employment @ 5-years}} (\text{employed male "M" graduates}) \geq 0$$

Upon further refining the sample under consideration to include only those bachelor's degree holders who were employed at both the 2-year and 5-year post-graduation follow-up interviews, the probability of being retained in NELM-related employment at the 5-year follow-up interview was *not* found to be *lower* (or significantly different) for young women than for young men, in *any* of the four NELM academic areas.

Test of Hypothesis 4

IT HAD BEEN HYPOTHESIZED THAT, UPON *REDEFINING* THE RESTRICTED SAMPLE UNDER CONSIDERATION TO INCLUDE ONLY THOSE BACHELOR'S DEGREE HOLDERS WHO WERE *NOT* RETAINED IN NELM-RELATED PURSUITS AT THE 2-YEAR POST-GRADUATION FOLLOW-UP INTERVIEW, THE PROBABILITY OF *RETURNING* TO NELM-RELATED PURSUITS AT THE 5-YEAR POST-GRADUATION FOLLOW-UP INTERVIEW WOULD BE *LOWER* FOR YOUNG WOMEN THAN FOR YOUNG MEN IN THE "N", "E", AND "M" GROUPS (AND WOULD BE *DIFFERENT* FOR YOUNG WOMEN VS. YOUNG MEN IN THE "L" GROUP). Hypothesis 4(a) was tested first, utilizing the sub-set of 5-year follow-up interview data for Natural Science bachelor's degree holders who were *not* retained in NELM at year-2 and the procedure described below; this procedure was then repeated three times, utilizing sub-sets of the 5-year follow-up interview data for Engineering, Life Science/Health Professions, and Mathematics/Computer Science bachelor's degree holders who were *not* retained in NELM at year-2 to test Hypothesis 4(b), 4(c), and 4(d), respectively.

As in the tests of the previous hypotheses, the first question to be addressed was whether sex, by itself, was a reliable predictor of NELM retention status at 5-years among Natural Science bachelor's degree holders who were *not* retained in NELM at 2-years (i.e., the

gross-effect-of-sex model). The direct logistic regression analysis conducted to test the gross-effect-of-sex model was identical to those employed above (see Hypotheses 2 and 3); the distinguishing feature in this case was the participation of a different sub-group of Natural Science bachelor's degree holders, namely, those who had been engaged in *non*-NELM-related pursuits at the 2-year post-graduation follow-up interview (i.e., those *not* retained at 2-years). As such, NELM retention status at 5-years (i.e., *return* to NELM-related pursuits vs. *continued non*-NELM-related pursuits) was predicted, in phase one, on the basis of the variable sex, only.

Whether or not sex was found, on its own, to be a reliable predictor of NELM retention status at 5-years among Natural Science bachelor's degree holders *not* retained in NELM at 2-years, the second question to be addressed was whether the variable sex would be a reliable predictor of NELM retention status at 5-years, after adjusting for the effects of the other available predictor variables (i.e., the net-effect-of-sex model). The sequential logistic regression analysis conducted to test the net-effect-of-sex model (in phase two) was also highly similar to one of those described above (see Hypothesis 2). In fact, the only feature distinguishing this analysis was, again, the participation of the sub-sample of Natural Science bachelor's degree holders *not* retained in NELM at 2-years; the set of antecedent variables employed to predict the outcome was identical to that of Hypothesis 2.

Specifically, NELM retention at 5-years (i.e., retention: *return* to NELM-related pursuits vs. non-retention: *continued non*-NELM-related pursuits) was predicted on the basis of the variables⁴⁵: mother's level of education (entered at Block-1); father's level of education (entered at Block-2); respondents' age at 2-years (entered at Block-3); marital status at 2-years (entered at Block-4); number of dependent children at 2-years (entered at Block-5); intrinsic motivation for having originally enrolled in a Natural Science program of study (entered at Block-6); extrinsic motivation for having originally enrolled in a Natural Science program of study (entered at Block-7)⁴⁶; and, sex (entered last, at Block-8).

⁴⁵See Table 6 for a summary of predictor variable coding.

⁴⁶In subsequent analyses of the sub-samples of E, L, and M bachelor's degree holders, the variables entered at Block-6 and Block-7 measured the respondents' intrinsic/extrinsic motivation for having originally enrolled in an Engineering, Life Science/Health Professions, or Mathematics/Computer Science program of study, respectively.

The goal of this sequential logistic regression analysis was, once again, to investigate the relationship between the dichotomous dependent variable NELM retention status at 5-years and the independent variable sex, with the effects of the other predictor variables (i.e., those entered at Blocks 1 to 7) statistically controlled. Simply put, the major question was whether sex would significantly *enhance* prediction of retention versus non-retention in NELM at the 5-year post-graduation follow-up interview in the sub-sample of Natural Science (Engineering; Life Science/Health Professions; or, Mathematics/Computer Science) bachelor's degree holders *not* retained at 2-years, once prediction by the available antecedent variables had been accounted for.

Figure 8 presents a summary of retention rates at the 5-year post-graduation follow-up interview, by academic area and by sex, for respondents who were not retained in NELM at the 2-year follow-up. As shown in this figure, retention rates (*or*, rates of *return* to NELM-related pursuits at year-5 from *non*-NELM-related pursuits at year-2) tended to be quite low, across academic areas. The variability in rates of return across academic areas was also quite limited, ranging from approximately 27% in Natural Science to just under 35% in Engineering. Judging by Figure 8, rates of return across gender were highly similar for women and men in Natural Science and in Mathematics/Computer Science; in Engineering, however, women had a lower rate-of-return to NELM than did men (6.2% lower), compared with noticeably higher rate-of-return to NELM for women than for men in Life Science/Health Professions (23.5% higher). It is important to note, however, that this figure should be interpreted with caution. Readers should be mindful of the difference in the absolute number of women versus men in the academic area of Engineering (i.e., 24 vs. 209), as well as the low absolute numbers of men and women in the academic area of Life Science/Health Professions (i.e., 31 and 66, respectively). Based thereon, findings for the sub-samples of respondents from the E and L academic areas, including the descriptive findings presented in this figure, must be interpreted cautiously and considered to be tentative, pending replication in a larger, independent sample.

Table 21 presents a summary of relevant descriptive statistics for the predictor variables entered in the direct and sequential logistic regression analyses, by NELM academic area and by NELM retention status at 5-years. The direct and sequential logistic regression findings for the sub-samples of bachelor's degree holders from the N, E, L, and M academic areas are

Figure 8. Retention rates at the 5-year post-graduation follow-up interview, by academic area and by sex, for respondents who were not retained in NELM at the 2-year follow-up (N = 783)

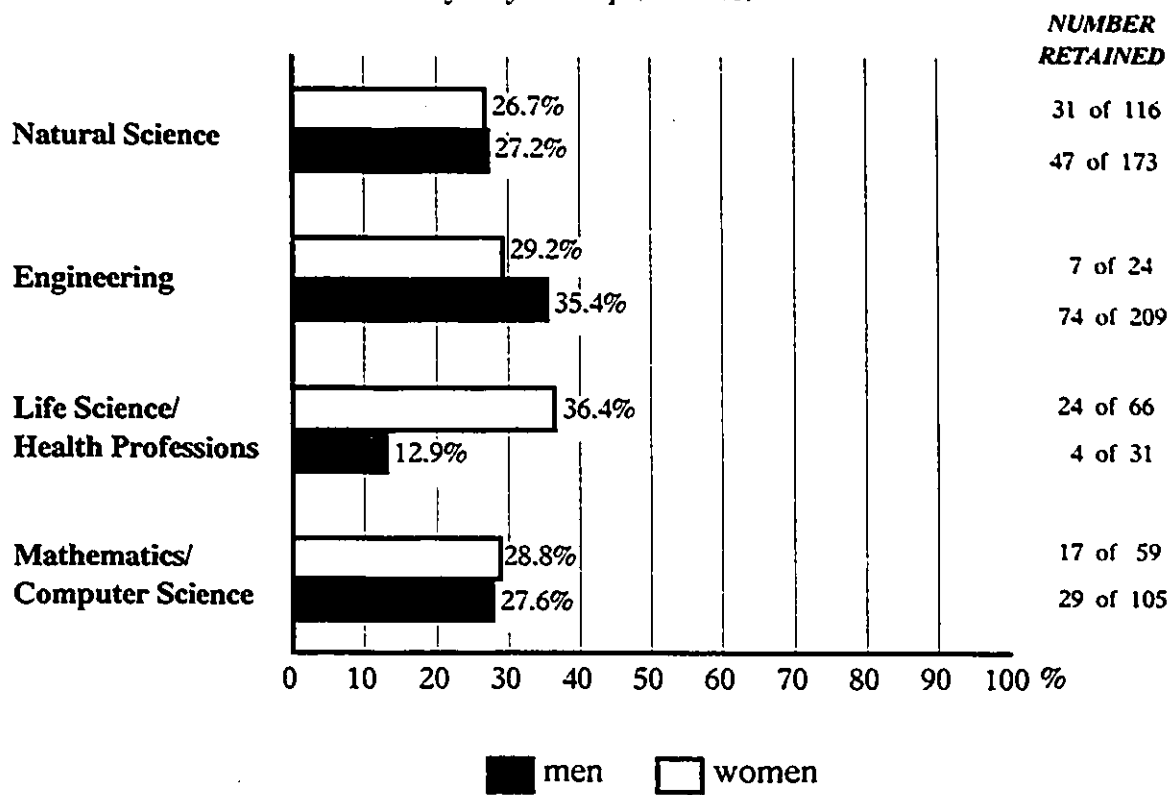


Table 21

Hypothesis 4 (bachelor's degree-holders not retained in NELM at the 2-year post-graduation follow-up interview): Descriptive Statistics for Predictor Variables Entered in the Direct and Sequential Logistic Regression Analyses, by NELM Academic Area and by Retention Status at Year-5 (N=783)*

variable ^b		natural science		engineering		life science / health professions		mathematics / computer science	
		IN	OUT	IN	OUT	IN	OUT	IN	OUT
		<i>n</i>							
	%	78	211	81	152	28	69	46	118
		26.99	73.01	34.76	65.24	28.87	71.13	28.05	71.95
mother's education	<i>M</i>	2.59	2.41	2.37	2.12	2.50	2.22	2.17	2.19
	<i>SD</i>	1.19	1.13	1.17	1.07	1.23	1.11	1.14	1.14
father's education	<i>M</i>	2.85	2.70	2.64	2.55	2.64	2.13	2.43	2.32
	<i>SD</i>	1.44	1.42	1.34	1.38	1.39	1.19	1.39	1.22
age (category) @ year-2	<i>M</i>	2.45	2.95	3.41	3.54	3.21	3.83	3.26	3.29
	<i>SD</i>	1.61	1.72	1.56	1.53	1.85	1.85	1.67	1.73
marital status @ year-2 (%)									
0=other		87.20	72.00	70.40	61.80	67.90	63.80	69.90	71.20
1=married/common law		12.80	28.00	29.60	38.20	32.10	36.20	30.40	28.80
number of children @ year-2	<i>M</i>	.01	.13	.10	.14	.25	.29	.17	.17
	<i>SD</i>	.11	.52	.34	.51	.65	.73	.49	.53
intrinsic motivation	<i>M</i>	3.40	3.37	3.27	3.35	3.48	3.46	3.47	3.24
	<i>SD</i>	.62	.63	.64	.57	.59	.65	.56	.66
extrinsic motivation	<i>M</i>	3.23	3.20	3.32	3.33	3.45	3.24	3.39	3.25
	<i>SD</i>	.78	.75	.65	.64	.67	.69	.78	.76
sex (%)									
0=female		39.70	40.30	8.60	11.20	85.70	60.90	37.00	35.60
1=male		60.30	59.70	91.40	88.80	14.30	39.10	63.00	64.40

Note. IN="retained in NELM at the 5-year post-graduation follow-up interview"; OUT="not retained in NELM at the 5-year post-graduation follow-up interview"

*Means (*M*s) and standard deviations (*SD*s) are presented for interval-level variables. Percentages (%) are presented for nominal-level variables.

^bRefer to Table 6 for a complete summary of predictor variable coding.

summarized in Tables 22 to 25, respectively.

Hypothesis 4(a): Natural Science Bachelor's Degree holders Not Retained at Year-2 - NELM Retention Status at Year-5

Gross-effect-of-sex model. As shown in Table 22, for the sub-sample of Natural Science bachelor's degree holders *not* retained at 2-years, model-fit was very poor (and statistically non-significant) when the dependent variable NELM retention status at 5-years was predicted based on the full model containing the variable sex, only. The **Model χ^2 value**, **Improvement χ^2 value**, and **Wald's test** were each statistically non-significant ($ps > .01$), indicating no better prediction of retention versus *continued* non-retention at 5-years than would be expected by chance.

Net-effect-of-sex model. Full model fit was similarly poor when NELM retention status at 5-years was predicted for the sub-sample of Natural Science bachelor's degree holders *not* retained at 2-years, by sex, adjusting for the effects of the 7 antecedent predictor variables. As indicated by the goodness-of-fit statistics for the full model tested at Block-8 (see Table 22), both the **Model χ^2 value** and **Improvement χ^2 value** for the full model were statistically non-significant ($ps > .01$).

Notably, the **Model χ^2 values** for 3 of the nested models--namely, those tested at Block-4, Block-5, and Block-6--were marginally significant ($ps < .05$). From an examination of the test statistics for the individual predictors one can see that, contrary to what had been hypothesized, these findings were *not* attributable to any contribution to prediction by the variable sex. Rather, they were attributable to the early contribution of the predictor variables age at 2-years (entered at Block-3) and marital status at 2-years (entered at Block-4). In fact, according to the **Wald criterion**, these two variables were the *only* significant (albeit marginally significant) predictors of NELM retention status at 5-years ($ps < .05$) included in the nested models. As evidenced by the **Improvement χ^2 values** associated with these variables, they also made a marginally significant improvement in prediction over the immediately-preceding blocks ($ps < .05$).

Given the coding of the categorical age variable (i.e., higher scores represented older age categories), its negative B coefficient signified that, among Natural Science bachelor's

Table 22

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 4(a): NELM Retention Status at Post-Graduation Year-5 Among Natural Science Bachelor's Degree-Holders who were Not Retained in NELM at Post-Graduation Year-2 (n=289)

variable ^a	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2LL)	Δ df	Improvement χ^2	df
constant	-1.00	.13	..	..	..	..	337.06	288	..	..	..	..
GROSS-EFFECT-OF-SEX MODEL												
	.02	.27	.01	1	.000	1.02	337.06	287	.01	1	.01	1
NET-EFFECT-OF-SEX MODEL												
B1 mother's education	.13	.12	1.37	1	.000	1.14	335.70	287	1.36	1	1.36	1
B2 father's education	.01	.12	.01	1	.000	1.01	335.69	286	1.37	2	.01	1
B3 age (category) @ year-2	-.17	.09	4.01*	1	-.077	.84	331.48	285	5.58	3	4.21*	1
B4 marital status @ year-2 (1=married, 0=other)	-.83	.39	4.51*	1	-.087	.44	326.49	284	10.58*	4	4.99*	1
B5 number of children @ year-2	-.96	.90	1.14	1	.000	.38	324.44	283	12.62*	5	2.05	1
B6 intrinsic motivation	.15	.22	.47	1	.000	1.17	323.96	282	13.10*	6	.48	1
B7 extrinsic motivation	.04	.20	.05	1	.000	1.05	323.91	281	13.15	7	.05	1
B8 sex (1=male, 0=female)	.12	.28	.17	1	.000	1.12	323.74	280	13.32	8	.17	1
INTERACTIONS (tested post-hoc):												
B9 sex by age (category) @ year-2	.24	.19	1.57	1	.000	1.27	322.10	279	14.96	9	1.64	1
B10 sex by marital status @ year-2	.10	.80	.02	1	.000	1.10	322.10	278	14.96	10	.02	1

Note. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis).
^aRefer to Table 6 for a complete summary of predictor variable coding.
 *p < .05 (marginally significant).

Table 23

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 4(b): NELM Retention Status at Post-Graduation Year-5 Among Engineering Bachelor's Degree-Holders who were Not Retained in NELM at Post-Graduation Year-2 (n = 233)

variable*	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2LL)	Δ Improvement χ^2	df	df
constant	-.63	.14	..	..	..	..	301.02	232	..	..	..	..
GROSS-EFFECT-OF-SEX MODEL	.29	.47	.37	1	.000	1.33	300.64	231	.38	1	.38	1
NET-EFFECT-OF-SEX MODEL												
B1 mother's education	.20	.12	2.71	1	.048	1.23	298.32	231	2.71	1	2.71	1
B2 father's education	-.06	.12	.21	1	.000	.95	298.10	230	2.92	2	.21	1
B3 age (category) @ year-2	-.04	.09	.22	1	.000	.96	297.88	229	3.14	3	.22	1
B4 marital status @ year-2 (1=married, 0=other)	-.37	.31	1.38	1	.000	.69	296.48	228	4.54	4	1.40	1
B5 number of children @ year-2	-.11	.37	.09	1	.000	.90	296.39	227	4.63	5	.09	1
B6 intrinsic motivation	-.22	.24	.91	1	.000	.80	295.48	226	5.54	6	.91	1
B7 extrinsic motivation	.06	.23	.07	1	.000	1.06	295.41	225	5.61	7	.07	1
B8 sex (1=male, 0=female)	.38	.48	.60	1	.000	1.46	294.79	224	6.23	8	.63	1

Note. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis).

*Refer to Table 6 for a complete summary of predictor variable coding.

Table 24

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 4(c): NELM Retention Status at Post-Graduation Year-5 Among Life Science/Health Professions Bachelor's Degree-Holders who were Not Retained in NELM at Post-Graduation Year-2 (n=97)

variable ^a	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 ($\Delta -2LL$)	Δ df	Improvement χ^2	df
constant	-.90	.22	..	..	..	..	116.58	96	..	..	..	..
GROSS-EFFECT-OF-SEX MODEL	-1.35	.59	5.16*	1	-.165	.26	110.37	95	6.22*	1	6.22*	1
NET-EFFECT-OF-SEX MODEL												
B1 mother's education	.22	.20	1.21	1	.000	1.24	115.37	95	1.21	1	1.21	1
B2 father's education	.29	.20	2.06	1	.023	1.34	113.27	94	3.31	2	2.10	1
B3 age (category) @ year-2	-.15	.13	1.24	1	.000	.86	112.00	93	4.58	3	1.26	1
B4 marital status @ year-2 (1=married, 0=other)	-.03	.50	.00	1	.000	.97	112.00	92	4.58	4	.00	1
B5 number of children @ year-2	.33	.42	.63	1	.000	1.39	111.40	91	5.18	5	.60	1
B6 intrinsic motivation	.10	.40	.07	1	.000	1.11	111.33	90	5.25	6	.07	1
B7 extrinsic motivation	.39	.42	.86	1	.000	1.48	110.45	89	6.13	7	.88	1
B8 sex (1=male, 0=female)	-1.44	.62	5.39*	1	-.175	.24	104.02	88	12.56	8	6.43*	1

Note. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis).
^aRefer to Table 6 for a complete summary of predictor variable coding.
 *p < .05 (marginally significant).

Table 25

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 4(d): NELM Retention Status at Post-Graduation Year-5 Among Mathematics/Computer Science Bachelor's Degree-Holders who were Not Retained in NELM at Post-Graduation Year-2 (n=164)

variable ^a	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2LL)	Δ df	Improvement χ^2	df
constant	-.94	.17	..	..	..	..	194.64	163	..	..	..	..
GROSS-EFFECT-OF-SEX MODEL												
	-.06	.36	.03	1	.000	.94	194.61	162	.03	1	.03	1
NET-EFFECT-OF-SEX MODEL												
B1 mother's education	-.02	.15	.01	1	.000	.98	194.63	162	.01	1	.01	1
B2 father's education	.11	.16	.46	1	.000	1.12	194.17	161	.47	2	.46	1
B3 age (category) @ year-2	-.01	.10	.01	1	.000	.99	194.17	160	.47	3	.01	1
B4 marital status @ year-2 (1=married, 0=other)	.09	.40	.05	1	.000	1.10	194.11	159	.53	4	.05	1
B5 number of children @ year-2	.02	.41	.00	1	.000	1.02	194.11	158	.53	5	.00	1
B6 intrinsic motivation	.65	.31	4.36*	1	.110	1.92	189.28	157	5.36	6	4.83*	1
B7 extrinsic motivation	.12	.25	.22	1	.000	1.13	189.05	156	5.59	7	.23	1
B8 sex (1=male, 0=female)	-.07	.37	.04	1	.000	.93	189.02	155	5.62	8	.04	1
INTERACTIONS (tested post-hoc):												
B9 sex by intrinsic motivation	-.48	.67	.50	1	.000	.62	188.50	154	6.14	9	.52	1

^aNote. LL = log likelihood (refer to Appendix O for a primer of logistic regression analysis).

^bRefer to Table 6 for a complete summary of predictor variable coding.

*p < .05 (marginally significant).

degree holders *not* retained in NELM at 2-years. older respondents were *less* likely to have *returned* to NELM-related pursuits at 5-years. The odds ratio associated with this variable indicated that, with each unit change in age (category), a respondent's relative chance of *returning* to NELM-related pursuits at post-graduation year-5 *decreased* by a multiplicative factor of .84.

Given the coding of the marital status variable (i.e., 0="other: single, widowed or divorced": 1="married or living common law"), its negative B coefficient signified that respondents who were married or living common law at post-graduation year-2 were *less* likely to *return* to NELM-related pursuits at post-graduation year-5 than were those who had been single, widowed, or divorced at post-graduation year-2. Based on the odds ratio associated with the this variable, a respondent's relative chance of *returning* to NELM at post-graduation year-5 *decreased* by a multiplicative factor of .44 if she/he had been married or living common law at post-graduation year-2 (vs. single, widowed, or divorced).

To examine, post-hoc, the possibility that the variables age at 2-years and marital status at 2-years could potentially operate differently, for women versus men, in the prediction of retention status at 5-years, the interaction terms of age at 2-years by sex and of marital status at 2-years by sex were subsequently entered into the sequential logistic regression model (i.e., post-hoc, at Block-9 and Block-10). These interactions were found to be non-significant ($p>.01$).

Hypothesis 4(b): Engineering Bachelor's Degree holders Not Retained at Year-2 - NELM Retention Status at Year-5

Gross-effect-of-sex model. Results for the sub-sample of Engineering bachelor's degree holders *not* retained in NELM at post-graduation year-2 were highly similar to those reported above for the corresponding sub-sample of Natural Science bachelor's degree holders. As shown in Table 23, model-fit was again very poor (and statistically non-significant) when the dependent variable NELM retention status at 5-years was predicted based on the full model containing the variable sex, only. The Model χ^2 value, Improvement χ^2 value, and Wald's test were each statistically non-significant ($p>.01$).

Net-effect-of-sex model. Full model fit was similarly poor (and statistically non-significant) when NELM retention status at 5-years was predicted for the sub-sample of Engineering bachelor's degree holders *not* retained in NELM at 2-years, adjusting for the effects of the 7 antecedent predictor variables. As shown in Table 23, goodness-of-fit statistics, both for the sequential logistic regression models and for the individual predictor variables, yielded consistently non-significant results. That is, all Model χ^2 values, Improvement χ^2 values, and Wald's tests were statistically non-significant ($ps>.01$).

Hypothesis 4(c): Life Science/Health Professions Bachelor's Degree holders Not Retained at Year-2 - NELM Retention Status at Year-5

Gross-effect-of-sex model. As shown in Table 24, results for the sub-sample of Life Science/Health Professions bachelor's degree holders *not* retained in NELM at post-graduation year-2 stood in contrast to those reported (above) for the previous two sub-samples, although they still failed to provide statistically significant support to Hypothesis 4(c). Specifically, model-fit was only marginally significant when the dependent variable NELM retention status at 5-years was predicted based on the full model containing the variable sex, only. The Model χ^2 value, Improvement χ^2 value, and Wald's test were each marginally significant ($ps<.05$), indicating that the predictor variable sex reliably (albeit marginally so) distinguished between retention and *continued* non-retention in NELM at the 5-year post-graduation follow-up interview. As was the case with similar findings in the test of Hypothesis 1, given the coding of the variable sex (i.e., 0="female"; 1="male"), its negative B coefficient indicated that, among Life Science/Health Professions bachelor's degree holders *not* retained in NELM post-graduation year-2, men were *less* likely than women to be retained in NELM at post-graduation year-5. Based on the odds ratio, a respondent's relative chance of being retained in NELM (i.e., of *returning* to NELM-related pursuits) at post-graduation year-5 *decreased* by a multiplicative factor of .26 if that respondent was male.

Net-effect-of-sex model. Again, results for the sub-sample of Life Science/Health Professions bachelor's degree holders *not* retained in NELM at post-graduation year-2 stood in contrast to those reported above, although--as detailed below--these findings, too, failed to offer

statistically significant support Hypothesis 4(c). Specifically, model fit was also only marginally significant when NELM retention status at 5-years was predicted by sex, adjusting for the effects of the 7 antecedent predictor variables. As indicated by the goodness-of-fit statistics for the sequential logistic regression model presented in Table 24, this marginally-significant model fit *was*, in this case, attributable to the variable sex significantly enhancing prediction beyond the other variables in the model. As test statistics indicative of *how* sex was affecting the outcome show, the negative B coefficient associated with sex indicated that, among Life Science/Health Profession bachelor's degree holders *not* retained in NELM at post-graduation year-2, men were *less* likely than women to be retained in NELM (i.e., to *return* to NELM-related pursuits) at post-graduation year-5. Similarly, based on the odds ratio, a respondent's relative chance of being retained in NELM at post-graduation year-5 actually *decreased* by a multiplicative factor of .24 if that respondent was male.

Hypothesis 4(d): Mathematics/Computer Science Bachelor's Degree holders Not Retained at Year-2 - NELM Retention Status at Year-5

Gross-effect-of-sex model. Results for the sub-sample of Mathematics/Computer Science bachelor's degree holders *not* retained in NELM at post-graduation year-2 were highly similar to those reported above for the first two corresponding sub-samples (i.e., the Natural Science and Engineering bachelor's degree holders). As shown in Table 25, model-fit was again very poor (and statistically non-significant) when the dependent variable NELM retention status at 5-years was predicted based on the full model containing the variable sex, only. The **Model χ^2** value, **Improvement χ^2** value, and **Wald's test** were each statistically non-significant ($ps > .01$).

Net-effect-of-sex model. Full model fit was similarly poor (and statistically non-significant) when NELM retention status at 5-years was predicted for the sub-sample of Mathematics/Computer Science bachelor's degree holders *not* retained in NELM at 2-years, adjusting for the effects of the 7 antecedent predictor variables. As shown in Table 25, goodness-of-fit statistics, both for the sequential logistic regression models and for the individual predictor variables yielded consistently non-significant results. That is, all **Model χ^2** values, **Improvement χ^2** values, and **Wald's tests** were statistically non-significant

($p > .01$).

As shown in Table 25, one exceptional finding⁴⁷ was the marginally significant Improvement χ^2 value and Wald's test ($p < .05$) for the predictor variable entered at Block-6 (i.e., intrinsic motivation for having originally enrolled in a Mathematics/Computer Science program of study). Given the coding of this variable (i.e., higher scores represented higher levels of intrinsic motivation), its positive B coefficient signified that, among Mathematics/Computer Science bachelor's degree holders *not* retained in NELM at post-graduation year-2, respondents having higher intrinsic motivation for having originally enrolled in a Mathematics/Computer Science program of study were *more* likely to *return* to NELM-related pursuits at post-graduation year-5. The odds ratio associated with this variable indicated that, with each unit change in intrinsic motivation, a respondent's relative chance of being retained in NELM at the 5-year post-graduation follow-up interview *increased* by a multiplicative factor of 1.92. Despite this marginal contribution to prediction by the variable intrinsic motivation, however, the Model χ^2 value at Block-6 indicated that this nested model offered no better prediction of the outcome than would be expected by chance ($p > .01$).

On the post-hoc speculation that the variable intrinsic motivation could potentially operate differently, for women versus men, in the prediction of NELM retention status at 5-years, the interaction term of sex by intrinsic motivation was subsequently entered into the sequential logistic regression model (i.e., post-hoc, at Block-9). This interaction was found to be non-significant ($p > .01$).

Conclusion

These findings resulted in a failure to reject null Hypothesis 4(a), 4(b), 4(c)⁴⁸, and 4(d), that is:

⁴⁷This finding was not unexpected given that, in the tests of Hypotheses 2 and 3, intrinsic motivation was also found to be a marginally significant predictor in the *full* and *employed* samples of Mathematics/Computer Science bachelor's degree holders, respectively.

⁴⁸As was the case in the failure to reject null Hypothesis 3(c) (above), in light of multiple statistical tests conducted in this investigation, the marginally significant findings with regard to sex in this instance were not considered to be sufficient grounds on which to reject the non-directional null Hypothesis 4(c), either.

$$H_o : P_{\text{retention in NELM @ 5-years}} (\text{female "N" graduates not retained @ 2-years}) \\ - P_{\text{retention in NELM @ 5-years}} (\text{male "N" graduates not retained @ 2-years}) \geq 0$$

$$H_o : P_{\text{retention in NELM @ 5-years}} (\text{female "E" graduates not retained @ 2-years}) \\ - P_{\text{retention in NELM @ 5-years}} (\text{male "E" graduates not retained @ 2-years}) \geq 0$$

$$H_o : P_{\text{retention in NELM @ 5-years}} (\text{female "L" graduates not retained @ 2-years}) \\ - P_{\text{retention in NELM @ 5-years}} (\text{male "L" graduates not retained @ 2-years}) = 0$$

$$H_o : P_{\text{retention in NELM @ 5-years}} (\text{female "M" graduates not retained @ 2-years}) \\ - P_{\text{retention in NELM @ 5-years}} (\text{male "M" graduates not retained @ 2-years}) \geq 0$$

Upon *redefining* the restricted sample under consideration to include only those bachelor's degree holders who were *not* retained in NELM-related pursuits at the 2-year post-graduation follow-up interview, the probability of *returning* to NELM-related pursuits at the 5-year post-graduation was *not* found to be *lower* (or significantly different) for young women than for young men, in *any* of the four NELM academic areas.

General Conclusion Concerning Hypothesis Testing

In Table 26, a summary of the findings for the sequential logistic regression analyses (i.e., the net-effect-of-sex models) testing Hypotheses 2, 3, and 4 is presented. Therein, it is apparent that across programs of study, retention (vs. non-retention) in NELM at post-graduation year-5 could not be consistently nor reliably predicted on the basis of sex. Moreover, these analyses failed to support this investigation's fundamental postulation, namely, *that early career retention among undergraduate degree holders in S&T would be proportionately lower for young women, as compared to young men.* The only statistically significant finding across programs of study was with regard to the set of design of variables derived from further education. Further *non-NELM-related* education at 2-years, in particular, was consistently a reliable predictor of non-retention in NELM at the 5-year post-graduation follow-up interview. This table also serves to highlight inter-program-of-study differences with regard to specific influential predictor variables.

Table 26

Summary of Findings for the Sequential Logistic Regression Analyses (net-effect-of-sex models) Testing Hypotheses 2, 3, and 4

statistical significance ^a and sign ^b of predictor variable ^c estimates (B coefficients)								
hypothesis tested	(a) natural science		(b) engineering		(c) life science / health professions		(d) mathematics / computer science	
2	marital status (1=married, 0=other)	* (-)			mother's education	** (+)	intrinsic motivation	* (+)
					father's education	* (+)		
					<i>interaction:</i> sex by father's education	* (+)	<i>interaction:</i> sex by intrinsic motivation	* (-)
3	marital status (1=married, 0=other)	* (-)			father's education	* (+)		
					intrinsic motivation	* (+)	intrinsic motivation	* (+)
	further education	***	further education	***	further education	***	further education	***
	<i>NELM-related</i>	*** (+)	<i>NELM-related</i>	* (+)				
	<i>non-NELM related</i>	*** (-)	<i>non-NELM related</i>	* (-)	<i>non-NELM related</i>	*** (-)	<i>non-NELM related</i>	*** (-)
			job satisfaction	** (+)	income	*** (+)		
					sex	* (-)		
					<i>interaction:</i> sex by father's education	* (+)		
4	age	* (-)			sex	* (-)	intrinsic motivation	* (+)
	marital status (1=married, 0=other)	* (-)						

^aBased on the Wald's test. ^bPositive B coefficients (+) indicate that the predicted odds of being retained in NELM increase as the predictor increases; negative B coefficients (-) indicate that the predicted odds of being retained in NELM decrease as the predictor increases. ^cRefer to Table 6 for a complete summary of variable coding.
p*<.05; *p*<.01; ****p*<.001

Stage IV: Addressing the Research Questions⁴⁹

Research Question 1: How Do "Retained" Women Compare With "Retained" Men?

1.1. Research question 1.1 asked: Upon considering each of the NELM groups of bachelors degree holders *separately*, how would women engaged in NELM-related pursuits at the 5-year post-graduation follow-up interview (i.e., in a NELM-related career or field of further study) compare with their male counterparts, on the following variables: (a) mother's level of education; (b) father's level of education; (c) intrinsic motivation for having originally enrolled in an N, E, L, or M program of study; (d) extrinsic motivation for having originally enrolled in an N, E, L, or M program of study; (e) marital status at the 5-year follow-up; (f) age at the 5-year follow-up; (g) number of dependent children at the 5-year follow-up? A summary of the expectations with regard to this research question was presented in Table 4. Tables 27 and 28, respectively, present the results of the descriptive and inferential analyses conducted to address this research question.

1.2. Research question 1.2 asked: Upon considering each of the NELM groups of bachelor's degree holders *separately*, how would women engaged in S&T-related *employment* at the 5-year follow-up interview (i.e., in a NELM-related career) compare with those women who were engaged in non-NELM-related *employment* at the 5-year post-graduation follow-up interview, on each of the seven variables listed above (i.e., [a] to [g]), as well as the variables: (h) further NELM-related education since 1986; (i) further non-NELM-related education since 1986; (j) income at the 5-year follow-up; (k) job satisfaction at the 5-year follow-up; (l) salary satisfaction at the 5-year follow-up? A summary of the expectations with regard to this research question was also presented in Table 4. In Tables 29 and 30, respectively, the results of the descriptive and inferential analyses conducted to address this research question are presented.

⁴⁹Readers are reminded that, given that multiple analyses of an exploratory nature were conducted, an α of .01 was adopted throughout this investigation in order to adjust for the inflated Type I error rate. In view of the large number of univariate analyses carried out to address the research questions, findings of $p < .05$ (i.e., those that were marginally significant) were considered dubious (i.e., quite possibly due to chance, alone) and were therefore deemed *not* to be worthy of note in the reporting/interpretation of the results.

Table 27

Descriptive Statistics, by NELM Academic Area and by Sex, for Variables Entered in the t-tests and Pearson χ^2 Analyses Addressing Research Question 1.1: How Do Women "Retained" in NELM at Year-5 Compare with Men "Retained" in NELM at Year-5?

variable ^a	n	natural science		engineering		life science / health professions		mathematics / computer science	
		women 161	men 271	women 61	men 527	women 502	men 231	women 101	men 232
mother's education	<i>M</i>	2.60	2.54	2.62	2.37	2.44	2.70	2.31	2.31
	<i>SD</i>	1.14	1.22	1.16	1.15	1.12	1.24	1.21	1.15
father's education	<i>M</i>	3.01	2.88	2.87	2.59	2.63	3.16	2.69	2.53
	<i>SD</i>	1.36	1.52	1.40	1.41	1.14	1.54	1.38	1.40
intrinsic motivation to enrol in NELM	<i>M</i>	3.51	3.41	3.48	3.42	3.61	3.53	3.55	3.32
	<i>SD</i>	.60	.64	.59	.58	.52	.59	.48	.66
extrinsic motivation to enrol in NELM	<i>M</i>	3.33	3.19	3.54	3.36	3.41	3.40	3.47	3.35
	<i>SD</i>	.65	.78	.54	.64	.56	.59	.66	.66
marital status @ year-5 (%)									
0=other		50.3	54.6	31.1	41.7	37.1	33.3	39.6	51.3
1=married/common law		49.7	45.4	68.9	58.3	62.9	66.7	60.4	48.7
age @ year-5	<i>M</i>	27.32	28.29	28.16	28.84	30.53	30.02	29.11	29.09
	<i>SD</i>	1.94	3.09	2.08	3.06	5.89	3.12	5.21	3.56
number of dependent children @ year-5	<i>M</i>	.12	.24	.28	.40	.55	.69	.33	.31
	<i>SD</i>	.41	.63	.58	.80	.89	1.10	.74	.71

^aRefer to Table 6 for a complete summary of variable coding.

Table 28

Research Question 1.1: How Do Women "Retained" in NELM at Year-5 Compare with Men "Retained" in NELM at Year-5? Results of t-tests and Pearson χ^2 Analyses

variable ^a	test statistic	n	natural science 432	engineering 588	life science / health professions 733	mathematics / computer science 333
mother's education ^b	t-value (df)		.57 (430)	1.60 (586)	-2.72** (406.02)	-.02 (331)
father's education	t-value (df)		.95 (367.65)	1.49 (586)	-4.50*** (412.56)	.98 (331)
intrinsic motivation to enrol in NELM program	t-value (df)		1.61 (430)	.69 (586)	1.97* (405.63)	3.58*** (253.37)
extrinsic motivation to enrol in NELM program	t-value (df)		1.99 (384.85)	2.06* (586)	.24 (731)	1.45 (331)
marital status @ year-5 (1=married/CL, 0=other)	χ^2 value n df=1		.59 432	2.12 588	.80 733	3.40 333
age @ year-5	t-value (df)		-3.99*** (428.76)	-2.28* (93.14)	1.54 (717.24)	.03 (331)
number of dependent children @ year-5 ^b	t-value (df)		-2.37** (425.82)	-1.46 (88.51)	-1.78 (371.83)	.14 (331)

Note. Given the coding of the variable sex (0="female"; 1="male"), positive t-values indicate that the mean value was higher for women than for men.

^aRefer to Table 6 for a complete summary of variable coding.

^bGiven the expectation regarding the direction of the difference, one-tailed t-tests were conducted for the N, E, and M academic area sub-samples.

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

Table 29

Descriptive Statistics, by NELM Academic Area and by Sex, for Variables Entered in the t-tests and Pearson χ^2 Analyses Addressing Research Question 1.2: How Do "Retained" Women, Engaged in NELM-related Employment at Year-5 Compare with "Retained" Men, Engaged in NELM-related Employment at Year-5?

variable ^a	n	natural science		engineering		life science / health professions		mathematics / computer science	
		women 129	men 217	women 55	men 505	women 489	men 224	women 99	men 225
mother's education	M	2.48	2.47	2.62	2.37	2.43	2.70	2.30	2.32
	SD	1.11	1.19	1.16	1.15	1.11	1.25	1.20	1.15
father's education	M	2.87	2.82	2.84	2.58	2.63	3.17	2.69	2.53
	SD	1.35	1.53	1.40	1.40	1.40	1.55	1.36	1.39
intrinsic motivation to enrol in NELM	M	3.50	3.39	3.52	3.41	3.61	3.53	3.56	3.33
	SD	.63	.62	.54	.58	.53	.59	.48	.65
extrinsic motivation to enrol in NELM	M	3.35	3.20	3.59	3.38	3.41	3.42	3.45	3.36
	SD	.61	.77	.52	.63	.56	.58	.67	.66
marital status @ year-5 (%)									
0=other		45.0	53.9	30.9	40.8	37.4	33.0	40.4	49.8
1=married/common law		55.0	46.1	69.1	59.2	62.6	67.0	59.6	50.2
age @ year-5	M	27.47	28.51	28.25	28.81	30.57	30.02	28.83	29.17
	SD	2.05	3.27	2.17	2.84	5.94	3.11	4.36	3.59
number of dependent children @ year-5	M	.15	.28	.31	.40	.55	.70	.30	.32
	SD	.45	.67	.61	.80	.89	1.09	.72	.72
NELM-related further education since 1986 (%)									
0 = no		36.4	47.5	56.4	67.3	68.1	52.7	81.8	82.7
1 = yes		63.6	52.5	43.6	32.7	31.9	47.3	18.2	17.3
non-NELM-related further education since 1986 (%)									
0 = no		86.0	85.7	83.6	86.1	87.1	94.6	82.8	82.2
1 = yes		14.0	14.3	16.4	13.9	12.9	5.4	17.2	17.8
income @ year-5	M	2.74	3.45	4.51	4.93	4.28	6.49	4.24	5.19
	SD	1.83	2.19	1.70	1.68	2.09	1.93	1.80	1.83
job satisfaction @ year-5	M	1.48	1.57	1.49	1.57	1.57	1.32	1.57	1.52
	SD	.53	.58	.54	.61	.57	.51	.59	.57
salary satisfaction @ year-5	M	1.95	2.03	2.00	1.98	2.11	1.96	1.82	1.84
	SD	.72	.68	.69	.63	.67	.76	.66	.60

^aRefer to Table 6 for a complete summary of variable coding.

Table 30

Research Question 1.2: How Do "Retained" Women, Engaged in NELM-related Employment at Year-5 Compare with "Retained" Men, Engaged in NELM-related Employment at Year-5? Results of t-tests and Pearson χ^2 Analyses

variable ^a	test statistic	n	natural science 346	engineering 560	life science / health professions 713	mathematics / computer science 324
mother's education ^b	t-value (df)		.08 (344)	1.53 (558)	-2.84** (390.71)	-.09 (322)
father's education	t-value (df)		.27 (295.57)	1.28 (558)	-4.42*** (394.21)	.97 (322)
intrinsic motivation to enrol in NELM program	t-value (df)		1.56 (344)	1.35 (68.05)	1.85 (392.50)	3.44*** (247.74)
extrinsic motivation to enrol in NELM program	t-value (df)		1.95 (317.47)	2.82 (72.45)	-.21 (711)	1.22 (322)
marital status at 5-years (1=married, 0=other)	χ^2 value n df=1		2.25 346	1.63 560	1.10 713	2.06 324
age at 5-years	t-value (df)		-3.66*** (343.10)	-1.41 (558)	1.59 (699.12)	-.74 (322)
number of dependent children at 5-years ^b	t-value (df)		-2.16* (336.70)	-1.00 (76.14)	-1.78 (364.46)	-.25 (322)
NELM-related further education since 1986 (1=yes, 0=no)	χ^2 value n df=1		3.57 346	2.20 560	15.06*** 713	0.00 324
non-NELM-related further education since 1986 (1=yes 0=no)	χ^2 value n df=1		0.00 346	0.09 560	8.46** 713	0.00 324
income at 5-years	t-value (df)		-3.23*** (306.07)	-1.76 (558)	-13.45*** (711)	-2.03* (322)
job satisfaction at 5-years	t-value (df)		-1.45 (344)	-.88 (558)	5.80*** (477.98)	.59 (322)
salary satisfaction at 5-years	t-value (df)		-.96 (344)	.24 (558)	2.68** (711)	-.35 (322)

Note. Given the coding of the variable sex (0="female"; 1="male"), positive t-values indicate that the mean value was higher for women than for men.

^aRefer to Table 6 for a complete summary of variable coding.

^bGiven the expectation regarding the direction of the difference, one-tailed t-tests were conducted for the N, E, and M academic area sub-samples.

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

Research Question 2: How Do "Retained" Women Compare With "Non-Retained" Women?

2.1. Research question 2.1 asked: Upon considering each of the NELM groups of bachelor's degree holders *separately*, how would women engaged in S&T-related pursuits at the 5-year post-graduation follow-up interview (i.e., in a NELM-related career or field of further study) compare with those women who were *not* engaged in S&T-related pursuits at the 5-year post-graduation follow-up interview, on the following variables: (a) mother's level of education; (b) father's level of education; (c) intrinsic motivation for having originally enrolled in an N, E, L, or M program of study; (d) extrinsic motivation for having originally enrolled in an N, E, L, or M program of study; (e) marital status at the 5-year follow-up; (f) age at the 5-year follow-up; (g) number of dependent children at the 5-year follow-up? A summary of the expectations with regard to this research question was presented in Table 5. Tables 31 and 32, respectively, present the results of the descriptive and inferential analyses conducted to address this research question.

2.2. Research question 2.2 asked: Upon considering each of the NELM groups of bachelor's degree holders *separately*, how would women engaged in S&T-related *employment* at the 5-year follow-up interview (i.e., in a NELM-related career) compare with those women who were engaged in non-NELM-related *employment* at the 5-year post-graduation follow-up interview, on each of the seven variables listed above (i.e., [a] to [g]), as well as the variables: (h) further NELM-related education since 1986; (i) further non-NELM-related education since 1986; (j) income at the 5-year follow-up; (k) job satisfaction at the 5-year follow-up; (l) salary satisfaction at the 5-year follow-up? A summary of the expectations with regard to this research question was also presented in Table 5. In Tables 33 and 34, respectively, the results of the descriptive and inferential analyses conducted to address this research question are presented.

Table 31

Descriptive Statistics, by NELM Academic Area and by Sex, for Variables Entered in the t-tests and Pearson χ^2 Analyses Addressing Research Question 2.1: How Do Women "Retained" in NELM at Year-5 Compare with Women "Not-Retained" in NELM at Year-5?

variable ^a	n	natural science		engineering		life science / health professions		mathematics / computer science	
		IN 161	OUT 141	IN 61	OUT 30	IN 502	OUT 82	IN 101	OUT 62
mother's education	M	2.60	2.61	2.62	2.73	2.44	2.18	2.31	2.25
	SD	1.14	1.25	1.16	1.34	1.12	1.07	1.21	1.14
father's education	M	3.01	2.79	2.87	3.17	2.63	2.41	2.69	2.28
	SD	1.36	1.49	1.40	1.49	1.41	1.35	1.38	1.25
intrinsic motivation to enrol in NELM	M	3.51	3.55	3.48	3.47	3.61	3.54	3.55	3.27
	SD	.60	.55	.59	.51	.52	.56	.48	.72
extrinsic motivation to enrol in NELM	M	3.33	3.29	3.54	3.55	3.41	3.44	3.47	3.21
	SD	.65	.71	.54	.48	.56	.61	.66	.80
marital status @ year-5 (%)									
0=other		50.3	45.4	31.1	56.7	37.1	43.9	39.6	45.9
1=married/common law		49.7	54.6	68.9	43.3	62.9	56.1	60.4	54.1
age @ year-5	M	27.32	27.88	28.16	28.00	30.53	31.08	29.11	29.13
	SD	1.94	2.88	2.08	1.29	5.89	6.84	5.21	4.52
number of dependent children @ year-5	M	.12	.26	.28	.17	.55	.40	.33	.36
	SD	.42	.64	.58	.46	.89	.77	.74	.71

^aRefer to Table 6 for a complete summary of variable coding.

Table 32

Research Question 2.1: How Do Women "Retained" in NELM at Year-5 Compare with Women "Not-Retained" in NELM at Year-5? Results of t-tests and Pearson χ^2 Analyses

variable ^a	test statistic	n	natural science 302	engineering 91	life science / health professions 584	mathematics / computer science 162
mother's education	t-value (df)		.05 (300)	.41 (89)	-1.95 (582)	-.32 (160)
father's education	t-value (df)		-1.32 (285.29)	.94 (89)	-1.28 (582)	-1.92 (160)
intrinsic motivation to enrol in NELM program	t-value (df)		.61 (300)	-.07 (89)	-1.14 (582)	-2.74** (93.42)
extrinsic motivation to enrol in NELM program	t-value (df)		-.58 (300)	.08 (89)	.38 (582)	-2.17* (160)
marital status @ year-5 (1=married/CL, 0=other)	χ^2 value n df=1		.54 302	4.46* 91	1.13 584	.39 162
age @ year-5	t-value (df)		1.94 (239.68)	-.39 (89)	.77 (582)	.03 (160)
number of dependent children @ year-5 ^b	t-value (df)		2.19* (234.25)	-.92 (89)	-1.53 (119.10)	.29 (160)

Note. Given the coding of the two groups of women (0="Not-Retained"; 1="Retained"), positive *t*-values indicate that the mean value was higher for women who were *not* retained in NELM, than for those who were.

^aRefer to Table 6 for a complete summary of variable coding.

^bGiven the expectation regarding the direction of the difference, one-tailed *t*-tests were conducted for the N, E, and M academic area sub-samples.

p*<.05; *p*<.01

Table 33

Descriptive Statistics, by NELM Academic Area and by Sex, for Variables Entered in the t-tests and Pearson χ^2 Analyses Addressing Research Question 2.2: How Do "Retained" Women, Engaged in NELM-related Employment at Year-5 Compare with "Non-Retained" Women, Engaged in non-NELM-related Employment at Year-5?

variable ^a	n	natural science		engineering		life science / health professions		mathematics / computer science	
		IN 129	OUT 131	IN 55	OUT 33	IN 489	OUT 74	IN 99	OUT 58
mother's education	M	2.48	2.59	2.62	2.73	2.43	2.22	2.30	2.22
	SD	1.11	1.25	1.16	1.34	1.11	1.09	1.20	1.13
father's education	M	2.87	2.73	2.84	3.17	2.63	2.42	2.69	2.28
	SD	1.35	1.48	1.40	1.49	1.40	1.38	1.36	1.27
intrinsic motivation to enrol in NELM	M	3.50	3.53	3.52	3.47	3.61	3.52	3.56	3.24
	SD	.63	.55	.54	.51	.53	.58	.48	.72
extrinsic motivation to enrol in NELM	M	3.35	3.28	3.59	3.55	3.41	3.43	3.45	3.18
	SD	.61	.70	.52	.48	.56	.62	.67	.80
marital status @ year-5 (%)									
0=other		45.0	44.3	30.9	56.7	37.4	40.5	40.4	44.8
1=married/common law		55.0	55.7	69.1	43.3	62.6	59.5	59.6	55.2
age @ year-5	M	27.47	27.93	28.25	28.00	30.57	30.57	28.83	29.22
	SD	2.05	2.97	2.17	1.29	5.94	5.89	4.36	4.62
number of dependent children @ year-5	M	.15	.27	.31	.17	.55	.41	.30	.38
	SD	.45	.64	.61	.46	.89	.78	.72	.72
NELM-related further education since 1986 (%)									
0 = no		36.4	84.0	56.4	83.3	68.1	78.4	81.8	89.7
1 = yes		63.6	16.0	43.6	16.7	31.9	21.6	18.2	10.3
non-NELM-related further education since 1986 (%)									
0 = no		86.0	45.8	83.6	60.0	87.1	70.3	82.8	55.2
1 = yes		14.0	54.2	16.4	40.0	12.9	29.7	17.2	44.8
income @ year-5	M	2.74	2.63	4.51	3.83	4.28	3.41	4.24	3.55
	SD	1.83	1.77	1.70	2.14	2.09	2.26	1.80	2.19
job satisfaction @ year-5	M	1.48	1.61	1.49	1.70	1.57	1.54	1.57	1.50
	SD	.53	.66	.54	.65	.57	.55	.59	.50
salary satisfaction @ year-5	M	1.95	2.05	2.00	1.77	2.11	1.99	1.82	1.97
	SD	.72	.81	.69	.57	.67	.85	.66	.73

^aRefer to Table 6 for a complete summary of variable coding.

Table 34

Research Question 2.2: How Do "Retained" Women, Engaged in NELM-related Employment at Year-5 Compare with "Non-Retained" Women, Engaged in non-NELM-related Employment at Year-5? Results of t-tests and Pearson χ^2 Analyses

variable ^a	test statistic	n	natural science 260	engineering 85	life science / health professions 563	mathematics / computer science 157
mother's education	t-value (df)		.73 (258)	.41 (83)	-1.57 (561)	-.41 (155)
father's education	t-value (df)		-.77 (256.70)	1.02 (83)	-1.20 (561)	-1.87 (155)
intrinsic motivation to enrol in NELM program	t-value (df)		.42 (258)	-.43 (83)	-1.37 (561)	-2.95*** (87.52)
extrinsic motivation to enrol in NELM program	t-value (df)		-.86 (258)	-.36 (83)	.34 (561)	-2.30* (155)
marital status at 5-years (1=married, 0=other)	χ^2 value n df=1		0.00 260	4.35* 85	.15 563	.14 157
age at 5-years	t-value (df)		1.48 (231.05)	-.59 (83)	.00 (561)	.54 (155)
number of dependent children at 5-years ^b	t-value (df)		1.74* (233.72)	-1.22 (73.97)	-1.45 (104.48)	.64 (155)
NELM-related further education since 1986 (1=yes, 0=no)	χ^2 value n df=1		59.42*** 260	5.14* 85	2.74 563	1.18 157
non-NELM-related further education since 1986 (1=yes 0=no)	χ^2 value n df=1		44.99*** 260	4.63* 85	12.95*** 563	12.71*** 157
income at 5-years	t-value (df)		-.50 (258)	-1.60 (83)	-3.30*** (561)	-2.04* (102.01)
job satisfaction at 5-years	t-value (df)		1.75 (247.89)	1.58 (83)	-.42 (561)	-.71 (155)
salary satisfaction at 5-years	t-value (df)		.97 (258)	-1.57 (83)	-1.16 (87.15)	1.30 (155)

Note. Given the coding of the two groups of women (0="Not-Retained"; 1="Retained"), positive *t*-values indicate that the mean value was higher for women who were *not* retained in NELM, than for those who were.

^aRefer to Table 6 for a complete summary of variable coding.

^bGiven the expectation regarding the direction of the difference, one-tailed *t*-tests were conducted for the N, E, and M academic area sub-samples.

p*<.05; **p*<.001

CHAPTER FIVE
DISCUSSION

Introduction

This investigation sought to address the question: Can the continued underrepresentation of women in Canada's S&T occupational domains be attributed to a lower rate of female persistence in this sector of employment, and not merely to the relatively low number of women initially pursuing S&T academic programs? A longitudinal investigation of the actual post-baccalaureate educational and labour force behaviour of a national Canadian sample of recent Natural Science, Engineering, Life Science/Health Professions, and Mathematics/Computer Science bachelor's degree earners was carried out in order to address this question.

For the purposes of this investigation, a set of four hypotheses was tested. This set actually represented four complementary ways of testing a single, fundamental postulation, namely, that early career retention among undergraduate degree holders in S&T would be proportionately *lower* for young women than for young men.

As is common in most research, a number of problems and issues arose during the conduct of the present investigation, both while addressing the question posed above and while carrying out follow-up univariate analyses aimed at taking a closer look at those young women who, 5 years after obtaining an undergraduate degree in science and technology, were found to be pursuing careers in S&T. These issues and problems are discussed in the second section of this chapter.

Moreover, as summarized in the section that follows, tests of the four hypotheses failed to support their single underlying assumption of lower female retention in S&T careers. Taken together, however, the present findings have several important policy implications, which are discussed in the concluding section of this chapter.

Summary of Findings

Hypothesis 1. The *entire* sample of NELM bachelor's degree holders was analyzed as a

whole, employing the 2-year and 5-year post-graduation follow-up interview data, respectively, in the tests of Hypothesis 1(a) and 1(b). At year-2, based on the test of the gross-effect-of-sex model, it did appear as though retention (vs. non-retention) in NELM could be reliably predicted on the basis of sex, only. This finding failed to support Hypothesis 1(a), however, as the probability of being retained in NELM was actually found to be *higher* for women than for men, *not* (as hypothesized) *lower*. In the test of the net-effect-of-sex model, sex failed to significantly *enhance* the prediction of NELM retention status at year-2 beyond the variable NELM program of study. Thus, once the variable NELM program of study had been accounted for, sex no longer made any additive (or interactive) contribution to the prediction of NELM retention status at the 2-year post-graduation follow-up interview.

The findings were highly similar at year-5. Based on the test of gross-effect-of-sex model, it once again appeared as though NELM retention status could be reliably predicted on the basis of sex, only. However, as before, this finding failed to support Hypothesis 1(b), as women were actually found to be *more* (not less) *likely* to be retained in NELM-related pursuits than were their male counterparts. In the test of the net-effect-of-sex model, sex again failed to contribute significantly to the prediction of NELM retention status, beyond the variable NELM program of study. Hence, once again, sex no longer made any additive (or interactive) contribution to the prediction of retention (vs. non-retention) in NELM at the 5-year post-graduation follow-up interview.

Taken together, these findings resulted in a failure to reject null Hypotheses 1(a) and 1(b). It was concluded that, at both post-graduation year-2 and year-5, rather than reflecting a true (albeit unanticipated) "sex difference", the "gross" effect of sex found was likely associated with differences in the *proportions* of women versus men pursuing the N, E, L, and M programs of study. Moreover, having considered both the post-baccalaureate educational *and* labour force behaviour of the respondents, the probability of non-retention at the 2-year and the 5-year post-graduation follow-up interviews was *not* found to be lower for women than for men, among NELM bachelor's bachelors degree holders as a whole, once the effects of the NELM program of study variable had been statistically accounted for.

These findings did, however, lend support to three earlier methodological decisions

concerning the design of the present investigation (see Chapter 3). First, the fact that the gross-effect-of-sex findings (in the direction *opposite* to that hypothesized) were deemed to be associated with the differential "base rates" of women versus men comprising the N, E, L, and M cohorts supported the decision to test each of the remaining hypotheses separately by academic area (i.e., to analyze separately the sub-sets of data for the N, E, L, and M cohorts of bachelor's degree holders). This allowed for the disclosure of important inter-NELM differences in NELM retention status (discussed below), which were first apparent in Figures 4 and 5 and in Table 8, that could have been masked had the NELM academic areas been lumped together in subsequent analyses. Second, the fact that the 2-year and the 5-year post-graduation follow-up findings were found to exhibit an extremely high degree of similarity supported the decision to consider the outcome of NELM retention status at 5 years only, in testing each of the remaining hypotheses. Third, the use of data collected at the 2-year post-graduation follow-up interview for predictor (i.e., antecedent) variables, but not for the outcome (i.e., criterion) variable, served to eliminate potential reciprocal-causality⁵⁰ difficulties and to exploit the longitudinal character of the data.

Hypothesis 2. Data for all of the NELM bachelor's degree holders were again analyzed, though separately by N, E, L, and M academic area, respectively, and to predict the 5-year post-graduation outcome, only, in the tests of Hypothesis 2(a), 2(b), 2(c), and 2(d). In the sub-sample of Natural Science bachelor's degree holders, tests of both the gross- *and* net-effect-of-sex models failed to support Hypothesis 2(a). Retention (vs. non-retention) in NELM at post-graduation year-5 could not be reliably predicted on the basis of sex alone, nor could it be reliably predicted on the basis of sex, after adjusting for the effects of the antecedent variables: mother's level of education; father's level of education; respondents' age at year-2; marital status at year-2; number of dependent children at year-2; intrinsic motivation for having originally enrolled in a Natural Science program of study; and, extrinsic motivation for having originally enrolled in a Natural Science program of study. However, one of these antecedent variables, namely, marital status at year-2, was found to be a marginally significant predictor of

⁵⁰As noted previously, had predictor variables measured at the 2-year post-graduation follow-up interview (e.g., marital status at 2-years) been used to predict NELM retention status at *year-2*, it would not have been clear whether marital status had influenced retention, whether retention had influenced marital status, or both.

NELM retention status. Specifically, being married (or living common law) at post-graduation year-2 was found to marginally *decrease* the probability of being retained in NELM at post-graduation year-5. Given that this marginally significant finding was unique to this sub-sample of respondents (and in light of the multiple statistical tests conducted in this investigation), it was considered to be tentative, pending replication in an independent sample.

Among Engineering bachelor's degree holders, tests of the gross- *and* net-effect-of-sex models also failed to support Hypothesis 2(b). Retention (vs. non-retention) in NELM at post-graduation year-5 could not be reliably predicted on the basis of sex alone, nor did sex significantly enhance the prediction of NELM retention status beyond the 7 antecedent variables (listed above).

In the sub-sample of Life Science/Health Professions bachelor's degree holders, tests of the gross- *and* net-effect-of-sex models failed to support Hypothesis 2(c), as well. As in the previous two sub-samples of respondents, retention (vs. non-retention) in NELM at post-graduation year-5 could not be reliably predicted on the basis of sex alone, nor based on sex, controlling for the effects of the 7 antecedent variables. The probability of retention was found to increase, however, with increasing values on two antecedent variables—namely, mother's level of education and (to a marginal degree) father's level of education. As well, a marginally significant interaction of sex with father's level of education showed men who were "retained" in NELM tended to have fathers with marginally higher levels of education than did those men who were "not retained", whereas, among women, father's level of education did not differ between those who were "retained" and "not retained" in NELM at post-graduation year-5. Being unique to this sub-sample of respondents, however, these results were considered to be tentative, as well, pending replication in an independent sample.

Finally, among Mathematics/Computer Science bachelor's degree holders, tests of the gross- *and* net-effect-of-sex models failed to support Hypothesis 2(d), also. As before, retention (vs. non-retention) in NELM at post-graduation year-5 could not be reliably predicted on the basis of sex alone, nor based on sex, with the effects of the 7 antecedent variables statistically accounted for. The probability of retention was found to marginally increase, however, with increasing levels of intrinsic motivation for having originally enrolled in an "M" program of

study. As well, a marginally significant interaction of sex with intrinsic motivation showed that non-retained women and men were approximately equally intrinsically motivated, whereas retained women tended to be slightly more intrinsically motivated than were retained men. Stated another way, among women, those who were "retained" were noticeably more intrinsically motivated than were those who were "not retained", whereas, among men, those who were "retained" were only slightly more intrinsically motivated than were those who were "not retained". These results were also considered to be tentative, pending replication in an independent sample, as they were unique to this sub-sample of respondents, as well.

Taken together, these findings resulted in a failure to reject null Hypotheses 2(a), 2(b), 2(c), and 2(d). Moreover, as had been suggested by the descriptive findings that appeared in Figure 6, having considered both the post-baccalaureate educational *and* labour force behaviour of the respondents, the probability of being retained in NELM at the 5-year post-graduation follow-up interview was *not* found to be lower (or different) for women than for men, in any of the four academic areas (even upon controlling for the effects of the available antecedent variables).

Hypothesis 3. In order to allow for the consideration of further education and employment-related variables, data for the sub-samples of "employed" N, E, L, and M bachelor's degree holders, respectively, (i.e., those who had been *working at both* post-graduation follow-ups), were selected for analysis in the tests of Hypothesis 3(a), 3(b), 3(c), and 3(d). Among employed Natural Science bachelor's degree holders, tests of the gross- *and* net-effect-of-sex models failed to support Hypothesis 3(a). Retention (vs. non-retention) in NELM at year-5 could not be reliably predicted on the basis of sex alone, nor based on sex, adjusting for the effects of the antecedent variables (i.e., the 7 antecedents listed above, as well as further education, income, job satisfaction, and salary satisfaction at year-2). Interestingly, however, NELM retention status could be reliably predicted based on marital status (albeit marginally so) as well as on the basis of the pair of design variables derived from further education at year-2. Specifically, further *NELM-related* education was found to significantly increase the probability of retention in NELM at post-graduation year-5, whereas further *non-NELM-related* education was to found to decrease this probability. Similarly, being married

(or living common law) at post-graduation year-2 marginally *decreased* the probability of being retained in NELM at post-graduation year-5.

In the sub-sample of employed Engineering bachelor's degree holders, tests of the gross- and net-effect-of-sex models failed to support Hypothesis 3(b), also. Again, retention (vs. non-retention) in NELM at post-graduation year-5 could not be reliably predicted on the basis of sex alone, nor based on sex with the effects of the 11 antecedent variables statistically removed. NELM retention status could, however, be reliably predicted on the basis of job satisfaction at year-2, as well as based on the pair of design variables derived from the predictor variable further education at year-2. Specifically, higher levels of job satisfaction at year-2 were found to increase the probability of retention in NELM at post-graduation year-5, as was further *NELM-related* education at year-2 (albeit marginally so), whereas further *non-NELM-related* education at year-2 was found to marginally decrease the probability of this outcome.

Among employed Life Science/Health Professions bachelor's degree holders, the test of the gross-effect-of-sex model failed to support Hypothesis 3(c), as retention (vs. non-retention) in NELM at post-graduation year-5 could not be reliably predicted on the basis of sex alone. In the test of the net-effect-of sex model, however (wherein the effects of the 11 antecedent variables had been statistically accounted for), sex was found to be a marginally significant predictor of NELM retention status. This finding offered only marginal support to Hypothesis 3(c). As the reader will recall, this was a non-directional hypothesis which predicted that the probability of being retained in NELM-related employment at the 5-year post-graduation follow-up interview would be *different* for young women versus young men. Specifically, in this cohort of employed Life Science/Health Professions bachelor's degree holders, *men* were found to be marginally *less likely* to be retained in NELM-related employment at year-5 than were their female counterparts. NELM retention status could also be reliably predicted on the basis of income at year-2, as well as based on *one* of the pair of design variables derived from further education at year-2. Specifically, higher levels of income at year-2 were found to increase the probability of retention in NELM at post-graduation year-5, whereas further *non-NELM-related* education at year-2 was found to decrease this probability. Findings also showed the probability of retention in NELM at post-graduation year-5 to increase (albeit marginally so) among respondents with more highly

educated fathers, and with higher levels of intrinsic motivation for having originally enrolled in a Life Science/Health Professions program of study. A marginally significant interaction of sex with father's education showed that men who were "retained" in NELM tended to have fathers with higher levels of education than did those men who were "not retained"; whereas, among women, father's level of education was highly similar, whether or not they were retained in NELM at post-graduation year-5.

Finally, in the sub-sample of employed Mathematics/Computer Science bachelor's degree holders, tests of the gross- *and* net-effect-of-sex models failed to support Hypothesis 3(d), also. Once again, retention (vs. non-retention) in NELM at year-5 could not be reliably predicted on the basis of sex alone, nor based on sex when controlling for the effects of the 11 antecedent variables. Yet again, NELM retention status could, however, be reliably predicted on the basis of *one* of the pair of design variables derived from the predictor variable further education at year-2. Specifically, further *non-NELM-related* education at year-2 was, as before, found to decrease the probability of retention in NELM at post-graduation year-5. Higher levels of intrinsic motivation for having originally enrolled in an "M" program of study, on the other hand, were found (marginally) to increase this probability.

Taken together, these findings resulted in a failure to reject null Hypotheses 3(a), 3(b), 3(c)⁵¹, and 3(d). Overall, having given consideration *only* to the post-baccalaureate labour force behaviour of recent NELM bachelor's degree earners, and in spite of several interesting findings with regard to specific antecedent variables in the respective N, E, L, and M cohorts, NELM retention status at post-graduation year-5 could *not* be reliably predicted by sex. Across all four cohorts, however, NELM retention status at post-graduation year-5 could be reliably and consistently predicted by *one* of the pair of design variables derived from further education at year-2, namely, further *non-NELM-related* education at year-2. Specifically, in each of the four sub-samples of employed bachelor's degree holders, the probability of being retained in NELM-related employment *decreased* with further *non-NELM-related* education. Moreover, as

⁵¹As noted in Chapter 4, in light of the multiple statistical tests conducted in this investigation, the marginally significant findings with regard to sex were not considered to be sufficient grounds on which to reject the null hypothesis 3(c).

had been apparent in the descriptive findings presented in Figure 7, among employed sub-samples of N, E, L, and M respondents, the probability of being retained in NELM-related employment at post-graduation year-5 was *not* found to be *lower* (or significantly different) for women than for men (even when statistically controlling for the effects of the available antecedent variables).

Hypothesis 4. In order to assess the probability of *returning* to NELM-related pursuits at post-graduation year-5 (from non-retention in NELM at year-2), data for the sub-samples of N, E, L, and M respondents who were "not retained" in NELM at the 2-year post-graduation follow-up interview were selected for analysis in the tests of Hypotheses 4(a), 4(b), 4(c), and 4(d), respectively. Among Natural Science bachelor's degree holders not retained in NELM at post-graduation year-2, tests of the gross- *and* net-effect-of-sex models failed to support Hypothesis 4(a). Retention (i.e., in this context, *return* to NELM-related pursuits) versus *continued* non-retention in NELM at post-graduation year-5 could not be reliably predicted on the basis of sex alone, nor based on sex, after adjusting for the effects of the 7 antecedent variables. The probability of retention was found to marginally *decrease*, however, with increasing values on two of these antecedent variables, namely, age and marital status at year-2 (i.e., older respondents, and those who were married [or living common law] at post-graduation year-2 were marginally *less likely* to be retained in NELM at post-graduation year-5).

In the sub-sample of Engineering bachelor's degree holders not retained in NELM at post-graduation year-2, tests of the gross- *and* net-effect-of-sex models failed to support Hypothesis 4(b), also. NELM retention status at post-graduation year-5 could, again, not be reliably predicted on the basis of sex alone, nor based on sex, controlling for the effects of the 7 antecedent variables.

Among Life Science/Health Professions bachelor's degree holders not retained in NELM at post-graduation year-2, tests of both the gross- *and* the net-effect-of-sex models offered only marginal support for Hypothesis 4(c). The reader will recall that, in the case of this "L" cohort, this hypothesis was non-directional, predicting that the probability of *returning* to NELM-related endeavours at post-graduation year-5 (from non-retention status at post-graduation year-2) would be *different* for young women versus young men. Herein, *return* to NELM-related pursuits (i.e.,

retention) versus *continued* non-retention in NELM at post-graduation year-5 could be (marginally) reliably predicted, both on the basis of the predictor variable sex alone, *and* on the basis of sex, after adjusting for the effects of the 7 antecedent variables. In each case, the probability of being retained in (i.e., *returning to*) NELM was found to be marginally *higher* for women than for men.

Finally, in the sub-sample of Mathematics/Computer Science bachelor's degree holders who were *not* retained in NELM at post-graduation year-2, tests of the gross- *and* net-effect-of-sex models failed to support Hypothesis 4(d). As was the case in the first two corresponding sub-samples of bachelor's degree holders discussed above (i.e., the Natural Science and Engineering cohorts), *return* to NELM-related pursuits (i.e., retention) versus *continued* non-retention in NELM at post-graduation year-5 could not be reliably predicted on the basis of sex alone, nor based on sex, controlling for the effects of the 7 antecedent variables. The probability of *returning* to NELM-related pursuits was found to increase marginally, however, with increasing intrinsic motivation for originally having enrolling in an "M" program of study.

Taken together, these findings resulted in a failure to reject null Hypotheses 4(a), 4(b), 4(c)⁵², and 4(d). Having considered both the post-baccalaureate educational *and* labour force behaviour of recent S&T bachelor's degree earners, *return* to NELM retention status at the 5-year post-graduation follow-up interview could *not* be reliably predicted on the basis of sex. Moreover, as demonstrated in the descriptive findings that appeared in Figure 8, among respondents *not* retained in NELM at post-graduation year-2, the probability of *returning* to NELM-related pursuits at the 5-year post-graduation follow-up was *not* found to be lower (or significantly different) for women than for men (even when controlling for the effects of the available antecedent variables).

Research questions. Research question 1.1 sought to compare women N, E, L, and M bachelor's degree earners who were engaged in NELM-related pursuits at the 5-year

⁵²As was the case in the failure to reject null Hypothesis 3(c) (above), in light of the multiple statistical tests conducted in this investigation, the marginally significant findings with regard to sex in this instance were not considered to be sufficient grounds on which to reject the null Hypothesis 4(c), either.

post-graduation follow-up interview (i.e., in a NELM-related career or field of further study) with their male counterparts. Among Natural Science bachelor's degree holders, men retained in NELM at year-5 were found to be older and to have a greater number of dependent children than women. These findings supported 3 of 5 expectations concerning this cohort (i.e., that women would have fewer children, and that there would be no differences in the intrinsic or extrinsic motivation of these women and men for having originally enrolled in an "N" program of study).

Among Engineering bachelor's degree holders, no statistically significant sex differences were found, lending support to 2 of the 5 expectations for this cohort (i.e., that there would be no differences in the intrinsic or extrinsic motivation of these women and men for having originally enrolled in an "E" program of study). Among Life Science/Health Professions bachelor's degree holders, for whom no expectations had been stated, men retained in NELM at year-5 were found to have more highly educated parents (i.e., mothers and fathers). Finally, among Mathematics/Computer Science bachelor's degree holders, women retained in NELM at year-5 were found to have been more highly *intrinsically* motivated upon originally enrolling in their program of study than were their male counterparts. Thus, only 1 of the 5 expectations was upheld in this final cohort (i.e., that there would be no difference in the extrinsic motivation of these women and men for having originally enrolled in an "M" program of study).

Research question 1.2 sought to compare the sub-samples of women N, E, L, and M bachelor's degree earners who were engaged in S&T-related *employment* at the 5-year follow-up interview (i.e., in a NELM-related career) with their male counterparts. Among Natural Science bachelor's degree holders who were employed in NELM at year-5, men were found to be older and to have higher incomes than women. These findings lent support to 4 of the 8 expectations with regard to this cohort (i.e., that there would be no differences in the intrinsic or extrinsic motivation of these women and men for having originally enrolled in an "N" program of study, and no difference in their job satisfaction or in their salary satisfaction at year-5), and opposed one (specifically, no sex difference in income at year-5 had been anticipated).

Among Engineering bachelor's degree holders employed in NELM at year-5, no statistically significant sex differences were found, lending support to 5 of the 8 expectations with regard to this cohort (i.e., that there would be no differences in the intrinsic or extrinsic

motivation of these women and men for having originally enrolled in an "E" program of study, no difference in their income, in their job satisfaction, or in their salary satisfaction at year-5). Among Life Science/Health Professions bachelor's degree holders employed in NELM at year-5, for whom no expectations had been stated, men were found to have more highly educated parents (i.e., mothers and fathers) and higher incomes than women, whereas women were found to have higher job satisfaction and salary satisfaction than men. Also, since 1986, a significantly greater proportion of men in this cohort had pursued further *NELM-related* education, whereas a significantly greater proportion of women therein had pursued further *non-NELM-related* education. Finally, among employed Mathematics/Computer Science bachelor's degree holders, women retained in NELM-related employment at post-graduation year-5 were found to have been more highly *intrinsically* motivated upon originally enrolling in their program of study than men. Thus, 4 of the 8 expectations regarding this final cohort were upheld (i.e., that there would be no difference in the extrinsic motivation of these women and men for having originally enrolled in an "M" program of study, no difference in their income, in their job satisfaction, or in their salary satisfaction at year-5), and 1 of the 8 was opposed (specifically, no sex difference in intrinsic motivation had been anticipated).

Research question 2.1 sought to compare women N, E, L, and M bachelor's degree earners who were engaged in S&T-related pursuits at the 5-year post-graduation follow-up interview (i.e., in a NELM-related career or field of further study) with those women who were *not* engaged in S&T-related pursuits at that time. The only statistically significant finding resulting from this comparison occurred among Mathematics/Computer Science bachelor's degree holders. It showed the women in this cohort who were retained in NELM post-graduation year-5 to have been more highly *intrinsically* motivated upon originally enrolling in their program of study than were *non-retained* women. Thus, these findings failed to lend support to either of the 2 expectations that had been held with regard to the N, E, and M cohorts (i.e., that fewer "retained" [vs. "non-retained"] women would be married, and that "retained" women [vs. "non-retained" women] would have fewer children).

Finally, research question 2.2 sought to compare the sub-samples of women N, E, L, and M bachelor's degree earners who were engaged in S&T-related *employment* at the 5-year

post-graduation follow-up interview (i.e., in a NELM-related career) with those who were engaged in non-NELM-related *employment* at that time. In the employed sub-sample of women Natural Science bachelor's degree holders, since 1986, a significantly greater proportion of women retained in NELM had pursued further *NELM-related* education, whereas a significantly greater proportion of women who were *not* retained in NELM had pursued further *non-NELM-related* education. Thus, from among the 4 expectations with regard to this cohort, these findings lent support to the 2 rather intuitive ones (i.e., that "retained" respondents would be proportionately more likely to have pursued further *NELM-related* education, and "non-retained" respondents would be proportionately more likely to have pursued further *non-NELM-related* education).

Among women Engineering bachelor's degree holders who were employed at year-5, no statistically significant differences between those who were retained and those who were *not* retained in NELM-related employment were found; these findings thus failed to lend support to any of the 4 expectations that had been held for this cohort. Among women Life Science/Health Professions bachelor's degree holders employed at year-5, a significantly greater proportion of those who were *not* retained in NELM-related employment were found to have pursued further *non-NELM-related* education since 1986. Thus, from among the 4 expectations with regard to this cohort, these findings lent support to only 1 (specifically, 1 of the 2 rather intuitive expectations, namely, that "non-retained" respondents would be proportionately more likely to have pursued further *non-NELM-related* education). Finally, among employed women Mathematics/Computer Science bachelor's degree holders, those who were retained in NELM at post-graduation year-5 were found to have been more highly *intrinsically* motivated upon having originally enrolled in their program of study than were those women engaged in non-NELM-related employment at year-5. As well, a significantly greater proportion of *non-retained* women had pursued further *non-NELM-related* education since 1986. Thus, these findings also upheld only 1 of 4 expectations with regard to this cohort (i.e., that "non-retained" respondents would be proportionately more likely to have pursued further *non-NELM-related* education).

In sum, of the many variables given consideration in both the analyses involved in

hypothesis testing and those addressing the research questions, only *further education* was found to have consistent and reliable predictive and discriminating properties across all four NELM academic areas. Specifically, further *non-NELM-related* education at year-2 was found to *decrease* the probability of retention in NELM at post-graduation year-5, and, further *non-NELM-related* education at year-5 served to distinguish between women NELM bachelor's degree holders who were retained, and those women who were *not*-retained in NELM at post-graduation year-5.

Issues and Problems

Although tests of each of the four hypotheses failed to support the fundamental postulation that early career retention among undergraduate degree holders in S&T would be proportionately lower for young women than for young men, a number of important inter-NELM academic-area differences were found. A brief discussion of these findings, in the context of the literature reviewed in Chapter 1, follows. This section concludes with a critical discussion of the scholarly contribution, strengths, and limitations of the present investigation.

Natural Science. Among Natural Science bachelor's degree holders—that is, the cohort having the *lowest* rate of retention in NELM overall—marital status had a consistent (albeit marginally significant) predictive influence, such that respondents who were married (or living common law) at post-graduation year-2 were marginally *less likely* to be retained in NELM at year-5. This was seen to be case when both the respondents' post-baccalaureate educational *and* labour force behaviour were considered, when consideration was given to their labour force behaviour, *only*, and when assessing the likelihood of their *return* to NELM-related pursuits at post-graduation year-5, from *non-NELM* retention status at year-2.

Coding difficulties with the marital-status variable were detailed in Chapter 3. Specifically, due to the manner in which Statistics Canada posed the questions used to assess marital status, a potential confound was introduced into the present investigation by precluding the possibility of any separate consideration of individuals who were married from those who were living common law. Consequently, marital status was treated as a dichotomous variable herein, with one category serving to classify individuals who were either single (i.e., never

married), widowed, or divorced, and the other category serving to classify individuals who were either married or living common law.

As discussed in Chapter 1, previous research suggests that women in nontraditional occupations—including those within S&T-related domains—tend to marry later, or are less likely ever to marry, than either their male counterparts in the same occupations or women engaged in traditional occupations (Card et al., 1980; Jagacinski, 1987b; Marshall, 1987, 1989; Tangri, 1972). The present investigation failed to support these findings of previous research, in that there was no significant interaction of marital status at year-2 with sex; thus, this variable—coded as it was—can be assumed to have influenced women's and men's probability of being retained in NELM at the 5-year post-graduation follow-up interview in essentially the same manner. Further (also failing to support the findings of previous research), no differences in marital status at year-5 were detected, either between women and men retained in NELM, or between women who were retained and those who were *not*-retained in NELM. The present findings thus beg the question: Would this have been the case had individuals who were married been considered separately from those who were living common law? It is left to future research to address this question.

Another interesting finding unique to the cohort of Natural Science bachelor's degree holders was that, at post-graduation year-5, compared with their male counterparts, women who were retained in NELM tended to be younger, to have fewer children, and lower incomes. Although any attempt to account for these findings is largely speculative, previous research has shown that women in nontraditional careers tend to postpone having children or have fewer children than do men (Jagacinski, 1987b; Marshall, 1987, 1989; Perucci, 1970). With regard to income, the wage-gap between men and women of similar educational-backgrounds in Canada has been extensively debated (cf. Ghulam, 1993). Thus, these findings with regard to number of dependent children and income could be seen to bolster previous research, or, to be simply related to the fact that the women in this cohort were younger than the men, and therefore had had less "time" either to bear children or to establish themselves in the labour force. Again, any definitive explanation of these findings awaits future research.

Engineering. In light of the abundance of recent research efforts focussing on women in

engineering in Canada (cf. Canadian Committee on Women in Engineering, 1992; ISTC, 1992), findings with regard to the cohort of Engineering bachelor's degree holders were of particular interest. Surprisingly, no significant differences on the available antecedent variables were found when women Engineering bachelor's degree earners who had been retained in NELM at the 5-year post-graduation follow-up interview were compared with retained men, or with *non-retained* women. In fact, the only significant finding unique to these Engineering bachelor's degree holders—which occurred when consideration was given to their labour force behaviour, *only*—was with regard to job satisfaction. This finding showed those with higher levels of job satisfaction at post-graduation year-2 to be significantly *more likely* to be retained in NELM at post-graduation year-5. Again, there was no interaction of job satisfaction at year-2 with sex; thus, this variable can be assumed to have influenced women's and men's probability of being retained in NELM at the 5-year post-graduation follow-up interview in an essentially similar manner.

As discussed in Chapter 1, previous research has shown there to be a lack of systematic sex differences in job satisfaction, with both the level and sources of women's and men's job satisfaction tending to vary in relation to the degree of occupational sex-segregation existing in their career field (Moore, 1985; Smart & Ethington, 1987). When the assessment of job satisfaction has been taken beyond global measures, wide variations in *specific* aspects of jobs affecting the satisfaction of women and men have been reported (Sekaran, 1986). Furthermore, the lack of systematic sex differences across previous studies has been accounted for by the fact that both women and men base their job satisfaction upon the framework of benefits and rewards associated with the sectors of the labour market in which they are employed, as opposed to the traditional sex-role values that they might bring to their jobs (Moore, 1985).

In the present investigation (as was detailed in Chapter 3), the measurement of job satisfaction, at each follow-up interview, was based on a single survey item, scored on a 4-point scale ranging from "very dissatisfied" to "very satisfied". Although the practice of using a 1-item measure of job-satisfaction has been justified elsewhere (cf. Bretz & Judge, 1994), it is clear that, in the present case, such a global measure of job-satisfaction was not sufficiently sensitive to assess *specific* aspects of jobs having the potential to differentially influence the

satisfaction of women and men. Moreover, the task of teasing out the specific facets of job satisfaction associated with retention (vs. non-retention) in NELM, and of assessing whether or not these facets operate differently among women, as compared to men, is left to future research.

Life Science/Health Professions. Among Life Science/Health Professions bachelor's degree holders, there were several atypical findings of variables having a predictive influence on NELM retention status. For example, when consideration was given to both these respondents' post-baccalaureate educational *and* labour force behaviours, having a highly educated mother was found to significantly *increase* the likelihood of being retained in NELM at post-graduation year-5, while having a highly educated father was found to *increase* the likelihood of this outcome, marginally. These findings lend support to the conclusions of previous research concerning the influence of high educational (and occupational) status mothers and fathers (cf. Almquist & Angrist, 1970; Lemkau, 1983; Jagacinski, 1987b). Further, when consideration was given *only* to the labour force behaviour of the respondents in this cohort, having a highly educated father also served to marginally *increase* the likelihood of being retained in NELM-related employment at post-graduation year-5; however, upon assessing the likelihood of *return* to NELM-related pursuits at post-graduation year-5 (from *non*-NELM retention status at year-2), neither parental education variable showed any predictive influence.

Interestingly, in the first two of these three circumstances, a marginally significant interaction of father's education by sex was found, showing the men who were retained in NELM at post-graduation year-5 to have fathers with marginally higher levels of education than men who were not retained, whereas, among women, whether or not they were retained in NELM, the level of their fathers' education was highly similar. One potential, albeit speculative, explanation for these findings is the predominance of occupational inheritance among men, with high-status fathers (e.g., medical doctors) tending to influence their sons (e.g., to become physicians). In order to probe this speculation in future research, data on father's occupation should be collected for analysis.

Another interesting finding, unique to this cohort of Life Science/Health Professions bachelor's degree holders, was that, compared with their male counterparts, women who were

retained in NELM at post-graduation year-5 tended to have lower incomes, lower job satisfaction, and lower salary satisfaction at post-graduation year-5. Again, any attempt to account for these findings is primarily speculative, as any number of factors may have served to influence these outcomes. However, one explanatory possibility is to consider the range of programs of study that comprised this particular academic area and the traditional gender-representation therein.

Specifically, as shown in Appendix A, the Life Science/Health Professions academic area was comprised of a number of traditionally female-dominated programs of study, such as nursing, as well as a number of traditionally male-dominated (or, more recently, gender-neutral) programs of study, such as medicine. Within the health professions in particular, women have traditionally been concentrated in lower-status, lower-paying jobs (Marshall, 1990). Moreover, rather than representing differences in the incomes, job, and salary satisfaction of men and women working side-by-side in the *same* occupations, the sex differences found herein may well have been related to the over-representation of women in lower-paying, lower-status occupations.

Finally, the mix of programs of study comprising this academic area might also be associated with the finding that both the probability of being retained in NELM-related employment at post-graduation year-5 *and* the probability of returning to NELM-related endeavours at year-5 (from non-NELM-related pursuits at year-2) were marginally *lower for men* than for women Life Science/Health Professions bachelor's degree holders. Consequently, in future research, it may be desirable to reconsider the composition of this academic area and perhaps to further separate or limit the programs of study that comprise it.

Mathematics/Computer Science. Among Mathematics/Computer Science bachelor's degree holders, intrinsic motivation for having originally enrolled in an "M" program of study had a consistent, although marginally significant predictive influence, such that respondents with higher levels of intrinsic motivation were marginally *more likely* to be retained in NELM at year-5. This was seen to be the case when both the respondents' post-baccalaureate educational *and* labour force behaviour were considered, when consideration was given to their labour force behaviour, *only*, as well as upon assessing the likelihood of their *return* to NELM-related pursuits at post-graduation year-5, from *non-NELM* retention status at year-2.

Interestingly, in the first of these three circumstances, only, there was a marginally significant interaction of intrinsic motivation with sex, such that among women, those who were "retained" were markedly more intrinsically motivated than were those who were "not retained", whereas, among men, those who were "retained" were only slightly more intrinsically motivated than were those who were "not retained". In a related finding that was also unique to this cohort of respondents, women who were retained in NELM at post-graduation year-5 were found to have significantly higher levels of intrinsic motivation for having originally enrolled in their program of study than either their male counterparts (who were retained in NELM at year-5) or other women (who were *not* retained in NELM at year-5).

The retrospectively measured intrinsic motivation variable, which was derived from a principal components analysis (detailed in Appendix M), incorporated the dimensions of desiring to "improve yourself generally" and to "acquire in-depth knowledge". Though admittedly tangential (and speculative in nature), it is worth noting at this point a potential link between this intrinsic motivation variable and the large body of research concerning women's career-related self-efficacy (discussed in Chapter 1), which has consistently shown high self-efficacy to be predictive of persistence and achievement among university students considering S&T-related fields of study (Lent et al., 1984; 1986; 1987). Moreover, careful consideration of the intrinsic motivation of Mathematics/Computer Science bachelor's degree holders for having originally enrolled in their program of study should be exercised in future research, as this appears to be a highly influential variable in this cohort, particularly among retained women.

Computation of retention-rates. Generally speaking, the rate at which these S&T bachelor's degree earners went on to participate in the Canadian scientific/technological community varied considerably across NELM academic areas. For example, two years after earning a bachelor's degree, retention rates were lowest among Natural Science graduates, with approximately 42% of these respondents engaged in post-baccalaureate education or careers that were *unrelated* to NELM. Engineering and Mathematics/Computer Science bachelor's degree earners fared somewhat better, with approximately 30% and 35%, respectively, engaged in *non-NELM*-related post-baccalaureate education or careers at post-graduation year-2. The rate of non-retention was markedly lower among Life Science/Health Professions bachelor's degree

earners, however, with only approximately 12% engaged in *non-NELM*-related post-baccalaureate education or careers 2 years after graduation.

It is interesting to note that these non-retention figures differ considerably from those cited in the introduction as having been reported by Statistics Canada concerning "class of '86" graduates, in that--in the present case--they are consistently much higher. Specifically, according to Statistics Canada figures, the percentages of 1986 bachelor's degree earners in S&T fields who reported holding jobs 2 years after graduation that were "unrelated to their program of study" were as follows: 8% of engineering/applied science graduates; 25% of agriculture/biological science graduates; 6% of graduates in the health professions; and, 13% of mathematics/physical science graduates (McDowell, 1991).

Granted, the interaction between the education system and the labour market is complex (Clark et al., 1986); while some programs of study, such as the Engineering specialties, are more or less directly linked to particular occupations, graduates of other fields of study, such as the Natural Sciences, are more likely to be distributed across a wider range of occupations. Notwithstanding this fact, however, at least three factors can be identified as having contributed to the differences between Statistics Canada's non-retention figures and those reported herein.

First, Statistics Canada's taxonomy of academic areas differed from the "NELM" system. As has been mentioned elsewhere, Statistics Canada employed the USIS coding system (Statistics Canada, 1991c) to cluster graduates of S&T fields into the following four groups: *engineering/applied science*, *agriculture/biological science*, *health professions*, and *mathematics/physical science*. Although this system of categorization was rejected in the present investigation due to its formation of groups that were far too heterogenous, it stands, nevertheless, as the system based on which Statistics Canada reports its figures. Moreover, Statistics Canada figures are among the *only* figures available in Canada to serve as a basis for comparison.

Second, Statistics Canada gave *exclusive* consideration to the graduates' labour force behaviour. Thus (in contrast to the present investigation), any and all S&T undergraduate degree earners who had gone on to pursue post-baccalaureate education at post-graduation year-2 were automatically excluded from consideration, and so are not reflected in the Statistics Canada

figures.

Finally, in its evaluation of the education-employment relation, Statistics Canada based its figures on the *opinions* of bachelor's degree earners. Specifically, as has been mentioned elsewhere, graduates were asked two questions: "if their job was one for which their educational program was designed", and, "whether or not they used any of the skills they acquired in their education program on the job" (Clark, 1989, p. 58). Based on an affirmative response to both, one, or neither of these two questions, respondents were classified as having a job that was "directly-related", "partially-related", or "unrelated" to their education, respectively.

Scholarly contribution. Unfortunately, it is not possible to determine to what extent differences in the non-retention figures reported by Statistics Canada and those found herein are individually attributable to each of these three factors. Nevertheless, it is by virtue of three advances--namely: the development of a more *precise* taxonomy of S&T-related fields of study; the consideration of both the post-baccalaureate educational *and* labour force behaviour of recent NELM bachelor's degree earners; and, the conduct of a more *rigorous* assessment of the education-employment relation--that this investigation attempted to make a scholarly contribution, thereby providing as accurate a portrayal as possible of the post-baccalaureate career behaviour of a national sample of Canadian women and men undergraduate degree holders in science and technology.

Other strengths and limitations. In addition to the conceptual and methodological issues already addressed, several other strengths and limitations inherent to this investigation are worth mentioning at this point. First, given that the data employed herein were a sub-set of a nationally representative, longitudinal data set that had been collected via surveys of graduates from all recognized Canadian universities, stratified by province, level of qualification, and major field of study, their external validity was very high. As such, based on the sample of 3158 respondents utilized herein, it is reasonable to assume that the findings of this investigation represent valid estimates that are generalizable to the population of NELM bachelor's degree holders in Canada. Unfortunately, internal validity remains questionable, as random assignment of subjects to treatment groups (or, in the present case, to academic areas) was, of course, not possible. Furthermore, because this investigation was carried out via a secondary analysis of survey data,

the author had no opportunity to contribute to the original formulation, phrasing, or response formats of the survey items. This reality precipitated difficulties not only with regard to variable derivation and coding (e.g., as discussed above, in the case of the variables marital status, job satisfaction, activity, etc.), but also precluded any opportunity for the author to assess reliability (e.g., across individuals conducting the telephone surveys and/or coding the data) or even to ensure, in advance, that the questions posed to respondents possessed adequate face validity.

Nevertheless, these data offered excellent descriptive potential and their use resulted in strong descriptive conclusions. However (as has been mentioned elsewhere), as with all good things, these data did have other limitations, by which the present investigation was unavoidably bound. Specifically, because these data did not offer the opportunity to definitively probe the issue of "why", during the 5 year period subsequent to completing advanced S&T-related education and training, some young women and young men choose either to forego or to discontinue their participation in Canada's scientific community, any inferences in this regard are, by necessity, *pure speculation* on the author's part. Consequently, in the event that a new survey of this nature were to be designed, it would be extremely useful to include a number of additional in-depth, explanatory variables, such as an assessment of the respondents' occupational personalities (i.e., interests and needs).

Policy Implications

Overall, there are two major policy implications arising from the findings of this investigation. The first of these concerns the relative unimportance of sex in the prediction of retention in science and technology among *highly-trained* young Canadians and the resulting need to continue to focus strategies aimed at bolstering the recruitment and retention of young women onto the *early* stages of the academic "pathway" to an S&T career. The second concerns the relative importance of *type* of further education in predicting the outcome of early career retention (vs. non-retention) in science and technology.

In the first case, at the descriptive level, the findings of the present investigation strongly dispute the notion that, upon reaching the end of the academic "pathway" to a scientific/technological career, women go on to become active members of Canada's

scientific/technological community in disproportionately *lower* numbers than do men (cf., Nevitte et al., 1988; Symons & Page, 1984). Similarly, these findings also dispel the view that, no matter how many women are initially drawn into S&T occupational domains, their numbers merely serve to constantly "top up the glass" to the same level of proportional *underrepresentation* (cf., Jacobs, 1989; Tancred & Czarnocki, 1992).

Certainly women in Canada have made impressive gains in the attainment of S&T-related education and in the pursuit of S&T careers, as evidenced in the "Canadian perspective" on women's educational and occupational representation presented in Chapter 1. Nevertheless, even in light of their recent advances, the point is far from moot, for women continue to be underrepresented in Canada's scientific/technological community. Consequently, in the interest of the scientific and economic health of Canada as a whole, as well as the equality of women and the quality of their career and life development in this country, the issue of women's underrepresentation in S&T must continue to be addressed.

As discussed in Chapter 1, Canadian research has shown that many young women lack confidence in their personal capability to succeed in nontraditional career domains (Baker, 1985) and that, even among those who are interested in pursuing a career in S&T, insufficient encouragement from parents, teachers, and guidance counsellors can lead to the abandonment of these interests, due to the perception that these endeavours are simply too difficult (Baker, 1985). Further, while young women tend to lack the personal confidence, self-efficacy, and prerequisite positive attitudes that are predictive of S&T career choice (Betz & Hackett, 1983; Lent et al., 1984; 1986; 1987; 1991; Matyas, 1985), many of these same characteristics, including, self-confidence, independence, assertiveness, positivism, commitment, energy, and a high level of social support have been shown to be predictive of women's success in nontraditional domains (Carroll & Cherry, 1986).

Clearly, policy and programs aimed at fostering young women's interest in and attitudes towards science and technology during the *early* phases of academic training need to be continued and expanded in Canada, particularly in view of the cumulative nature of science education. As discussed in Chapter 1, women science career role-models exert a positive influence on young women's enrolment in science courses and personal consideration of science

careers (Smith & Erb, 1986), and young women's beliefs in the compatibility of a science career and family roles exert a positive influence on their intent to engage in further science studies (Lips, 1972). Hence, it is hardly surprising that initiatives such as "Let's Talk Science", which is aimed at increasing awareness of and interest in science and technology among Canadian pre-school, elementary, and high school students and teachers (Vale, 1996), achieve their success by providing girls and young women with female role-models, by refuting stereotypically masculine views of scientists, and by encouraging girls and young women to pursue science- and math-related activities and course work.

In sum, up to this point there has been a well-founded emphasis in Canada on the recruitment and retention of girls and young women, both as they approach and journey along the academic "pathway" to a career in science. This emphasis has, in essence, laid a solid foundation for the success of future efforts aimed at eliminating the underrepresentation of women in S&T. However, with increased cuts to program budgets, many initiatives aimed at providing women with support, in one form or another, are quickly disappearing (e.g., Industry, Science and Technology's "Canada Scholarships" program). As such, it is essential that policy be instituted to ensure that the resources invested by government and/or private-industry in these endeavours will continue to be viewed as money well spent, and that such funding will be actively maintained or increased, rather than fall victim to cuts.

In the second case, the importance of *further education* should not be overlooked as one potential avenue to pursue in the effort to lessen the shortage of highly qualified S&T personnel in Canada. Across all four academic areas, further *non-NELM-related* education was found to be highly predictive of non-retention, and, among Natural Science and Engineering bachelor's degree holders in particular, further *NELM-related* education was found to be highly predictive of retention in science and technology.

Unfortunately, these findings admit no easy summary, as it not possible to determine when the respondents' behavioural intentions concerning the pursuit of further education were formed. It is possible, however, that the present findings are a reflection of career choices made during, or just after, the completion of the bachelor's degree. That is, during their undergraduate studies in S&T, some individuals may have felt themselves to be well-suited to these pursuits

(e.g., happy, satisfied, encouraged) and have decided to engage in post-baccalaureate NELM-related education; whereas, other individuals may have felt themselves to be ill-suited to these pursuits (e.g., unhappy, dissatisfied, discouraged) and therefore have decided to pursue post-baccalaureate education in a field unrelated to S&T.

Moreover, given the lack of interaction with sex, the effect of further education might be plausibly explained by the gender-non-specific search for person-environment fit (i.e., congruence), with attrition being associated with personality *incongruence* (Holland, 1959; 1985). That is, non-retained individuals may have been seeking to lessen their personality incongruence by choosing a more congruent post-baccalaureate field of study. This "impropriety of original choice" explanation is supported by the findings of previous research (discussed in Chapter 1), in which interviews were conducted with former science, mathematics, and engineering students (Hewitt & Seymour, 1991). Therein, many young women *and* young men who had changed college major (i.e., from an S&T-related field, to a non-S&T-related field) reported having rejected the lifestyle associated with a science-related career, having lacked strong motivation for a career in an S&T field, or having found a more appealing non-science option (Hewitt & Seymour, 1991). To further elucidate the findings of present investigation, it would be advisable to incorporate an assessment of the respondents' occupational personalities in future research.

In sum, these findings suggest the need to pay greater attention to further education and training as a means of better understanding the decision by some highly-trained young women and young men *not* to persist in Canada's scientific/technological community. In light of the powerful relation of further education with persistence, policy which encourages additional post-baccalaureate science- and technology-related education and training would be advisable. Government could, for example, make it easier for young women and young men to finance these studies. Such efforts are likely to be especially influential in the case of Natural Science bachelor's degree earners, among whom the greatest attrition is taking place, and for whom further education has the strongest association with retention *and* non-retention in science and technology.

Conclusion

To date, most of the pertinent North American research has tried to understand why, from the early stages of their academic training (i.e., during secondary school and beyond), relatively few women study science-related subjects or enroll in science-related academic programs, just as most concrete efforts to rectify the situation have been directed toward bolstering young women's study of science and mathematics during the early phases of schooling. The present research had a different, albeit complementary focus--one that has been neglected up until now. It sought to study, in a systematic, longitudinal fashion, the retention (or lack thereof) of young women and young men who already had a bachelor's degree in an S&T domain, during the first 5 years after their graduation from university.

Being based as they were on a national Canadian sample of undergraduate degree holders in science and technology, the findings of this investigation offer strong support for the conclusion that the continued underrepresentation of women in Canada's S&T occupational domains *cannot* be attributed to a lower rate of female retention in this sector of employment. Rather, it remains likely that women's continued underrepresentation in these domains is primarily related to the relatively low number of women initially pursuing (and ultimately graduating from) S&T academic programs. In fact, one need only look to the disproportionate representation of men versus women in the NELM cohorts of the present investigation for an indication of the extent to which women continue to be underrepresented in the S&T graduating classes of Canadian universities. As seen herein, there were 508 men, compared to only 341 women, among Natural Science bachelor's degree earners; there were 841 men, compared to a mere 100 women, among Engineering bachelor's degree earners; and, there were 355 men, compared to only 164 women, among Mathematics/Computer Science bachelor's degree earners. In contrast, women were overrepresented among Life Science/Health Professions bachelor's degree earners, numbering 607, compared to only 272 men.

Of course, the proportionately different rates at which women and men initially *pursue* and ultimately *persist* in S&T academic programs are issues that remain beyond the scope of the present investigation (cf. Hewitt & Seymour 1991; Ware et al., 1985), as is the issue of women's

self-selection to the margins of science (cf. Mather, 1996). Based on the very limited entrance/recruitment and exit/retention literature that was found to be directly germane to the present investigation and was reviewed in the introduction, it is clear that the teasing out of factors which *contribute to* and *serve to explain* S&T retention (vs. non-retention) in Canada is, as yet, still at a very early stage. Research conducted to date has, for the most part, failed to examine the educational and occupational choices of women *from the perspective of the women themselves* (i.e., by linking women's choices to their expectations for success and subjective task value) (Eccles, 1987).

As such, future research would be well advised to lay aside descriptive issues and focus its attention on explanatory models that attempt to account for the relative contributions of various factors to the decisions by some highly trained young women and young men to leave Canada's scientific establishment. Finally, research aimed at understanding the initial choice of science- and technology-related disciplines of study by young women, as well as efforts to bolster their representation in the study of science and mathematics during the *early* phases of schooling, should definitely continue, as these questions—rather than retention-related issues—appear to be particularly pertinent to meeting the challenge of eliminating the underrepresentation of women in the scientific/technological community in Canada.

CHAPTER SIX
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APPENDIX A

University Programs of Study Comprising the N, E, L, and M Academic Areas

Programs of study comprising the "NATURAL SCIENCE" designation (N)

	USIS Code
GENERAL SCIENCE	8.00
AGRICULTURE	50000.00
PLANT SCIENCE	50322.00
SOIL SCIENCE	50326.00
BIOCHEMISTRY	50600.00
GENETICS	50910.00
MICROBIOLOGY	50912.00
OTHER BIOLOGY	50999.00
BIOPHYSICS	51200.00
BOTANY	51500.00
ZOOLOGY	52400.00
CHEMISTRY	81500.00
GEOLOGY AND RELATED	81800.00
METALLURGY, MATERIAL SCIENCE	82100.00
CLIMATOLOGY	82404.00
OTHER METEOROLOGY	82499.00
PHYSICS	82799.00
ASTRONOMY	83001.00
AEROSPACE SCIENCES	83002.00
OTHER PHYSICS	83099.00

Programs of study comprising the "ENGINEERING" designation (E)

	USIS Code
ENGINEERING APPLIED	60000.00
AERONAUTICAL, AEROSPACE	60500.00
CHEMICAL ENGINEERING	60600.00
CIVIL ENGINEERING	60700.00
DESIGNS, SYSTEMS ENGINEERING	60800.00
ELECTRICAL ENGINEERING	60900.00
INDUSTRIAL ENGINEERING	61000.00
MINING ENGINEERING	61100.00
MECHANICAL ENGINEERING	61200.00
METALLURGICAL ENGINEERING	61300.00
OTHER ENGINEERING	61400.00
ENGINEERING SCIENCE	61500.00
ENGINEERING GENERAL	61600.00
FORESTRY ENGINEERING	62000.00

Programs of study comprising the "LIFE SCIENCE/HEALTH PROFESSIONS" designation (L)

	USIS Code
KINESIOLOGY, HUMAN KINETICS	14000.00
ANIMAL SCIENCE	50310.00
FOOD SCIENCE AND NUTRITION	51808.00
VETERINARY MEDICINE	52100.00
VETERINARY SCIENCES	52200.00
VETERINARY MEDICINE SPECIALTIES	52300.00
TOXICOLOGY	52500.00
HEALTH PROFESSIONS	70000.00
DENTISTRY	70300.00
DENTAL SPECIALTIES	70400.00
MEDICINE	70500.00
ANATOMY	70604.00
BIOCHEMISTRY	70606.00
BIOPHYSICS	70608.00
EMBRYOLOGY	70610.00
ENDOCRINOLOGY	70612.00
GENETICS	70614.00
HISTOLOGY	70616.00
NEUROPHYSIOLOGY	70622.00
PHARMACOLOGY	70626.00
PHYSIOLOGY	70628.00
OTHER BASIC SCIENCES	70699.00
MEDICAL SPECIALTIES	70800.00
IMMUNOLOGY	71006.00
MICROBIOLOGY	71010.00
PATHOLOGY	71014.00
OTHER PARACLINICAL SPECIALTIES	71099.00
SURGICAL SPECIALTIES	71200.00
NURSING	71500.00
OPTOMETRY	71800.00
PHARMACY	72100.00
EPIDEMIOLOGY AND PUBLIC HEALTH	72400.00
AURAL AND ORAL REHABILITATION	72702.00
OCCUPATIONAL THERAPY	72704.00
PHYSICAL THERAPY	72706.00
MEDICAL TECHNOLOGY	73600.00

Programs of study comprising the "MATHEMATICS/COMPUTER SCIENCE" designation (M)

	USIS Code
COMPUTER SCIENCE	80600.00
MATHEMATICS	81200.00

APPENDIX B

University Student Information System (USIS)

00000	General Arts and Sciences
00001	Interdisciplinary Studies
00002	General Arts
00008	General Science
10000	Education, Physical Education, Sports, Recreation and Leisure
11800	Elementary/Secondary Teacher Training
12300	Higher Education, Postsecondary Teacher Training
13600	Kindergarten, Pre-school Teacher Training
	NON-TEACHING FIELDS
13801	School Librarianship
13802	Education Administration
13803	Education Psychology
13805	Guidance and Counselling
13806	Curriculum Specialization
13807	Measurements and Evaluation
13808	Education Foundations
13899	Other Non-teaching Fields
13900	Physical Education
14000	Kinesiology, Human Kinetics and Kinanthropology
14100	Recreation
20000	Fine and Applied Arts
20300	Fine Arts
20500	Music
20800	Other Performing Arts
	APPLIED ARTS
21401	Industrial Design
21499	Other Applied Arts

30000	Humanities and Related	
30300	Classics, Classical and Dead Languages	
30500	English Language and /or Literature	
30600	French Language and/or Literature	
30900	History	
31000	Journalism	
	LANGUAGES AND/OR LITERATURES, OTHER	
	31101	Comparative Literature
	31102	Medieval Languages
	31103	Asian Languages and Literatures
	31104	Slavic Languages and Literatures
	31199	Other Languages and Literatures
	31200	Library Science
	31300	Other Records Science
	31400	Linguistics
	31700	Other Mass Communication Studies
	32100	Philosophy
	32400	Religious Studies
	32500	Theological Studies (professional program - preparation for the ministry)
	32700	Translation and Interpretation
40000	Social Sciences and Related	
	40300	Anthropology
	40600	Archaeology
	40800	Canadian Studies
	AREAS STUDIES, OTHER	
	40910	Medieval Studies
	40920	Asian Studies
	40940	Slavic Studies
	40999	Other Area Studies
	41200	Commerce, Management, Business Administration, Administrative Studies/Sciences
	41300	Criminology
	SPECIALIZED ADMINISTRATION STUDIES	
	41401	Public Administration
	41402	Health Administration
	41403	Hotel and Food Administration
	41499	Other Specialized Administration Studies
	41500	Demography
	42700	Economics
	43000	Geography
	43300	Law and Jurisprudence

MAN/ENVIRONMENT STUDIES

44008 Regional, Rural, Urban, City Planning and Community Development
44010 Resource Management, Environmental Studies

44300 Political Science
44600 Psychology
44700 Secretarial Studies
44900 Social Work and Social Welfare
45200 Sociology
45500 Military Studies
45700 Other Social Services

50000 Agriculture and Biological Sciences (excluding health professions)

AGRICULTURE

50310 Animal Science
50322 Plant Science
50326 Soil Science
50399 Other Agriculture

50600 Biochemistry

BIOLOGY

50910 Genetics
50912 Microbiology
50999 Other Biology

51200 Biophysics
51500 Botany
51600 Fisheries and Wildlife Management

HOUSEHOLD SCIENCE AND RELATED

51808 Food Science and Nutrition
51899 Other Household Science and Related

52100 Veterinary Medicine (professional program)
52200 Veterinary Sciences
52300 Veterinary Medicine Specialties
52400 Zoology
52500 Toxicology

60000 Engineering and Applied Sciences

60300 Architecture
60500 Aeronautical and Aerospace Engineering
60600 Chemical Engineering
60700 Civil Engineering
60800 Design, Systems Engineering
60900 Electrical Engineering

61000	Industrial Engineering
61100	Mining Engineering
61200	Mechanical Engineering
61300	Metallurgical Engineering
61400	Other Engineering
61500	Engineering Science
61600	Engineering General
62000	Forestry
62200	Landscape Architecture

70000

Health Professions and Occupations

70300	Dentistry (professional program)
70400	Dental Specialties
70500	Medicine (professional program)
	BASIC MEDICAL SCIENCES
70604	Anatomy
70606	Biochemistry
70608	Biophysics
70610	Embryology
70612	Endocrinology
70614	Genetics
70616	Histology
70622	Neurophysiology
70626	Pharmacology
70628	Physiology
70699	Other Basic Sciences
70800	Medical Specialties
	PARACLINICAL SCIENCES
71006	Immunology
71010	Microbiology
71014	Pathology
71099	Other Paraclinical Sciences
71200	Surgical Specialties
71500	Nursing
71800	Optometry
72100	Pharmacy
72400	Epidemiology and Public Health
	REHABILITATION MEDICINE
72702	Aural and Oral Rehabilitation
72704	Occupational Therapy
72706	Physical Therapy
72799	Other Rehabilitation
73600	Medical Technology
79900	Other Health Professions and Occupations

80000	Mathematics and Physical Sciences
80600	Computer Science
81200	Mathematics
81500	Chemistry
81800	Geology and Related
82100	Metallurgy, Materials Science
	METEOROLOGY
82404	Climatology
82499	Other Meteorology
82700	Oceanography and Water Studies
	PHYSICS
83001	Astronomy
83002	Aerospace Science
83099	Other Physics
99998	Not Applicable/None
99999	Not Reported

n.e.c. = not elsewhere classified

APPENDIX C

Decisions Made Concerning the University Programs
Comprising the NELM Academic Areas After Referring to the
User's Guide to the 1986 Census Data on Major Fields of Study (Statistics Canada, 1986)

Programs of study discussed and INCLUDED were as follows:

*1400 Kinesiology

Included, given that it was determined to be definitely science based.

*0008 General Science

Included, given that, although is general, it is science.

Programs of study discussed and EXCLUDED were as follows:

*13807 Measurement and Evaluation

Excluded due to its association with social science, and the fact that it falls under the heading of education.

*13900 Physical Education

Excluded, for reasons above, and for its association with recreation.

*40300 Anthropology and 40600 Archaeology

Excluded due to cultural component, as well as association with social science.

*50399 Other Agriculture

Excluded due to questionable content -- Too vague. (It could be agricultural economics, for example).

*51899 Other Household Science & Related

Excluded due to questionable content -- Too vague. Likely to be too social, as in home economics and the like.

*56100 Fish & Wildlife Management

Excluded given that the focus is on the social science of management, rather than the scientific focus on the "fish".

*62200 Landscape Architecture & Architecture

Excluded due to the art component. Human construction -- Not viewed as Engineering, in the traditional sense.

*72799 Other Rehabilitation and 79900 Other Health Professions and Occupations

Excluded because of questionable content -- Too vague.

*80000 Mathematics and Physical Science

Excluded because it crosses two categories -- could not be placed into a single cell.

APPENDIX D

Distribution of Respondents Across University Programs of Study
Comprising the N, E, L, and M Academic Areas (N = 3158)

Programs of study comprising the "NATURAL SCIENCE" designation (N)

	USIS Code	Frequency	Valid Percent	Cumulative Percent
GENERAL SCIENCE	8.00	226	26.6	26.6
AGRICULTURE	50000.00	20	2.4	29.0
PLANT SCIENCE	50322.00	10	1.2	30.2
SOIL SCIENCE	50326.00	81	9.5	39.7
BIOCHEMISTRY	50600.00	10	1.2	40.9
GENETICS	50910.00	20	2.4	43.2
MICROBIOLOGY	50912.00	267	31.4	74.7
OTHER BIOLOGY	50999.00	4	.5	75.1
CHEMISTRY	81500.00	66	7.8	82.9
GEOLOGY AND RELATED	81800.00	79	9.3	92.2
METALLURGY, MATERIAL SCIENCE	82100.00	1	.1	92.3
CLIMATOLOGY	82404.00	1	.1	92.5
OTHER METEOROLOGY	82499.00	1	.1	92.6
ASTRONOMY	83001.00	3	.4	92.9
OTHER PHYSICS	83099.00	60	7.1	100.00
		849	100.0	

Programs of study comprising the "ENGINEERING" designation (E)

	USIS Code	Frequency	Valid Percent	Cumulative Percent
ENGINEERING APPLIED	60000.00	5	.5	.5
AERONAUTICAL, AEROSPACE	60500.00	3	.3	.9
CHEMICAL ENGINEERING	60600.00	99	10.9	11.7
CIVIL ENGINEERING	60700.00	127	13.9	25.7
DESIGNS, SYSTEMS ENGINEERING	60800.00	6	.7	26.3
ELECTRICAL ENGINEERING	60900.00	228	25.0	51.4
INDUSTRIAL ENGINEERING	61000.00	29	3.2	54.6
MINING ENGINEERING	61100.00	15	1.6	56.2
MECHANICAL ENGINEERING	61200.00	205	22.5	78.7
METALLURGICAL ENGINEERING	61300.00	10	1.1	79.8
OTHER ENGINEERING	61400.00	90	9.9	89.7
ENGINEERING SCIENCE	61500.00	18	2.0	91.7
ENGINEERING GENERAL	61600.00	21	2.3	94.0
FORESTRY ENGINEERING	62000.00	55	6.0	100.0
		911	100.0	

Programs of study comprising the "LIFE SCIENCE/HEALTH PROFESSIONS" designation (L)

	USIS Code	Frequency	Valid Percent	Cumulative Percent
KINESIOLOGY, HUMAN KINETICS	14000.00	19	2.2	2.2
ANIMAL SCIENCE	50310.00	25	2.8	5.0
FOOD SCIENCE AND NUTRITION	51808.00	57	6.5	11.5
VETERINARY MEDICINE	52100.00	39	4.4	15.9
VETERINARY SCIENCES	52200.00	1	.1	16.0
HEALTH PROFESSIONS	70000.00	1	.1	16.2
DENTISTRY	70300.00	37	4.2	20.4
DENTAL SPECIALTIES	70400.00	17	1.9	22.3
MEDICINE	70500.00	181	20.6	42.9
ANATOMY	70604.00	3	.3	43.2
BIOCHEMISTRY	70606.00	13	1.5	44.7
PHARMACOLOGY	70626.00	3	.3	45.1
PHYSIOLOGY	70628.00	12	1.4	46.4
OTHER BASIC SCIENCES	70699.00	11	1.3	47.7
MEDICAL SPECIALTIES	70800.00	22	2.5	50.2
IMMUNOLOGY	71006.00	1	.1	50.3
MICROBIOLOGY	71010.00	3	.3	50.6
NURSING	71500.00	250	28.4	79.1
OPTOMETRY	71800.00	5	.6	79.6
PHARMACY	72100.00	79	9.0	88.6
EPIDEMIOLOGY AND PUBLIC HEALTH	72400.00	22	2.5	91.1
AURAL AND ORAL REHABILITATION	72702.00	8	.9	92.0
OCCUPATIONAL THERAPY	72704.00	26	3.0	95.0
PHYSICAL THERAPY	72706.00	36	4.1	99.1
MEDICAL TECHNOLOGY	73600.00	8	.9	100.0
		879	100.0	

Programs of study comprising the "MATHEMATICS/COMPUTER SCIENCE" designation (M)

	USIS Code	Frequency	Valid Percent	Cumulative Percent
COMPUTER SCIENCE	80600.00	329	63.4	63.4
MATHEMATICS	81200.00	190	36.6	100.0
		519	100.0	

APPENDIX E

Universities Included in the *Survey of 1986 Graduates* and the *Follow-up of 1986 Graduates*

Memorial University of Newfoundland
University of Prince Edward Island
Acadia University
Atlantic School of Theology
Université Sainte Anne
Dalhousie University
Mount Saint Vincent University
Nova Scotia College of Art and Design
Technical University of Nova Scotia
St. Francis Xavier University
Saint Mary's University
University of King's College
Nova Scotia Agricultural College
University of Cape Breton
Mount Allison University
University of New Brunswick
St. Thomas University
Université de Moncton
Bishop's University
McGill University
Concordia University
Université de Montréal
Université du Québec à Montréal
Université de Laval
Université de Sherbrooke
École polytechnique de Montréal
École des hautes études commerciales
Brock University
University of Guelph
McMaster University
University of Toronto
University of Waterloo
University of Western Ontario
University of Windsor
York University
Wilfrid Laurier University
Laurentian University - Nippissing University College
Ontario Bible College
Carleton University
Lakehead University
Laurentian University - Main Sudbury Campus
Université d'Ottawa/University of Ottawa
Queen's University
Laurentian University - Algoma University College
Université de Laurentienne - Collège universitaire de Hearst
McMaster Divinity College

University of Waterloo - St. Jerome College
University of Waterloo - Renison College
Collège Dominicain de philosophie et de théologie
Université Saint-Paul
Ryerson Polytechnical Institute
University of Manitoba
University of Manitoba - Canadian Mennonite
Brandon University
University of Winnipeg
Canadian Mennonite Bible College
Canadian Nazarene College
University of Saskatchewan
University of Saskatchewan - College of Emmanuel and Saint Chad
University of Saskatchewan - St. Andrew's College
University of Regina
Canadian Theological Seminary
Canadian Bible College
University of Regina - Campion College
University of Regina - Luther College
University of Alberta
Newman Theological College
Athabasca University
Canadian Union University
University of Calgary
University of Lethbridge
Augustana University College
University of British Columbia
Seminary of Christ the King
Simon Fraser University
University of Victoria
Trinity Western University
Open Learning Agency

NOTE: This list is from the *Follow-up of 1986 Graduates Microdata User's Guide* (Statistics Canada, 1991c).

APPENDIX F

Questionnaire Administered to Respondents at the Two-year Follow-up:
Survey of 1986 Graduates University and College Programs Questionnaire



Statistics Canada / Statistique Canada

Form 586G-02

**SURVEY OF 1986 GRADUATES
UNIVERSITY AND COLLEGE PROGRAMS
QUESTIONNAIRE**

Confidential when completed
Authority - Statistics Act, Statutes of
Canada, 1970-71-72, Chapter 15

Sequence # <input style="width: 100px;" type="text"/>					
Interviewer number <input style="width: 100%;" type="text"/>	Interviewer's name <input style="width: 100%;" type="text"/>	Senior interviewer's name <input style="width: 100%;" type="text"/>			
RECORD OF CALLS/SUPPLEMENTARY TRACING					
Date	Start Time	Finish Time	Comments/Results	Telephone Number	Interviewer's Initials
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
Total number of calls <input style="width: 50px;" type="text"/>			Length of interview <input style="width: 50px;" type="text"/> minutes		
FINAL STATUS OF QUESTIONNAIRE:					
Contacted and completed interview <input type="radio"/>		Can't be reached by phone <input type="radio"/>			
Contacted and partial interview <input type="radio"/>		Unable to trace <input type="radio"/>			
Contacted but refused <input type="radio"/>		Interview ended in item 2 <input type="radio"/>			
Already contacted (duplicate) <input type="radio"/>		No longer living in Canada <input type="radio"/>			
Absent for duration of survey <input type="radio"/>		Deceased <input type="radio"/>			
Unlisted number <input type="radio"/>		Other <input type="radio"/>			
No answer <input type="radio"/>					

A. POSTSECONDARY STUDIES

1. Hello, I'm ... (your name) ... of Statistics Canada. We're doing a survey of 1986 graduates for Employment and Immigration Canada. While your participation is voluntary, your assistance is essential to accurately reflect the employment experiences of graduates. Your answers will be confidential under the Statistics Act.

Did you obtain or complete the requirements for a ... (read line A) ... program in 1986? (By "complete the requirements" I mean write the last exam or submit the last paper, report or project or defend your thesis.)

Yes — go to 4

No

2. Did you obtain or complete the requirements for any degree, diploma or certificate in 1986?

Yes

No — end interview

3. What degree, diploma or certificate did you obtain or complete the requirements for in 1986? (Do not read list; check one only; if more than one, check the highest-level degree etc.)

Trade-vocational:

Certificate or diploma

Community College, CEGEP, Technical Institute, School of Nursing:

Certificate or diploma

University:

Certificate or diploma below bachelor level

Bachelor's degree (e.g. B.A., B.Sc., B.A.Sc., 4-year B.Ed.)

Certificate or diploma above bachelor level

Master's degree (e.g., M.A., M.Sc., M.Ed.)

Degree in medicine, dentistry, veterinary medicine, law, optometry or theology (M.D., D.D.S., D.M.D., D.V.M., D.B., O.D., M.D.V.), or 1-year B. Ed after another Bachelor's degree

Earned doctorate (e.g., Ph.D., D.Sc., D.Ed.)

Other: (Specify)

4. INTERVIEWER CHECK-ITEM

If entry in line 8,

check — go to 5

Otherwise, — go to 6

5. Was your MAJOR field of study or specialization for this program in ... (read line 3)?

Yes — go to 7a

No

6. What was your MAJOR field of study or specialization for your ... (read line A) ... program in 1986? (If two or equal importance, enter both)

7a. Did you have any other MAJOR field(s) of study or specialization for your ... (read line A) ... program in 1986?

Yes — 7b

No

7b. What was your other MAJOR field of study or specialization? (If more than one, enter all)

8. In what month and year did you complete the requirements for the ... (read line A) ... program? (By "complete the requirements" I mean write the last exam or submit the last paper, report or project, or defend your thesis.)

Month: 1985 1986

INTERVIEWER: Correct line A of the tracing form if required, then continue.

-3-

9. What was the normal length in academic years of the ...*(read line A)*... program? (Do not read list; check one only)

Less than 6 months

6 months - less than one year

One year

13 months - less than two years

Two years

Three years

Four years

Five years

More than five years

No "normal" length, it varies

Don't know

10. Was it a co-op program? (This is a program that is specifically called a cooperative program by the institution, and that alternates periods of paid work and study)

Yes

No

11. Were you ever registered as a part-time student for the ...*(read line A)*... program?

Yes

No — go to 13

12. During your final term in the program, were you enrolled as a full-time or as a part-time student?

Full-time

Part-time

13. During the ...*(read line A)*... program did you ever take a leave of absence from your studies?

Yes

No

14. INTERVIEWER CHECK-ITEM:
If yes in 11 OR yes in 13
check — go to 15
Otherwise — go to 18a

15. How long did it take you to complete the ...*(read line A)*... program, including any periods of absence from your studies?

: OR | |
Number of months Number of years

16. How much of this time were you enrolled... (read list)

full-time?

: OR | |
Number of months Number of years

part-time?

: OR | |
Number of months Number of years

17. What were the reasons you did not attend the program full-time or on a continuous basis? (Do not read list; check one or more)

Lack of money

Family responsibilities

— as a full-time job

— as a part-time job

— both reasons

Stress

Program not offered full-time

Other reasons (Specify)

18a. Before you started the program, what was the highest level of education you had completed? (Do not read list; mark one only)	18b. What was your major field of study or specialization? (If two of equal importance, enter both)
Elementary <input type="radio"/>	
Secondary	
Some secondary <input type="radio"/>	} go to 19
Completed secondary or technical high school <input type="radio"/>	
Trade-vocational	
Some trade-vocational <input type="radio"/>	
Trade-vocational diploma or certificate <input type="radio"/>	
College	
Some college or some CEGEP <input type="radio"/>	
Completed college or completed CEGEP or nursing school diploma or certificate <input type="radio"/>	
University	
Some university (incl. university transfer in Alta. and B.C.) <input type="radio"/>	
Diploma or certificate below bachelor level <input type="radio"/>	
Bachelor degree (e.g. B.A., B.Sc., B.A.Sc., 4-year B.Ed.) <input type="radio"/>	
Diploma or certificate above bachelor level <input type="radio"/>	
Masters degree (e.g., M.A., M.Sc., M.Ed.) <input type="radio"/>	
Degree in medicine, dentistry, veterinary medicine, law, optometry or theology (M.D., D.D.S., D.M.D., D.V.M., D.B., D.D., M.Div.) or 1 year B.Ed. after another bachelor's degree <input type="radio"/>	
Earned doctorate (e.g., Ph.D., D.Sc., D.Ed.) <input type="radio"/>	
Other (Specify) <input type="radio"/>	

B. WORK AND OTHER EXPERIENCES BEFORE COMPLETING POSTSECONDARY STUDIES	
<p>19. Now some questions about the time before you completed the ...<i>(read line A)</i>... program. During that period, did you ever work full-time, that is, 30 or more hours a week? Do not include summer jobs held while you were a student.</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 27</p>	<p>25. What kind of work did you do? (Give full description, e.g. elementary school teacher, manager of a biological research department, shoe salesperson)</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>20. What was the total number of months or years of full-time work experience you had before completing the ...<i>(read line A)</i>... program? Please add up the durations of all your full-time jobs, except for summer jobs held while you were a student. (Do not read list; check one only)</p> <p>Less than 6 months <input type="radio"/> — go to 27</p> <p>6 months—less than 1 year <input type="radio"/></p> <p>From 1 year to less than 3 years ... <input type="radio"/></p> <p>From 3 years to less than 5 years ... <input type="radio"/></p> <p>From 5 years to less than 7 years ... <input type="radio"/></p> <p>7 years or more <input type="radio"/></p> <p>Don't know <input type="radio"/></p>	<p>26. In this work, what were your most important activities or duties? (Give full description, e.g., teaching geography, managing a research lab., selling shoes)</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>21. Before you completed the ...<i>(read line A)</i>... program, did you work at a full-time job for the same employer for a period of six consecutive months or more?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 27</p>	<p>27. During the twelve months before you enrolled in the ...<i>(read line A)</i>... program, what was your major activity? For example, going to school, working, looking for work, household responsibilities. (Check one only)</p> <p>Going to school <input type="radio"/> go to 28</p> <p>Working <input type="radio"/></p> <p>Looking for work <input type="radio"/> } go to 29</p> <p>Household responsibilities <input type="radio"/></p> <p>Other (Specify) <input type="radio"/></p>
<p>22. In what year did you last work at a full-time job that lasted six months or more?</p> <p><u>1991</u> OR:</p> <p>Still working at it <input type="radio"/></p>	<p>28. What kind of school was that?</p> <p>High school <input type="radio"/></p> <p>Vocational school or institute <input type="radio"/></p> <p>College or CEGEP <input type="radio"/></p> <p>University <input type="radio"/></p> <p>Other <input type="radio"/></p>
<p>23. For whom did you work? (Name of business, government department or agency, or person)</p> <p>_____</p> <p>_____</p> <p>_____</p>	
<p>24. What kind of business, industry or service is this? (Give full description, e.g. elementary school, municipal government, retail shoe store)</p> <p>_____</p> <p>_____</p> <p>_____</p>	

<p>29. During the 12 months before you enrolled in the ...<i>(read line A)</i>... program, was your principal residence in ...<i>(read line C)</i>?</p> <p>Yes <input type="radio"/> — go to 32a</p> <p>No <input type="radio"/></p>	<p>36. Was the job you had during that week a full-time job, that is, usually 30 or more hours a week?</p> <p>Yes <input type="radio"/> — go to 47a</p> <p>No <input type="radio"/></p>												
<p>30. In what province was it?</p> <table border="0"> <tr> <td>Nfld. <input type="radio"/></td> <td>Man. <input type="radio"/></td> </tr> <tr> <td>PEI <input type="radio"/></td> <td>Sask. <input type="radio"/></td> </tr> <tr> <td>N.S. <input type="radio"/></td> <td>Alta. <input type="radio"/></td> </tr> <tr> <td>N.B. <input type="radio"/></td> <td>B.C. <input type="radio"/></td> </tr> <tr> <td>Quebec <input type="radio"/></td> <td>Yukon or NWT <input type="radio"/></td> </tr> <tr> <td>Ontario <input type="radio"/></td> <td>Outside Canada <input type="radio"/></td> </tr> </table>	Nfld. <input type="radio"/>	Man. <input type="radio"/>	PEI <input type="radio"/>	Sask. <input type="radio"/>	N.S. <input type="radio"/>	Alta. <input type="radio"/>	N.B. <input type="radio"/>	B.C. <input type="radio"/>	Quebec <input type="radio"/>	Yukon or NWT <input type="radio"/>	Ontario <input type="radio"/>	Outside Canada <input type="radio"/>	<p>37. Did you have a full-time job to start at a definite date in the future?</p> <p>Yes <input type="radio"/> — go to 47a</p> <p>No <input type="radio"/> — go to 40</p>
Nfld. <input type="radio"/>	Man. <input type="radio"/>												
PEI <input type="radio"/>	Sask. <input type="radio"/>												
N.S. <input type="radio"/>	Alta. <input type="radio"/>												
N.B. <input type="radio"/>	B.C. <input type="radio"/>												
Quebec <input type="radio"/>	Yukon or NWT <input type="radio"/>												
Ontario <input type="radio"/>	Outside Canada <input type="radio"/>												
<p>31. Did you move from that province/country specifically to enroll in the ...<i>(read line A)</i>... program or for some other reason?</p> <p>Enroll <input type="radio"/></p> <p>Other reason <input type="radio"/></p> <p>Did not move <input type="radio"/></p>	<p>38a. During the last week of January 1987, did you have a job to start at a definite date in the future?</p> <p>Yes <input type="radio"/> —</p> <div data-bbox="1052 865 1351 1024" style="border: 1px solid black; padding: 5px;"> <p>38b. Was that job full-time, that is, 30 or more hours a week?</p> <p>Yes <input type="radio"/> — go to 47a</p> <p>No <input type="radio"/> — go to 40</p> </div> <p>No <input type="radio"/></p>												
<p>LAST WEEK OF JANUARY 1987</p>													
<p>32a. Now, some questions about your experiences since you completed the ...<i>(read line A)</i>... program. During the last week of January 1987, that is, about a year and a half ago, were you enrolled in any credit courses at an educational or training institution?</p> <p>Yes <input type="radio"/> —</p> <p>No <input type="radio"/></p> <p>Don't know <input type="radio"/></p> <div data-bbox="548 1348 847 1507" style="border: 1px solid black; padding: 5px;"> <p>32b. Was it full-time or part-time?</p> <p>Full-time <input type="radio"/></p> <p>Part-time <input type="radio"/></p> </div>	<p>39. Were you looking for a job during the last week of January 1987?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 47a</p>												
<p>33. During that week, did you do any work at a job or business?</p> <p>Yes <input type="radio"/> — go to 36</p> <p>No <input type="radio"/></p>	<p>40. Were you looking for a full-time job?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/></p>												
<p>LAST WEEK OF OCTOBER 1987</p>													
<p>34. That week, did you have a job or business at which you did not work?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 38a</p>	<p>41a. Now, some questions about the last week of October 1987. During that week, were you enrolled in any credit courses at an educational or training institution?</p> <p>Yes <input type="radio"/> —</p> <p>No <input type="radio"/></p> <p>Don't know <input type="radio"/></p> <div data-bbox="1052 1453 1351 1612" style="border: 1px solid black; padding: 5px;"> <p>41b. Was it full-time or part-time?</p> <p>Full-time <input type="radio"/></p> <p>Part-time <input type="radio"/></p> </div>												
<p>35. Were you absent from work because of a temporary layoff?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/></p> <p>Don't remember <input type="radio"/></p>	<p>42. During that week, did you do any work at a job or business?</p> <p>Yes <input type="radio"/> — go to 45</p> <p>No <input type="radio"/></p>												
<p>36. That week, did you have a job or business at which you did not work?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 38a</p>	<p>43. That week, did you have a job or business at which you did not work?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 47a</p>												
<p>37. Were you absent from work because of a temporary layoff?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/></p>	<p>44. Were you absent from work because of a temporary layoff?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/></p>												

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<p>45. Was the job you had during that week a full-time job, that is, usually 30 or more hours a week?</p> <p>Yes <input type="radio"/> — go to 50</p> <p>No <input type="radio"/></p>	<p>51. INTERVIEWER CHECK-ITEM: If any "Yes" in 50.</p> <p>check <input type="radio"/> — go to 53</p> <p>Otherwise <input type="radio"/> — go to 52</p>																		
<p>46. Did you have a full-time job to start at a definite date in the future?</p> <p>Yes <input type="radio"/> — go to 50</p> <p>No <input type="radio"/> — go to 49</p>	<p>52. Have you always had a job during the entire two years or so since you completed the ... (read line A) ... program?</p> <p>Yes <input type="radio"/> — go to 63</p> <p>No <input type="radio"/></p>																		
<p>47a. During the last week of October 1987, did you have a job to start at a definite date in the future?</p> <p>Yes <input type="radio"/> —</p>	<p>53. Considering all these reasons, how long did you go without a job during that period?</p> <p style="text-align: center;"> <input style="width: 40px; border: 1px solid black;" type="text"/> Number of months </p>																		
<p>47b. Was that job full-time, that is, 30 or more hours a week?</p> <p>Yes <input type="radio"/> — go to 50</p> <p>No <input type="radio"/> — go to 49</p>	<p>54. Was there any time during this ... (read answer in 53) ... period when you were <u>NOT</u> looking for a job?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 61</p>																		
<p>48. Were you looking for a job during the last week of October 1987?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 50</p>	<p>55. At any time during this ... (read answer in 53) ... period, was there any time you <u>WERE</u> looking for a job?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 59</p>																		
<p>49. Were you looking for a full-time job?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/></p>	<p>56. During this ... (read answer in 53) ... period, how long in total were you looking for a job?</p> <p style="text-align: center;"> <input style="width: 40px; border: 1px solid black;" type="text"/> Number of months </p> <p>(INTERVIEWER: Q.56 must not be more than Q.53)</p>																		
<p>E. PERIOD SINCE COMPLETING POSTSECONDARY STUDIES.</p>																			
<p>50. Now some questions about the entire two years or so since you completed the ... (read line A) ... program. During that period, were you ever without a job ... (Read reasons)</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="width: 10%; text-align: center;">Yes</th> <th style="width: 10%; text-align: center;">No</th> </tr> </thead> <tbody> <tr> <td>a. because you were going to school?</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>b. because you had personal or family responsibilities?</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>c. because you couldn't find work?</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>d. OR for any other reason? (Specify)</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td colspan="3" style="padding-top: 10px;"> <div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div> </td> </tr> </tbody> </table>		Yes	No	a. because you were going to school?	<input type="radio"/>	<input type="radio"/>	b. because you had personal or family responsibilities?	<input type="radio"/>	<input type="radio"/>	c. because you couldn't find work?	<input type="radio"/>	<input type="radio"/>	d. OR for any other reason? (Specify)	<input type="radio"/>	<input type="radio"/>	<div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div>			<p>57. At any time during the ... (read answer in 56) ... period you were looking for a job, were you a full-time student?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 59</p>
	Yes	No																	
a. because you were going to school?	<input type="radio"/>	<input type="radio"/>																	
b. because you had personal or family responsibilities?	<input type="radio"/>	<input type="radio"/>																	
c. because you couldn't find work?	<input type="radio"/>	<input type="radio"/>																	
d. OR for any other reason? (Specify)	<input type="radio"/>	<input type="radio"/>																	
<div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div> <div style="border: 1px solid black; height: 15px; width: 100%;"></div>																			
	<p>58. How much of this ... (read answer in 56) ... period were you a full-time student?</p> <p style="text-align: center;"> <input style="width: 40px; border: 1px solid black;" type="text"/> Number of months </p> <p>(INTERVIEWER: Q.58 must not be more than Q.56)</p>																		

<p>59. During the period when you were <u>NOT</u> looking for a job, were you ever wanting to start a new job or return to an old job?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> → go to 63</p>	<p>67. Did you have more than one job or business that week?</p> <p>Yes <input type="radio"/> } go to 72</p> <p>No <input type="radio"/> }</p>
<p>60. How long were you wanting? (That is, how long were you wanting to start a new job or return to an old job during the period you were <u>NOT</u> looking for a job?)</p> <p><input style="width: 40px; height: 15px;" type="text"/> → go to 63</p> <p>Number of months</p>	<p>68a. During that week of May 1 to 7, did you have a job to start at a definite date in the future?</p> <p>Yes <input type="radio"/> →</p> <div style="border: 1px solid black; padding: 5px; margin-left: 20px;"> <p>68b. Is that job full-time, that is, 30 or more hours a week?</p> <p>Yes <input type="radio"/> → go to 72</p> <p>No <input type="radio"/> → go to 71</p> </div> <p>No <input type="radio"/></p>
<p>61. At any time during the ... (read answer in 53) ... period you were looking for a job, were you ever a full-time student?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> → go to 63</p>	<p>69a. During the week of May 1 to 7, were you looking for a job?</p> <p>Yes <input type="radio"/> →</p> <div style="border: 1px solid black; padding: 5px; margin-left: 20px;"> <p>69b. Were you looking for a full-time job?</p> <p>Yes <input type="radio"/> } go to 98</p> <p>No <input type="radio"/> }</p> </div> <p>No <input type="radio"/></p>
<p>62. How much of this ... (read answer in 53) ... period were you a full-time student?</p> <p><input style="width: 40px; height: 15px;" type="text"/> Number of months</p> <p>(INTERVIEWER: Q.62 must not be more than Q.53)</p>	<p>70. What was the main reason you did not look for a job that week? (Do not read list; check one only)</p> <p>Own illness or disability <input type="radio"/></p> <p>Personal or family responsibilities <input type="radio"/></p> <p>Going to school <input type="radio"/></p> <p>No longer interested in finding a job <input type="radio"/></p> <p>Waiting for recall (to former job) <input type="radio"/></p> <p>Has already found a new job <input type="radio"/></p> <p>Waiting for replies from employer <input type="radio"/></p> <p>Could not find the kind of job wanted <input type="radio"/></p> <p>Discouraged with looking <input type="radio"/></p> <p>No reason given <input type="radio"/></p> <p>Other reason (Specify) <input type="radio"/></p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>F. WEEK OF MAY 1-7, 1988.</p>	
<p>63. The next few questions refer to the week of May 1 to 7, that is, ... week(s) ago. During that week, did you work at a job or business?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> → go to 65</p>	<p>64. Did you have more than one job or business that week?</p> <p>Yes <input type="radio"/> } go to 72</p> <p>No <input type="radio"/> }</p>
<p>65. That week, did you have a job or business at which you did not work?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> → go to 62a</p>	<p>66. Were you absent from work because of a temporary layoff?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/></p>

go to 98

<p>71. What is the main reason you had a part-time job? (Do not read list; check one only)</p> <p>Own illness or disability <input type="radio"/></p> <p>Personal or family responsibilities <input type="radio"/></p> <p>Going to school <input type="radio"/></p> <p>Could only find part-time work <input type="radio"/></p> <p>Did not want full-time work <input type="radio"/></p> <p>Full-time work is under 30 hours a week <input type="radio"/></p> <p>Other reason (Specify) <input type="radio"/> ➔</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>74. What kind of work did you do? (Give full description, e.g., elementary school teacher, manager of a biological research department, shoe salesman.)</p> <p>Same kind of work as in 25 <input type="radio"/></p> <p>OR:</p> <p>_____</p> <p>_____</p> <p>_____</p>
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p align="center">DESCRIPTION OF MAIN JOB</p> <p><i>INTERVIEWER: For questions 72 through 94, if the respondent had (or will have) more than one job, ask about the main job, i.e., the one usually worked at for the most number of hours.</i></p> </div> <p>72. For whom did you work? (Name of business, government department or agency, or person)</p> <p>Same employer as in 23 <input type="radio"/></p> <p>OR:</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>75. In this work, what were your most important activities or duties? (Give full description, e.g., teaching geography, managing a research lab., selling shoes)</p> <p>Same activities or duties as in 26 <input type="radio"/></p> <p>OR:</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>73. What kind of business, industry or service is this? (Give full description, e.g., elementary school, municipal government, retail shoe store)</p> <p>Same business as in 24 <input type="radio"/></p> <p>OR:</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>76. If you were to work your usual hours at that job for 12 months, approximately what would be your gross earnings? (Record to the nearest thousand dollars)</p> <p>\$ _____</p> <p>Don't know <input type="radio"/></p> <p>Refused <input type="radio"/></p>
<p>77. Do you think the ... (read line A) ... program was intended to prepare you for a specific job or career?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 79</p>	<p>78. Was the job you had in the week of May 1 to 7 one for which your educational program was designed?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/></p> <p>Don't know <input type="radio"/></p>
<p>79. Were you a paid worker or self-employed?</p> <p>Paid worker <input type="radio"/></p> <p>Self-employed <input type="radio"/> — go to 84</p> <p>Other (e.g., unpaid family worker) <input type="radio"/> — go to 88</p>	<p>80. Is this a permanent position or a temporary position?</p> <p>Permanent <input type="radio"/></p> <p>Temporary <input type="radio"/></p>

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81. When you were selected for that job, what level of education was needed to get the job? (Do not read list; check one only)

Don't know

No qualifications specified

High School

Some high school

Completed high school

General Postsecondary

Some postsecondary education (level not specified)

Trade-Vocational

Trade-vocational, level not specified

Trade or vocational certificate/diploma

College:

Some college, CEGEP or similar institution

Diploma or certificate from college, CEGEP or similar institution, incl. nursing school

University:

Some university (incl. university transfer in Alta. and B.C.)

University diploma or certificate below Bachelor level

Degree, level not specified

Bachelor's degree (e.g., B.A., B.Sc., 4-year B.Ed.)

University diploma or certificate, level not specified

University diploma or certificate above Bachelor level

Master's degree (e.g., M.A., M.Sc., M.Ed.)

Degree in medicine, dentistry, veterinary medicine, law, optometry or theology (M.D., D.D.S., D.M.D., D.V.M., L.B., O.D., M.Div.) or 1-year B. Ed. after another Bachelor's degree

Earned Doctorate (e.g., Ph.D., D.Sc., D.Ed.)

Other (Specify)

go to 83

82a. Did the employer specify that it must be in a specific field or fields of study?

Yes — 82b. What field(s) of study? (If two of equal importance, enter both)

No

83. Did the employer specify that related work experience was essential for that job?

Yes

No

Don't know

84. INTERVIEWER CHECK-ITEM:

If "Yes" in 68a,

check — go to 98

Otherwise — go to 85

85. In this job, did you use any of the skills acquired from the ... (read line A) ... program?

Yes

No

86. Considering all aspects of the job you had in the week of May 1 to 7, how satisfied were you with the job? Would you say that you were ... (read first four categories) ...

very satisfied?

satisfied?

dissatisfied?

very dissatisfied?

Don't know, no opinion

87. Considering the duties and responsibilities of that job, how satisfied were you with the money you made? Would you say that you were ... (read first four categories) ...

very satisfied?

satisfied?

dissatisfied?

very dissatisfied?

Don't know, no opinion

<p>88. Was the job you had during that week a full-time job, that is, usually 30 or more hours a week?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 99</p>	<p>94. During that week, were you looking for a full-time job?</p> <p>Yes <input type="radio"/> } No <input type="radio"/> } go to 98</p>
<p>89. How many hours a week do you usually work at that job? (If respondent says "it varies", ask for an average of the last four weeks)</p> <p><input style="width: 40px;" type="text"/> — go to 95</p> <p>Number of hours</p>	<p>95. Have you worked at that job full-time for six months or more? (By this we mean doing the same kind of work for the same employer)</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 97</p>
<p>90. What is the main reason you had a part-time job? (Do not read list; check one only)</p> <p>Own illness or disability <input type="radio"/></p> <p>Personal or family responsibilities <input type="radio"/></p> <p>Going to school <input type="radio"/></p> <p>Could only find part-time work <input type="radio"/></p> <p>Did not want full-time work <input type="radio"/></p> <p>Full-time work is under 30 hours a week <input type="radio"/></p> <p>Other reason (Specify) <input type="radio"/></p> <p><input style="width: 100%; height: 15px;" type="text"/></p> <p><input style="width: 100%; height: 15px;" type="text"/></p> <p><input style="width: 100%; height: 15px;" type="text"/></p>	<p>96. Was that the <u>FIRST</u> job at which you worked full-time for six months or more <u>AFTER</u> completing the <u>...</u> (read line A) ... program?</p> <p>Yes <input type="radio"/> — go to 120</p> <p>No <input type="radio"/> — go to 100</p>
<p>91. How many hours a week do you usually work at that job? (If respondent says "it varies", ask for an average of the last four weeks)</p> <p><input style="width: 40px;" type="text"/></p> <p>Number of hours</p>	<p>97. When did you begin that job?</p> <p><input style="width: 30px;" type="text"/> / <input style="width: 30px;" type="text"/> 1 9 <input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/></p> <p>Month Year</p>
<p>92. When did you begin that job?</p> <p><input style="width: 30px;" type="text"/> / <input style="width: 30px;" type="text"/> 1 9 <input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/></p> <p>Month Year</p>	<p>98. Have you ever held a full-time job lasting six months or more?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 121</p>
<p>93. Did you have a full-time job to start at a definite date in the future?</p> <p>Yes <input type="radio"/> — go to 98</p> <p>No <input type="radio"/></p>	<p>99. Have you had a job at which you worked full-time for six months or more <u>AFTER</u> completing the <u>...</u> (read line A) ... program?</p> <p>Yes <input type="radio"/> — go to 101</p> <p>No <input type="radio"/> — go to 121</p>
<p>100. When did you begin the job you had in the week of May 1 to 7?</p> <p><input style="width: 30px;" type="text"/> / <input style="width: 30px;" type="text"/> 1 9 <input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/></p> <p>Month Year</p>	<p>100. When did you begin the job you had in the week of May 1 to 7?</p> <p><input style="width: 30px;" type="text"/> / <input style="width: 30px;" type="text"/> 1 9 <input style="width: 30px;" type="text"/> <input style="width: 30px;" type="text"/></p> <p>Month Year</p> <p><i>(INTERVIEWER: The date should not be later than January 1988)</i></p>

<p>101. When did you start the FIRST job at which you worked full-time for six months or more AFTER completing the ... (read line A) ... program? And when did you end it?</p> <p>Start: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1 9 <input type="text"/> <input type="text"/> <small>Month Year</small></p> <p>End: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1 9 <input type="text"/> <input type="text"/> <small>Month Year</small></p> <p>OR: Still working at it <input type="radio"/></p>	<p>107. Now some questions about the time between completing the ... (read line A) ... program and the start of this job, that is, between (date in 106a) and (date in 106b). During that period, were you ever without a job ... (Read reasons)</p> <p style="text-align: right;">Yes No</p> <p>a. because you were going to school? <input type="radio"/> <input type="radio"/></p> <p>b. because you had personal or family responsibilities? <input type="radio"/> <input type="radio"/></p> <p>c. because you couldn't find work? <input type="radio"/> <input type="radio"/></p> <p>d. OR for any other reason? (Specify) <input checked="" type="radio"/> <input type="radio"/></p> <p><input type="text"/></p> <p><input type="text"/></p> <p><input type="text"/></p>
<p>102. For whom did you work? (Name of business, government department or agency or person)</p> <p><input type="text"/></p> <p><input type="text"/></p> <p><input type="text"/></p>	<p>108. INTERVIEWER CHECK-ITEM:</p> <p>If any "Yes" in 107,</p> <p>check <input type="radio"/> → go to 110</p> <p>Otherwise <input type="radio"/> → go to 109</p>
<p>103. What kind of business, industry or service is this? (Give full description, e.g. elementary school, municipal government, retail shoe store)</p> <p><input type="text"/></p> <p><input type="text"/></p> <p><input type="text"/></p>	<p>109. Did you always have a job during the entire period between (date in 106a) and (date in 106b)?</p> <p>Yes <input type="radio"/> → go to 121</p> <p>No <input type="radio"/></p>
<p>104. What kind of work did you do? (Give full description, e.g., elementary school teacher, manager of a biological research department, shoe salesperson)</p> <p><input type="text"/></p> <p><input type="text"/></p> <p><input type="text"/></p>	<p>110. Considering all these reasons, how long in total were you without a job during that period?</p> <p><input type="text"/> Number of months</p>
<p>105. In this work, what were your most important activities or duties? (Give full description, e.g., teaching geography, managing a research lab., selling shoes)</p> <p><input type="text"/></p> <p><input type="text"/></p> <p><input type="text"/></p>	<p>111. Was there any time during this ... (read answer in 110) ... period when you were NOT looking for a job?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> → go to 118</p>
<p>H. LABOUR FORCE ACTIVITIES BETWEEN STUDIES AND FIRST FULL-TIME 6-MONTH JOB.</p> <p>106. INTERVIEWEE CHECK-ITEM:</p> <p>a) Copy the date from item 9:</p> <p><input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1 9 <input type="text"/> <input type="text"/> <small>Month Year</small></p> <p>b) Copy the start date from item 10:</p> <p><input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 1 9 <input type="text"/> <input type="text"/> <small>Month Year</small></p> <p>If the date in b) is after the date in a),</p> <p>check <input type="radio"/> → go to 107</p> <p>Otherwise <input type="radio"/> → go to 121</p>	<p>112. At any time during this ... (read answer in 110) ... period, was there any time you WERE looking for a job?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> → go to 116</p>

<p>113. During this... (read answer in 110)... period, how many... in total were you looking for a job?</p> <p>Number of words</p> <p>(INTERVIEWER: Q. 113 must not be more than Q. 110)</p>	<p>GENERAL TRAINING AND EDUCATION</p> <p>121. Now I'd like to ask you about your reasons for enrolling in the... (read line A)... program. On a scale of one to four, where one means "not at all" and four means "to a great extent", how important was it for you to acquire the skills needed in a particular occupation?</p> <p>1 "not at all" 2 3 4 "to a great extent"</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>114. At any time during this... (read answer in 113)... period you were looking for a job, were you a full-time student?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 116</p>	<p>122. Given your experience since graduation, on the same scale of one to four, to what extent do you feel your program provided you with the skills needed in a particular occupation?</p> <p>1 "not at all" 2 3 4 "to a great extent"</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>115. How much of this... (read answer in 113)... period were you a full-time student?</p> <p>Number of months</p> <p>(INTERVIEWER: Q. 115 must not be more than Q. 113)</p>	<p>123. Again on the scale of one to four, when you enrolled how important was it for you to acquire an in-depth knowledge of an academic discipline?</p> <p>1 "not at all" 2 3 4 "to a great extent"</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>116. During the period when you were NOT looking for a job, were you ever waiting to start a new job or return to an old job?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 121</p>	<p>124. To what extent do you feel your program provided you with an in-depth knowledge of an academic discipline?</p> <p>1 "not at all" 2 3 4 "to a great extent"</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>117. How long were you waiting? (That is, how long were you waiting to start a new job or return to an old job during the period you were NOT looking for a job?)</p> <p>Number of months</p> <p>— go to 121</p>	<p>125. When you decided to enroll, how important was it for you to improve yourself generally?</p> <p>1 "not at all" 2 3 4 "to a great extent"</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>118. At any time during this... (read answer in 110)... period you were looking for a job, were you ever a full-time student?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 121</p>	<p>126. To what extent do you feel your program provided you with an opportunity to improve yourself generally?</p> <p>1 "not at all" 2 3 4 "to a great extent"</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>119. How much of this... (read answer in 110)... period were you a full-time student?</p> <p>Number of months</p> <p>— go to 121</p> <p>(INTERVIEWER: Q. 119 must not be more than Q. 110)</p>	
<p>120. When did you begin the job you had in the week of May 1 to 7?</p> <p>1 1 9</p> <p>(INTERVIEWER: The date should not be later than January 1968)</p>	

127. When you decided to enroll, how important was it for you to improve your chances of a good income?

1 "not at all" 2 3 4 "to a great extent"

128. To what extent do you feel your program provided you with improved chances of a good income?

1 "not at all" 2 3 4 "to a great extent"

129. Given your experiences since completing the ... (read line A)... program in 1986, would you have selected the same educational program, a different program, or not taken any postsecondary program?

Same } go to 134

None }

Don't know }

Different

130. Would you have selected the same field of study or specialization?

Yes → go to 132

No

Don't know → go to 132

131. What field of study or specialization would you have chosen? (If two, record the more important first)

.....

.....

.....

.....

.....

.....

132. What kind of program would you have taken: university, college or trade-vocational?

University go to 133

College } go to 134

Trade-vocational }

Don't know }

Other (Specify) }

.....

.....

.....

133. What level of degree or diploma would you have taken? (Do not read list; mark one only)

University diploma or certificate below bachelor level

Bachelor's degree, general or honours (e.g., B. A., B. Sc., 4-year B. Ed.)

University diploma or certificate above bachelor level

Master's degree (e.g., M.A., M.Sc., M.Ed.)

Degree in medicine, dentistry, veterinary medicine, law, optometry or theology (M.D., D.O.S., D.M.D., D.V.M., LL.B., O.D., M.Div.), or 1-year B. Ed. after another Bachelor's degree

Doctorate (e.g., Ph.D., D.Sc., D.Ed.)

Don't know

Other: (Specify)

.....

.....

.....

134. In general, how important is it that any job you get be related to your field of study or specialization? Would you say it is ... (read first four categories)

very important?

important?

not important?

not at all important?

Don't know, no opinion

135. Since you completed the ... (read line A)... program in 1986, have you taken any education or training programs leading to any degrees, diplomas, certificates or licences?

Yes

No → go to 138

<p>137. Did you take any of these programs as a full-time student?</p> <p>Yes <input type="radio"/> — go to 148</p> <p>No <input type="radio"/></p>	<p>147a. Have you had any difficulties in repaying the money you owe?</p> <p>Yes <input type="radio"/> —</p> <p>No <input type="radio"/></p>															
<p>138. Did you ever borrow money to finance ANY of your education through the student loan program?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 142</p>	<p>147b. What kinds of difficulties have you had? (Do not read list; check one or more)</p> <p>a. Unemployed, couldn't get any work <input type="radio"/></p> <p>b. Could only get part-time work <input type="radio"/></p> <p>c. Don't earn enough, income too small <input type="radio"/></p> <p>d. High debt load, owe too much to others <input type="radio"/></p> <p>e. Other reasons (Specify) <input type="radio"/></p> <p>_____</p> <p>_____</p> <p>_____</p>															
<p>139. How much did you borrow in total through the student loan program? (Record to nearest \$100)</p> <p>\$ <input type="text" value="5"/> <input type="text" value="0"/> <input type="text" value="0"/></p>																
<p>140. How much money from the student loan program did you owe when you graduated in 1986? (Record to nearest \$100)</p> <p>\$ <input type="text" value="6"/> <input type="text" value="0"/> <input type="text" value="0"/></p>																
<p>141. How much from the student loan program do you owe now? (Record to nearest \$100)</p> <p>\$ <input type="text" value="7"/> <input type="text" value="0"/> <input type="text" value="0"/></p>	<p>148. INTERVIEWER CHECK-ITEM:</p> <p>If line A reads "Master" or "Doctorate",</p> <p>check <input type="radio"/> — go to 149</p> <p>Otherwise <input type="radio"/> — go to 150</p>															
<p>142. Did you ever borrow money to finance ANY of your education from other sources such as relatives or directly from a bank?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/> — go to 146</p>	<p>149. During your Master's/Doctorate program, did you receive a grant or bursary from ... (read list)</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="width: 10%; text-align: center;">Yes</th> <th style="width: 10%; text-align: center;">No</th> </tr> </thead> <tbody> <tr> <td>a. the Natural Sciences and Engineering Research Council, sometimes called "N-serc"?</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>b. the Social Sciences and Humanities Research Council, sometimes called "Serc"?</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>c. the Quebec Research Training Fund?</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> <tr> <td>d. some other fund or agency? (Specify)</td> <td style="text-align: center;"><input type="radio"/></td> <td style="text-align: center;"><input type="radio"/></td> </tr> </tbody> </table> <p>_____</p> <p>_____</p> <p>_____</p>		Yes	No	a. the Natural Sciences and Engineering Research Council, sometimes called "N-serc"?	<input type="radio"/>	<input type="radio"/>	b. the Social Sciences and Humanities Research Council, sometimes called "Serc"?	<input type="radio"/>	<input type="radio"/>	c. the Quebec Research Training Fund?	<input type="radio"/>	<input type="radio"/>	d. some other fund or agency? (Specify)	<input type="radio"/>	<input type="radio"/>
	Yes	No														
a. the Natural Sciences and Engineering Research Council, sometimes called "N-serc"?	<input type="radio"/>	<input type="radio"/>														
b. the Social Sciences and Humanities Research Council, sometimes called "Serc"?	<input type="radio"/>	<input type="radio"/>														
c. the Quebec Research Training Fund?	<input type="radio"/>	<input type="radio"/>														
d. some other fund or agency? (Specify)	<input type="radio"/>	<input type="radio"/>														
<p>143. How much did you borrow in total from these other sources? (Record to nearest \$100)</p> <p>\$ <input type="text" value="3"/> <input type="text" value="0"/> <input type="text" value="0"/></p>																
<p>144. How much did you owe these other sources when you graduated in 1986? (Record to nearest \$100)</p> <p>\$ <input type="text" value="4"/> <input type="text" value="0"/> <input type="text" value="0"/></p>																
<p>145. How much do you now owe to these other sources? (Record to nearest \$100)</p> <p>\$ <input type="text" value="5"/> <input type="text" value="0"/> <input type="text" value="0"/></p>	<p>150. During the next 12 months, do you plan to take any courses or a program that could lead to a degree, diploma or certificate?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/></p>															
<p>146. INTERVIEWER CHECK-ITEM:</p> <p>If Q. 141 or Q. 145 greater than zero,</p> <p>check <input type="radio"/> — go to 147a</p> <p>Otherwise <input type="radio"/> — go to 148</p>																

151. Since you completed the ...*(read line A)*... program in 1986, have you ever registered to become an apprentice?

Yes

No → go to 154

152. Was this a formal registration with a provincial apprenticeship authority?

Yes

No → go to 154

153. What trade was this?

J. GENERAL QUESTIONS.

154. And now, some general questions. In what month and year were you born?

Month: Year:

155. What is your marital status? Are you ... *(Read the categories)*

now married or living common-law?

single, that is, never married?

a widow or widower?

separated or divorced?

156a. What language did you first speak in childhood? *(Check one or more)*

156b. Do you still understand it?

		Yes	No
English	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
French	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other language	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

157. What language do you speak most often at home? *(Check one or more)*

English

French

Other language

158. **INTERVIEWER CHECK-ITEM:**

If line D reads "Bilingual",

check → go to 159

Otherwise → go to 160a

159. While you were studying for the ...*(read line A)*... program, in what language did you take most of your courses? *(Do not read list)*

English

French

English and French about equally

Another language

160a. Do you have any dependent children?

Yes → 160b. Please tell me their ages. *(Record age in years as of last birthday)*

No

a.	b.	c.	d.	e.
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
f.	g.	h.	i.	j.
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

161. What was your total personal income from all sources before taxes and deductions for the last 12 months? Was it ...

less than \$30,000?

- less than \$20,000?
 - less than \$15,000?
 - \$15,000 or more?
- \$20,000 or more?
 - less than \$25,000?
 - \$25,000 or more?

\$30,000 or more?

- less than \$40,000?
 - less than \$35,000?
 - \$35,000 or more?
- \$40,000 or more?
 - less than \$45,000?
 - \$45,000 or more?

No income

Don't know

162. What is the highest level of education completed by your father and by your mother (or guardian)? (Do not read list; check one only in each column)

	Father	Mother
School:		
No formal schooling	<input type="radio"/>	<input type="radio"/>
Elementary school	<input type="radio"/>	<input type="radio"/>
Some secondary (high school)	<input type="radio"/>	<input type="radio"/>
Completed secondary school	<input type="radio"/>	<input type="radio"/>
Trade-vocational:		
Trade or vocational diploma or certificate	<input type="radio"/>	<input type="radio"/>
College:		
Some college, CEGEP, Institute of technology or Nursing school	<input type="radio"/>	<input type="radio"/>
Completed college, CEGEP, Inst. Tech., or Nursing school	<input type="radio"/>	<input type="radio"/>
University:		
Some university	<input type="radio"/>	<input type="radio"/>
Teachers college	<input type="radio"/>	<input type="radio"/>
University certificate or diploma below bachelor level	<input type="radio"/>	<input type="radio"/>
Bachelor's degrees (e.g., B.A., B.Sc., B.A.Sc., 4-year B.Ed.)	<input type="radio"/>	<input type="radio"/>
University certificate or diploma above bachelor level	<input type="radio"/>	<input type="radio"/>
Master's degrees (e.g., M.A., M.Sc., M.Ed.)	<input type="radio"/>	<input type="radio"/>
Degree in medicine, dentistry, veterinary medicine, law, geology, or theology (M.D., D.D.S., D.M.D., D.V.M., D.O., D.V.) or 3-year B.Ed. after another Bachelor's degree	<input type="radio"/>	<input type="radio"/>
Earned doctorate (e.g., Ph.D., D.Sc., D.Ed.)	<input type="radio"/>	<input type="radio"/>
Don't know	<input type="radio"/>	<input type="radio"/>
Other (Specify)	<input type="radio"/>	<input type="radio"/>
Father:	_____	

Mother:	_____	

163a. Do you consider yourself Inuit, North American Indian or Métis?

No, none of them

Inuit

North American Indian

Métis

163b. Are you a status or a non-status Indian?

Status

Non-status

164. Are you limited in the kind or amount of activity you can do because of a long-term physical condition, mental condition or health problem ... (Read list)

	Yes	No
a. at home?	<input type="radio"/>	<input type="radio"/>
b. at school or work?	<input type="radio"/>	<input type="radio"/>
c. in other activities, such as transportation or leisure-time activities?	<input type="radio"/>	<input type="radio"/>

165. INTERVIEWER CHECK-ITEM:

If any "yes" checked in 164,

check — go to 166a

Otherwise — go to 167a

166a. Are you handicapped or disabled with regard to ... (read list)

166b. How many years have you been handicapped or disabled in this way?

	No	Yes	Number of years
a. Mobility, agility?	<input type="radio"/>	<input type="radio"/>	1 | |
b. Sight, seeing?	<input type="radio"/>	<input type="radio"/>	2 | |
c. Hearing?	<input type="radio"/>	<input type="radio"/>	3 | |
d. Speech, speaking?	<input type="radio"/>	<input type="radio"/>	4 | |
e. Learning?	<input type="radio"/>	<input type="radio"/>	5 | |
f. Emotions, mental problems?	<input type="radio"/>	<input type="radio"/>	6 | |

<p>167a. During 1987, did you take part in any Canada Employment and Immigration Commission financial assistance programs?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/></p> <p>Don't know <input type="radio"/></p>	<p>167b. Which of the Canada Employment and Immigration Commission financial assistance programs did you take part in?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Any others?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Any others?</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Any others?</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>168. INTERVIEWER: Now go to items A and B on page 2 of the Tracing Sheet.</p>	<p>169. INTERVIEWER: Read the following statement concerning joint collection and data-sharing exactly as worded.</p> <p>To avoid duplication of enquiry, Statistics Canada is conducting this survey jointly with Employment and Immigration Canada, the Department of the Secretary of State and the provincial Ministries of Education and Labour. The information passed to these departments will not contain personal information and will be kept confidential and used only for statistical purposes.</p> <p>Do you agree to share your answers?</p> <p>Yes <input type="radio"/> — end interview</p> <p>No <input type="radio"/> — In accordance with the Statistics Act, would you please write to the Chief Statistician of Canada, Ottawa, Ontario, K1A 0T6, saying you do not wish to share your answers.</p> <p><i>INTERVIEWER: If the respondent asks if it isn't enough just to tell you he/she doesn't want to share, add:</i></p> <p>According to the law, we need to have a letter from you indicating that you object to your answers being shared, specifying to which departments your objections apply.</p> <p>END OF INTERVIEW: Thank you for your participation in this survey.</p> <p><i>(INTERVIEWER: Please check questions 170 and 171)</i></p> <p>170. Province or territory where respondent was located when interviewed</p> <p>Nfld. <input type="radio"/> Quebec <input type="radio"/> Alta. <input type="radio"/></p> <p>PEI <input type="radio"/> Ontario <input type="radio"/> BC <input type="radio"/></p> <p>NS <input type="radio"/> Man. <input type="radio"/> Yukon <input type="radio"/></p> <p>NB <input type="radio"/> Sask. <input type="radio"/> NWT <input type="radio"/></p> <p>171. Language of interview:</p> <p>English <input type="radio"/></p> <p>French <input type="radio"/></p>

APPENDIX G

Questionnaire Administered to Respondents at the Five-year Follow-up:
Follow-up of 1986 Graduates Questionnaire



Follow-up of
1986 Graduates

Form F86G-02

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Canada, 1983, Chapitre 219

PLACE LABEL HERE	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">INTERVIEWER NUMBER</td> </tr> <tr> <td style="text-align: center;"> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> </tr> </table> </td> </tr> <tr> <td style="padding: 2px;">INTERVIEWER NAME</td> </tr> <tr> <td style="padding: 2px;">SENIOR INTERVIEWER NAME</td> </tr> </table>	INTERVIEWER NUMBER	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> <td style="width: 15px; height: 15px;"></td> </tr> </table>											INTERVIEWER NAME	SENIOR INTERVIEWER NAME
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INTERVIEWER NAME															
SENIOR INTERVIEWER NAME															

RECORD OF CALLS / TRACING						
	Date	Start time	Finish time	Comments - Results	Telephone Number	Int. Insts.
1						
2						
3						
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7						
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9						
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Call Coverage by Time of Day and Day of Week						
Time Period	Mon.	Tues.	Wed	Thur.	Fri	Sat.
08:00 - 12:00						
12:01 - 16:00						
16:01 - 19:00						
19:01 - 21:00						

Total number of calls	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">1</td> <td style="width: 20px; height: 20px;"></td> </tr> </table>	1		
1				
Length of interview	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">2</td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> minutes	2		
2				
Final Status	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">3</td> <td style="width: 20px; height: 20px;"></td> </tr> </table>	3		
3				

65-93-256 / 1986-11-16 SICM-D-04-04-200

INTRODUCTION:
Hello, I'm ... (your name) ... from Statistics Canada. We are conducting a follow-up survey of 1988 graduates to add to the information you gave us in 1988. The survey is being carried out under the Statistics Act for Employment and Immigration Canada. Your answers will be kept confidential and used only for statistical purposes. While your participation is voluntary, your assistance is essential if the results are to be accurate.

SECTION A: LAST WEEK

A1. Last week, did you work at a job or business?
Yes 1 go to B1
No 2 go to A2

A2. Last week, did you have a job or business at which you did not work?
Yes 3 go to A3
No 4 go to A4

A3. Were you absent from work because of a temporary layoff?
Yes 5 } go to B1
No 6 }

AA. Last week, did you have a job to start at a definite date in the future?
Yes 1 go to A5
No 2 go to A7

A5. Will you usually work 30 or more hours per week?
Yes 3 go to C1
No 4 go to A6
Don't know 5 go to C1

A6. What is the reason you will usually work less than 30 hours per week? (Do not read list; check one only.)
Full-time work is under 30 hours a week 1 }
Did not want full-time work 2 } go to C1
Own illness or disability 3 }
Personal or family responsibilities 4 }
Going to school 5 }
Could only find part-time work 6 }
Other reason (Specify) 7 }
_____ }
_____ }
_____ }

A7. Last week, were you looking for a job?
Yes 1 go to A8
No 2 go to A10

A8. Were you looking for a full-time job?
Yes 3 go to A11
No 4 go to A9

A9. Were you looking for a job at which you would usually work 30 or more hours per week?
Yes 5 } go to A11
No 6 }

A10. What was the main reason you did not look for a job last week? (Do not read list; check one only.)
Own illness or disability 01
Personal or family responsibilities 02
Going to school 03
No longer interested in finding a job 04
Waiting for recall (to former job) 05
Has already found a new job 06
Waiting for replies from employer 07
Could not find the kind of job wanted 08
Discouraged with looking 09
No reason given 10
Other reason (Specify) 11
_____ }
_____ }
_____ }

A11. Since January 1988, did you ever have a full-time job which lasted six months or more?
Yes 1 go to D1
No 2 go to A12

A12. Since January 1988, did you ever have a job at which you usually worked 30 or more hours per week and which lasted six months or more?
Yes 3 go to D1
No 4 go to E1

SECTION B: JOB HELD IN MAY 1988

B1. INTERVIEWER CHECK ITEM:

If employer's name is listed in INFO Item 1 1 go to B2
Otherwise 2 go to B4

B2. Last week, did you have a job with ... (Read INFO Item 1.) ...?

Yes 3 go to B3
No 4 go to B4

B3. Have you held a job with that employer continuously since May 1988? Include time off for illness, (maternity leave), vacations, labour disputes or temporary layoffs.

Yes 5 go to B5
No 6 go to B4

B4. Did you have more than one job or business last week?

Yes 7 } go to C1
No 8 }

B5. Did you have more than one job or business last week?

Yes 1 go to B6
No 2 go to B7

B6. Last week, was your main job with... (Read INFO Item 1.) ...?
(INTERVIEWER: If asked, the main job refers to the job usually worked at for the most number of hours.)

Yes 3 go to B7
No 4 go to C1

B7. INTERVIEWER CHECK ITEM:

If occupation is listed in INFO Item 2 5 go to B11
Otherwise 6 go to B8

B8. What kind of work did you usually do at that job? (Give full description, e.g., elementary school teacher, manager of a biological research department, shoe salesperson.)

B9. In this work, what were your most important activities or duties? (Give full description, e.g., teaching geography, managing a research lab., selling shoes.)

B10. In May 1988, did you do the same kind of work and activities or duties?

Yes 7 go to B12
No 8 go to B16

B11. In May 1988 you were working as a... (Read INFO Item 2.) ... Since then, have you changed the kind of work, activities or duties you were doing?

Yes 1 go to B14
No 2 go to B12
INFO Item 2 data incorrect ... 3 go to B14

B12. Last week, were you a paid worker or self-employed?

Paid worker 4 go to B13
Self-employed 5 go to B23
Other (e.g., unpaid family worker) ... 6 go to B13

B13. Is this a permanent position or a temporary position?

Permanent 7 go to B23
(Definition: There was no indication that the job would end at some definite point in time, e.g., hired permanently with no specified term.)

Temporary 8 go to B23
(Definition: There was a definite indication that the job would terminate at some specified point in time, e.g., hired for a six-month term.)

B14. What kind of work did you usually do at the job you had last week? (Give full description, e.g., elementary school teacher, manager of a biological research department, shoe salesperson.)

B15. In this work, what were your most important activities or duties? Give full description of teaching, geography, managing a research job, sewing shoes.

.....

B16. When did you start working at this new job?

1 | 1	1988	<input type="radio"/>
Month	1989	<input type="radio"/>
	1990	<input type="radio"/>
	1991	<input type="radio"/>

(INTERVIEWER: Item B16 date must not be before May 1988.)

B17. Was the educational program you completed in 1986 intended to prepare you for this job?

Yes

No

Don't know

B18. Last week, were you a paid worker or self-employed?

Paid worker go to B19

Self-employed go to B23

Other (e.g., unpaid family worker) go to B19

B19. Is this a permanent position or a temporary position?

Permanent
 (Definition: There was no indication that the job would end at some definite point in time, e.g., hired permanently with no specified term.)

Temporary
 (Definition: There was a definite indication that the job would terminate at some specified point in time, e.g., hired for a six-month term.)

B20. When you were selected for that job, what level of education was needed to get the job? (Do not add list. Check one only.)

Don't know	01	<input type="radio"/>	} go to B22
No qualifications specified	02	<input type="radio"/>	
High School	03	<input type="radio"/>	
Some high school High school diploma certificate	04	<input type="radio"/>	
General Postsecondary:			
Some postsecondary education (level not specified)	05	<input type="radio"/>	
Trade or Vocational:			
Some trade-vocational	06	<input type="radio"/>	
Trade or vocational certificate diploma	07	<input type="radio"/>	
College:			
Some college, CEGEP or similar institution, incl. nursing school	08	<input type="radio"/>	
Diploma or certificate from college, CEGEP or similar institution, incl. nursing school	09	<input type="radio"/>	
University:			
Some university (incl. university transfer in Alta. and B.C.)	10	<input type="radio"/>	
University diploma or certificate below bachelor's level	11	<input type="radio"/>	
Degree, level not specified	12	<input type="radio"/>	
Bachelor's degree (e.g., B.A., B.Sc., 4-year B.Ed.)	13	<input type="radio"/>	
University diploma or certificate, level not specified	14	<input type="radio"/>	
University diploma or certificate above bachelor's level but below master's level	15	<input type="radio"/>	
Master's degree (e.g., M.A., M.Sc., M.Ed.)	16	<input type="radio"/>	
Degree in medicine, dentistry, veterinary medicine, law, optometry or theology (M.D., D.D.S., D.M.D., D.V.M., LL.B., C.D., M.Dr.) or 1-year B. Ed. after another Bachelor's degree	17	<input type="radio"/>	
Earned Doctorate (e.g. Ph.D., D.Sc., D.Ed.)	18	<input type="radio"/>	
Other (Specify)	19	<input type="radio"/>	

.....

B21a. Did the employer specify that it must be in a specific field or fields of study?

Yes → **B21b.** What field(s) of study? (if two of equal importance, enter both.)

1st _____

2nd _____

No

B22. Did the employer specify that related work experience was essential for that job?

Yes 3

No 4

Don't know 5

B23. Has the level of education required to get this job changed since you started it?

Yes 6 go to B24

No 7 } go to B25

Don't know 8 }

B24. What level of education is required for this job now? (Do not read list; check one only.)

Don't know 01

No qualifications specified 02

High School:

Some high school 03

High school diploma/certificate 04

General Postsecondary:

Some postsecondary education (level not specified) 05

Trade or Vocational:

Some trade-vocational 06

Trade or vocational certificate/diploma 07

College:

Some college, CEGEP or similar institution, incl. nursing school 08

Diploma or certificate from college, CEGEP or similar institution, incl. nursing school 09

University:

Some university (incl. university transfer in Alta. and B.C.) 10

University diploma or certificate below bachelor's level 11

Degree, level not specified 12

Bachelor's degree (e.g., B.A., B.Sc., 4-year B.Ed.) 13

University diploma or certificate, level not specified 14

University diploma or certificate above bachelor's level but below master's level 15

Master's degree (e.g., M.A., M.Sc., M.Ed.) 16

Degree in medicine, dentistry, veterinary medicine, law, optometry or theology (M.D., D.D.S., D.M.D., D.V.M., LL.B., O.D., M.Div.) or 1-year B. Ed. after another Bachelor's degree 17

Earned Doctorate (e.g. Ph.D., D.Sc., D.Ed.) 18

Other (Specify) 19

<p>B25. In this job, did you use any of the skills acquired from the educational program you completed in 1988?</p> <p>Yes <input type="radio"/> No <input type="radio"/></p>	<p>B31. Last week, did you have a job to start at a definite date in the future?</p> <p>Yes <input type="radio"/> go to B32</p> <p>No <input type="radio"/> go to B34</p>
<p>B26. Considering all aspects of the job you had last week, how satisfied were you with the job? Would you say that you were ... (Read first four categories.) ...</p> <p>very satisfied? <input type="radio"/> 3</p> <p>satisfied? <input type="radio"/> 4</p> <p>dissatisfied? <input type="radio"/> 5</p> <p>very dissatisfied? <input type="radio"/> 6</p> <p>Don't know, no opinion <input type="radio"/> 7</p>	<p>B32. Will you usually work 30 or more hours per week at that job?</p> <p>Yes <input type="radio"/> go to B35</p> <p>No <input type="radio"/> go to B33</p> <p>Don't know <input type="radio"/> go to B35</p>
<p>B27. Considering the duties and responsibilities of that job, how satisfied were you with the money you made? Would you say that you were ... (Read first four categories.) ...</p> <p>very satisfied? <input type="radio"/> 1</p> <p>satisfied? <input type="radio"/> 2</p> <p>dissatisfied? <input type="radio"/> 3</p> <p>very dissatisfied? <input type="radio"/> 4</p> <p>Don't know, no opinion <input type="radio"/> 5</p>	<p>B33. What is the reason you will usually work less than 30 hours per week? (Do not read list; check one only.)</p> <p>Full-time work is less than 30 hours a week <input type="radio"/> } go to B35</p> <p>Did not want full-time work <input type="radio"/> }</p> <p>Own illness or disability <input type="radio"/> 3</p> <p>Personal or family responsibilities <input type="radio"/> 4</p> <p>Going to school <input type="radio"/> 5</p> <p>Could only find part-time work <input type="radio"/> 6</p> <p>Other reason (Specify) <input type="radio"/> 7</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>B28. Working your usual hours, approximately what would be your gross annual earnings at that job? (Record to the nearest thousand dollars.)</p> <p>\$ <input type="text"/> ,000</p> <p>Don't know <input type="radio"/> 997</p> <p>Refused <input type="radio"/> 998</p>	<p>B34. Last week, were you looking for a full-time job or a job at which you would usually work 30 or more hours per week?</p> <p>Yes <input type="radio"/> No <input type="radio"/></p>
<p>B29. How many hours a week did you usually work at that job? (If respondent says "it varies", ask for an average of the last four weeks.)</p> <p><input type="text"/> Number of hours</p>	<p>B35. In the job you held last week, did you ever work full-time for a period of six months or more since January 1988? By this we mean doing the same kind of work for the same employer.</p> <p>Yes <input type="radio"/> go to F1</p> <p>No <input type="radio"/> go to B36</p>
<p>(INTERVIEWER: If the number of hours is 30 or more, go to F1.)</p>	<p>B36. Since January 1988, did you ever work at that job for 30 hours or more per week for a period of six months or more?</p> <p>Yes <input type="radio"/> go to F1</p> <p>No <input type="radio"/> go to B37</p>
<p>B30. What is the reason you usually worked less than 30 hours per week? (Do not read list; check one only.)</p> <p>Full-time work is less than 30 hours a week <input type="radio"/> go to F1</p> <p>Did not want full-time work <input type="radio"/> go to B35</p> <p>Own illness or disability <input type="radio"/> 3</p> <p>Personal or family responsibilities <input type="radio"/> 4</p> <p>Going to school <input type="radio"/> 5</p> <p>Could only find part-time work <input type="radio"/> 6</p> <p>Other reason (Specify) <input type="radio"/> 7</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>B37. Since January 1988, did you ever have a full-time job which lasted six months or more?</p> <p>Yes <input type="radio"/> go to B39</p> <p>No <input type="radio"/> go to B38</p>

<p>B38. Since January 1988, did you ever have a job at which you usually worked 30 or more hours per week and which lasted six months or more?</p> <p>Yes <input type="radio"/> go to B39</p> <p>No <input type="radio"/> go to F1</p>	<p>SECTION C: DESCRIPTION OF MAIN JOB</p> <p>C1. INTERVIEWER. For questions C1 through C32, if the respondent had (or will have) more than one job, ask about the <u>main job</u>, i.e., the one usually worked at for the most number of hours.</p> <p>For whom did (will) you work? (Name of business, government department or agency, or person.)</p> <p>Same employer as in INFO item 1 <input type="radio"/></p> <p>or 1</p> <p>_____</p> <p>_____</p> <p>_____</p>						
<p>B39. INTERVIEWER. For questions B39 through B44 if the respondent had more than one such job, ask about the <u>most recent job</u>.</p> <p>For whom did you work? (Name of business, government department or agency, or person.)</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>C2. What kind of business, industry or service is this? (Give full description, e.g., elementary school, municipal government, retail shoe store.)</p> <p>_____</p> <p>_____</p> <p>_____</p>						
<p>B40. What kind of business, industry or service is this? (Give full description, e.g., elementary school, municipal government, retail shoe store.)</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>C3. What kind of work did (will) you do? (Give full description, e.g., elementary school teacher, manager of a biological research department, shoe salesperson.)</p> <p>_____</p> <p>_____</p> <p>_____</p>						
<p>B41. What kind of work did you do? (Give full description, e.g., elementary school teacher, manager of a biological research department, shoe salesperson.)</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>C4. In this work, what were (will be) your most important activities or duties? (Give full description, e.g., teaching geography, managing a research lab., selling shoes.)</p> <p>_____</p> <p>_____</p> <p>_____</p>						
<p>B42. In this work, what were your most important activities or duties? (Give full description, e.g., teaching geography, managing a research lab., selling shoes.)</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>C1. What kind of work did (will) you do? (Give full description, e.g., elementary school teacher, manager of a biological research department, shoe salesperson.)</p> <p>_____</p> <p>_____</p> <p>_____</p>						
<p>B43. When did you begin that job?</p> <p> <table style="display: inline-table; border: 1px solid black; text-align: center;"> <tr><td style="width: 20px; height: 20px;"> </td><td style="width: 20px; height: 20px;"> </td></tr> </table> <table style="display: inline-table; border: 1px solid black; text-align: center; margin-left: 20px;"> <tr><td style="width: 20px; height: 20px;">1</td><td style="width: 20px; height: 20px;">9</td><td style="width: 20px; height: 20px;"> </td><td style="width: 20px; height: 20px;"> </td></tr> </table> </p> <p style="font-size: small;">Month Year</p>			1	9			<p>C1. In this work, what were (will be) your most important activities or duties? (Give full description, e.g., teaching geography, managing a research lab., selling shoes.)</p> <p>_____</p> <p>_____</p> <p>_____</p>
1	9						
<p>(INTERVIEWER: Item B43 date must be before December 1990.)</p>							
<p>B44. When did you end that job?</p> <p> <table style="display: inline-table; border: 1px solid black; text-align: center;"> <tr><td style="width: 20px; height: 20px;">1</td><td style="width: 20px; height: 20px;"> </td><td style="width: 20px; height: 20px;"> </td></tr> </table> </p> <p style="font-size: small;">Month</p> <p>1988 <input type="radio"/></p> <p>1989 <input type="radio"/></p> <p>1990 <input type="radio"/></p> <p>1991 <input type="radio"/></p>	1			<p>_____</p> <p>_____</p> <p>_____</p>			
1							
<p>(INTERVIEWER: Now go to F1.)</p>							

<p>C5. Working your usual hours, approximately what would be your gross annual earnings at that job? (Record to the nearest thousand dollars.)</p> <p>\$ <input type="text"/> .000</p> <p>Don't know <input type="radio"/> 197</p> <p>Refused <input type="radio"/> 198</p>	<p>C9. When you were selected for that job, what level of education was needed to get the job? (Do not read #11. Check one only.)</p> <p>Don't know <input type="radio"/> 01</p> <p>No qualifications specified <input type="radio"/> 02</p> <p>High School <input type="radio"/> 03</p> <p>Some high school <input type="radio"/> 04</p> <p>High school diploma/certificate <input type="radio"/> 05</p> <p>General Postsecondary:</p> <p>Some postsecondary education (level not specified) <input type="radio"/> 06</p> <p>Trade or Vocational:</p> <p>Some trade-vocational <input type="radio"/> 07</p> <p>Trade or vocational certificate/diploma <input type="radio"/> 08</p> <p>College:</p> <p>Some college, CEGEP or similar institution, incl. nursing school <input type="radio"/> 09</p> <p>Diploma or certificate from college, CEGEP or similar institution, incl. nursing school <input type="radio"/> 10</p> <p>University:</p> <p>Some university (incl. university transfer in Alta. and B.C.) <input type="radio"/> 11</p> <p>University diploma or certificate below bachelor's level <input type="radio"/> 12</p> <p>Degree, level not specified <input type="radio"/> 13</p> <p>Bachelor's degree (e.g., B. A., B. Sc., 4-year B.Ed.) <input type="radio"/> 14</p> <p>University diploma or certificate, level not specified <input type="radio"/> 15</p> <p>University diploma or certificate above bachelor's level but below master's level <input type="radio"/> 16</p> <p>Master's degree (e.g., M.A., M.Sc., M.Ed.) <input type="radio"/> 17</p> <p>Degree in medicine, dentistry, veterinary medicine, law, optometry or podiatry (M.D., D.D.S., D.M.D., D.V.M., LL.B., O.D., M.DIV.) or 1-year B. Ed. after another Bachelor's degree <input type="radio"/> 18</p> <p>Earned Doctorate (e.g. Ph.D., D.Sc., D.Ed.) <input type="radio"/> 19</p> <p>Other (Specify) <input type="radio"/> 20</p> <p><input type="text"/></p> <p><input type="text"/></p> <p><input type="text"/></p>
<p>C6. Was the educational program you completed in 1985 intended to prepare you for this job?</p> <p>Yes <input type="radio"/> 1</p> <p>No <input type="radio"/> 2</p> <p>Don't know <input type="radio"/> 3</p>	
<p>C7. Were you (will you be) a paid worker or self-employed?</p> <p>Paid worker <input type="radio"/> 4 go to C8</p> <p>Self-employed <input type="radio"/> 5 go to C12</p> <p>Other (e.g., unpaid family worker) <input type="radio"/> 6 go to C8</p>	
<p>C8. Is this a permanent position or a temporary position?</p> <p>Permanent <input type="radio"/> 7 (Definition: There was no indication that the job would end at some definite point in time, e.g., hired permanently with no specified term.)</p> <p>Temporary <input type="radio"/> 8 (Definition: There was a definite indication that the job would terminate at some specified point in time, e.g., hired for a six-month term.)</p>	

<p>C10a. Did the employer specify that it must be in a specific field or fields of study?</p> <p>Yes <input type="radio"/> → C10b. What field(s) of study? (if two of equal importance, enter both.)</p> <p>1st _____</p> <p>_____</p> <p>2nd _____</p> <p>_____</p> <p>No <input type="radio"/></p>	<p>C16. What level of education is required for this job now? (Do not read just; check one only.)</p> <p>Don't know 01 <input type="radio"/></p> <p>No qualifications specified 02 <input type="radio"/></p> <p>High School:</p> <p>Some high school 03 <input type="radio"/></p> <p>High school diploma/certificate 04 <input type="radio"/></p> <p>General Postsecondary:</p> <p>Some postsecondary education (level not specified) 05 <input type="radio"/></p> <p>Trade or Vocational:</p> <p>Some trade-vocational 06 <input type="radio"/></p> <p>Trade or vocational certificate/diploma 07 <input type="radio"/></p> <p>College:</p> <p>Some college, CEGEP or similar institution, incl. nursing school 08 <input type="radio"/></p> <p>Diploma or certificate from college, CEGEP or similar institution, incl. nursing school 09 <input type="radio"/></p> <p>University:</p> <p>Some university (incl. university transfer in Alta. and B.C.) 10 <input type="radio"/></p> <p>University diploma or certificate below bachelor's level 11 <input type="radio"/></p> <p>Degree, level not specified 12 <input type="radio"/></p> <p>Bachelor's degree (e.g., B. A., B. Sc., 4-year B.Ed.) 13 <input type="radio"/></p> <p>University diploma or certificate, level not specified 14 <input type="radio"/></p> <p>University diploma or certificate above bachelor's level but below master's level 15 <input type="radio"/></p> <p>Master's degree (e.g., M.A., M.Sc., M.Ed.) 16 <input type="radio"/></p> <p>Degree in medicine, dentistry, veterinary medicine, law, optometry or theology (M.D., D.D.S., D.M.D., D.V.M., LL.B., O.D., M.Div.) or 1-year B. Ed. after another Bachelor's degree 17 <input type="radio"/></p> <p>Earned Doctorate (e.g., Ph.D., D.Sc., D.Ed.) 18 <input type="radio"/></p> <p>Other (Specify) 19 <input type="radio"/></p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>C11. Did the employer specify that related work experience was essential for that job?</p> <p>Yes 3 <input type="radio"/></p> <p>No 4 <input type="radio"/></p> <p>Don't know 5 <input type="radio"/></p>	
<p>C12. INTERVIEWER CHECK-ITEM:</p> <p>If "Yes" in item A4 6 <input type="radio"/> go to C13</p> <p>Otherwise 7 <input type="radio"/> go to C15</p>	
<p>C13. Since January 1988, did you ever have a full-time job which lasted six months or more?</p> <p>Yes 8 <input type="radio"/> go to D1</p> <p>No 9 <input type="radio"/> go to C14</p>	
<p>C14. Since January 1988, did you ever have a job at which you usually worked 30 hours or more per week and which lasted six months or more?</p> <p>Yes 1 <input type="radio"/> go to D1</p> <p>No 2 <input type="radio"/> go to E1</p>	
<p>C15. Has the level of education required to get this job changed since you started it?</p> <p>Yes 3 <input type="radio"/> go to C16</p> <p>No 4 <input type="radio"/> go to C17</p> <p>Don't know 5 <input type="radio"/> go to C17</p>	

C17. In this job, did you use any of the skills acquired from the educational program you completed in 1988?

Yes No

C18. Considering all aspects of the job you had last week, how satisfied were you with the job? Would you say that you were ... (Read first four categories) ...

very satisfied? 1
 satisfied? 2
 dissatisfied? 3
 very dissatisfied? 4
 Don't know, no opinion 5

C19. Considering the duties and responsibilities of that job, how satisfied were you with the money you made? Would you say that you were ... (Read first four categories) ...

very satisfied? 1
 satisfied? 2
 dissatisfied? 3
 very dissatisfied? 4
 Don't know, no opinion 5

C20. How many hours a week did you usually work at that job? (If respondent says "it varies", ask for an average of the last four weeks.)

Number of hours

(INTERVIEWER: If the number of hours is 30 or more, go to C26.)

C21. What is the reason you usually worked less than 30 hours per week? (Do not read list; check one only.)

Full-time work is less than 30 hours a week 1
 Did not want full-time work 2
 Own illness or disability 3
 Personal or family responsibilities 4
 Going to school 5
 Could only find part-time work 6
 Other reason (Specify) 7

C22. Last week, did you have a job to start at a definite date in the future?

Yes go to C23
 No go to C25

C23. Will you usually work 30 or more hours per week?

Yes go to C26
 No go to C24
 Don't know go to C26

C24. What is the reason you will usually work less than 30 hours per week? (Do not read list; check one only.)

Full-time work is less than 30 hours a week 1
 Did not want full-time work 2
 Own illness or disability 3
 Personal or family responsibilities 4
 Going to school 5
 Could only find part-time work 6
 Other reason (Specify) 7

C25. Last week, were you looking for a full-time job or a job at which you would usually work 30 or more hours per week?

Yes No

C26. When did you begin the job you held last week?

19
 Month Year

C27. INTERVIEWER CHECK-ITEM:

If the date in item C26 is after November 1990 (11/90) go to C30
 Otherwise go to C28

C28. Since January 1988, did you ever work at that job full-time for a period of six months or more? By this we mean doing the same kind of work for the same employer.

Yes go to C32
 No go to C29

C29. Since January 1988, did you ever work at that job for 30 hours or more per week for a period of six months or more?

Yes go to C32
 No go to C30

C30. Since January 1988, did you ever have a full-time job which lasted six months or more?

Yes go to D1
 No go to C31

C31. Since January 1988, did you ever have a job at which you usually worked 30 or more hours per week and which lasted six months or more?

Yes go to D1
 No go to C32

C32. INTERVIEWER CHECK-ITEM:

If the year in item C26 is 1990 or 1991 go to E1
 Otherwise go to F1

SECTION D: MOST RECENT JOB LASTING SIX MONTHS OR MORE		D5. INTERVIEWER CHECK-ITEM
<p>D1. INTERVIEWER: For questions in section C, if the respondent had more than one such job, ask about the <u>most recent job</u>.</p> <p>For whom did you work? (Name of business, government department or agency, or person.)</p> <p>Same employer as in C1 <input type="radio"/></p> <p>or</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>"No" in item A2 <input type="radio"/> go to D6</p> <p>Otherwise <input type="radio"/> go to D16</p>	
<p>D2. What kind of business, industry or service was this? (Give full description, e.g., elementary school, municipal government, retail shoe store.)</p> <p>Same business, industry or service as in C2 <input type="radio"/></p> <p>or</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>D6. Working your usual hours, approximately what would have been your gross annual earnings at that job? (Record to the nearest thousand dollars.)</p> <p>\$ _____,000</p> <p>Don't know <input type="radio"/></p> <p>Refused <input type="radio"/></p>	
<p>D3. What kind of work did you do? (Give full description, e.g., elementary school teacher, manager of a biological research department, shoe salesperson.)</p> <p>Same kind of work as in C3 <input type="radio"/></p> <p>or</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>D7. Was the educational program you completed in 1986 intended to prepare you for this job?</p> <p>Yes <input type="radio"/></p> <p>No <input type="radio"/></p> <p>Don't know <input type="radio"/></p>	
<p>D4. In this work, what were your most important activities or duties? (Give full description, e.g., teaching geography, managing a research lab., sewing shoes.)</p> <p>Same activities or duties as in C4 <input type="radio"/></p> <p>or</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>D8. Were you a paid worker or self-employed?</p> <p>Paid worker <input type="radio"/> go to D9</p> <p>Self-employed <input type="radio"/> go to D13</p> <p>Other (e.g., unpaid family worker) <input type="radio"/> go to D9</p>	
<p>D9. Was this a permanent position or a temporary position?</p> <p>Permanent <input type="radio"/> (Definition: There was no indication that the job would end at some definite point in time, e.g., hired permanently with no specified term.)</p> <p>Temporary <input type="radio"/> (Definition: There was a definite indication that the job would terminate at some specified point in time, e.g., hired for a six-month term.)</p>		

D10. When you were selected for that job, what level of education was needed to get the job? (Do not read list; check one only.)

Don't know 31

No qualifications specified 32

High School:

Some high school 33

High school diploma/certificate 34

General Postsecondary:

Some postsecondary education (level not specified) 35

Trade or Vocational:

Some trade-vocational 36

Trade or vocational certificate/diploma 37

College:

Some college, CEGEP or similar institution, incl. nursing school 38

Diploma or certificate from college, CEGEP or similar institution, incl. nursing school 39

University:

Some university (incl. university transfer in Alta. and B.C.) 40

University diploma or certificate below bachelor's level 41

Degree, level not specified 42

Bachelor's degree (e.g., B.A., B.Sc., 4-year B.Ed.) 43

University diploma or certificate, level not specified 44

University diploma or certificate above bachelor's level but below master's level 45

Master's degree (e.g., M.A., M.Sc., M.Ed.) 46

Degree in medicine, dentistry, veterinary medicine, law, odontology or medicine (M.D., D.D.S., D.V.M., D.V.M., LL.B., C.D., M.Div.) or 1-year B. Ed. after another Bachelor's degree 47

Earned Doctorate (e.g., Ph.D., D.Sc., D.Ed.) 48

Other (Specify) 49

} go to D12

D11a. Did the employer specify that it must be in a specific field or fields of study?

Yes → D11b. What field(s) of study? (If two of equal importance, enter both.)

1st _____

2nd _____

No

D12. Did the employer specify that related work experience was essential for that job?

Yes 1

No 2

Don't know 3

D13. In this job, did you use any of the skills acquired from the educational program you completed in 1988?

Yes No

D14. Considering all aspects of the job, how satisfied were you with that job? Would you say that you were ... (Read first four categories.)

very satisfied? 1

satisfied? 2

dissatisfied? 3

very dissatisfied? 4

Don't know, no opinion 5

D15. Considering the duties and responsibilities of that job, how satisfied were you with the money you made? Would you say that you were ... (Read first four categories.) ...

very satisfied? 1

satisfied? 2

dissatisfied? 3

very dissatisfied? 4

Don't know, no opinion 5

D16. When did you begin that job?

____ 19____

Month Year

(INTERVIEWER: Item D16 date must be before December 1990.)

D17. When did you end that job?

1 ____ 1988

Month 1988

1990

1991

D18. INTERVIEWER CHECK ITEM:

If the year in item D16 is 1990 go to E1

Otherwise go to D19

D19. INTERVIEWER CHECK ITEM:

If the year in item D17 is 1991 go to F1

Otherwise go to E1

SECTION E: ACTIVITIES IN 1990																
<p>E1. Now some questions about the whole of 1990. During that year, were you ever without a job or business ... (read reasons) ...</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 80%;"></td> <td style="text-align: center; width: 10%;">Yes</td> <td style="text-align: center; width: 10%;">No</td> </tr> <tr> <td>a. because you were going to school?</td> <td style="text-align: center;">1 <input type="radio"/></td> <td style="text-align: center;">2 <input type="radio"/></td> </tr> <tr> <td>b. because you had personal or family responsibilities?</td> <td style="text-align: center;">3 <input type="radio"/></td> <td style="text-align: center;">4 <input type="radio"/></td> </tr> <tr> <td>c. because you couldn't find work?</td> <td style="text-align: center;">5 <input type="radio"/></td> <td style="text-align: center;">6 <input type="radio"/></td> </tr> <tr> <td>d. for any other reason? (Specify)</td> <td style="text-align: center;">7 <input type="radio"/></td> <td style="text-align: center;">8 <input type="radio"/></td> </tr> </table> <p style="margin-left: 40px;">↓</p> <p>_____</p> <p>_____</p> <p>_____</p>		Yes	No	a. because you were going to school?	1 <input type="radio"/>	2 <input type="radio"/>	b. because you had personal or family responsibilities?	3 <input type="radio"/>	4 <input type="radio"/>	c. because you couldn't find work?	5 <input type="radio"/>	6 <input type="radio"/>	d. for any other reason? (Specify)	7 <input type="radio"/>	8 <input type="radio"/>	<p>E6. During this ... (Read answer in E3.) ... month-period, how long in total were you looking for a job?</p> <p><input type="text"/> Number of months</p> <hr/> <p><i>(INTERVIEWER: Item E6 must <u>not</u> be more than item E3.)</i></p> <p>E7. At any time during this ... (Read answer in E6.) ... month-period you were looking for a job, were you a full-time student?</p> <p>Yes 1 <input type="radio"/> go to E8</p> <p>No 2 <input type="radio"/> go to E9</p> <hr/> <p>E8. How much of this ... (Read answer in E6.) ... month-period were you a full-time student?</p> <p><input type="text"/> Number of months</p> <hr/> <p><i>(INTERVIEWER: Item E8 must <u>not</u> be more than item E6.)</i></p> <p>E9. During the period when you were <u>NOT</u> looking for a job, were you ever waiting to start a new job or return to an old job?</p> <p>Yes 3 <input type="radio"/> go to E10</p> <p>No 4 <input type="radio"/> go to F1</p> <hr/> <p>E10. How long were you waiting? That is, how long were you waiting to start a new job or return to an old job during the period you were <u>not</u> looking for a job?</p> <p><input type="text"/> Number of months</p> <hr/> <p><i>(INTERVIEWER: Now go to F1.)</i></p> <p>E11. At any time during this ... (Read answer in E3.) ... month-period you were without a job, were you ever a full-time student?</p> <p>Yes 5 <input type="radio"/> go to E12</p> <p>No 6 <input type="radio"/> go to F1</p> <hr/> <p>E12. How much of this ... (Read answer in item E3.) ... month-period were you a full-time student?</p> <p><input type="text"/> Number of months</p> <hr/> <p><i>(INTERVIEWER: Item E12 must <u>not</u> be more than item E3.)</i></p>
	Yes	No														
a. because you were going to school?	1 <input type="radio"/>	2 <input type="radio"/>														
b. because you had personal or family responsibilities?	3 <input type="radio"/>	4 <input type="radio"/>														
c. because you couldn't find work?	5 <input type="radio"/>	6 <input type="radio"/>														
d. for any other reason? (Specify)	7 <input type="radio"/>	8 <input type="radio"/>														
<p>E2. INTERVIEWER CHECK ITEM:</p> <p>If any "Yes" checked in item E1 1 <input type="radio"/> go to E3</p> <p>Otherwise 2 <input type="radio"/> go to F1</p>																
<p>E3. Considering all these reasons, how long in total were you without a job in 1990?</p> <p><input type="text"/> Number of months</p>																
<p>E4. Was there any time during this ... (Read answer in E3.) ... month-period when you were <u>NOT</u> looking for a job?</p> <p>Yes 3 <input type="radio"/> go to E5</p> <p>No 4 <input type="radio"/> go to E11</p>																
<p>E5. At any time during this ... (Read answer in E3.) ... month-period, was there any time you <u>WERE</u> looking for a job?</p> <p>Yes 5 <input type="radio"/> go to E6</p> <p>No 6 <input type="radio"/> go to E9</p>																

SECTION F: EDUCATION TAKEN SINCE MAY 1988		F4 INTERVIEWER CHECK ITEM	
<p>F1. INTERVIEWER CHECK ITEM</p> <p>INFO item 3 is blank <input type="radio"/> go to F5</p> <p>Otherwise <input type="radio"/> go to F2</p>	<p>INFO item 4 is blank <input type="radio"/> go to F6</p> <p>Otherwise <input type="radio"/> go to F5</p>		
<p>F2. The information from the May 1988 survey indicates that you were attending an educational program leading to a ... (Read INFO item 3.) Is this correct?</p> <p>Yes <input type="radio"/> go to F4</p> <p>No <input type="radio"/> go to F3</p>	<p>F5. Was the major field of study or specialization (Read INFO item 4) ...?</p> <p>Yes <input type="radio"/> go to F7</p> <p>No <input type="radio"/> go to F6</p>		
<p>F3. What type of degree, diploma, certificate or licence was it? (Do not read list; check one only).</p> <p>None <input type="radio"/> go to F8 or</p> <p>Trade or vocational:</p> <p>a. Certificate or diploma <input type="radio"/></p> <p>Community College, CEGEP, Technical Institute, Nursing School:</p> <p>b. Certificate or diploma <input type="radio"/></p> <p>University:</p> <p>c. Certificate or diploma below bachelor level <input type="radio"/></p> <p>d. Bachelor's degree (e.g. B.A., B.Sc., B.A.Sc., 4-year B.Ed.) <input type="radio"/></p> <p>e. Certificate or diploma above bachelor level but below master's level <input type="radio"/></p> <p>f. Master's degree (e.g., M.A., M.Sc., M.Ed.) <input type="radio"/></p> <p>g. Degree in medicine, dentistry, veterinary medicine, law, optometry or theology (M.D., D.D.S., D.M.D., D.V.M., D.L.B., O.D., M.D.V.I. or 1-year B. Ed. after a Bachelor's degree) <input type="radio"/></p> <p>h. Earned doctorate (e.g., Ph.D., D.Sc., D.Ed.) <input type="radio"/></p> <p>Professional Association:</p> <p>i. Diploma, certificate or licence such as in accounting, banking or insurance <input type="radio"/></p> <p>j. Other (Specify) <input type="radio"/></p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>F6. What was the major field of study or specialization?</p> <p>1st _____</p> <p>_____</p> <p>2nd _____</p> <p>_____</p>		
<p>F7. In what month and year did you, or do you expect to, complete the requirements?</p> <p>Month year</p> <p>_____</p> <p>Don't know <input type="radio"/></p> <p>Dropped out <input type="radio"/></p>			

<p>F8. INTERVIEWER CHECK ITEM</p> <p>If INFO item 3 is blank <input type="radio"/> 1 go to F15</p> <p>Otherwise <input type="radio"/> 2 go to F9</p>	<p>F11. INTERVIEWER CHECK ITEM</p> <p>If INFO item 6 is blank <input type="radio"/> 1 go to F13</p> <p>Otherwise <input type="radio"/> 2 go to F12</p>										
<p>F9. The information from the May 1988 survey also indicates that you were attending an educational program leading to a ... (Read INFO item 3.) Is this correct?</p> <p>Yes <input type="radio"/> 3 go to F11</p> <p>No <input type="radio"/> 4 go to F10</p>	<p>F12. Was the major field of study or specialization ... (Read INFO item 6.) ...?</p> <p>Yes <input type="radio"/> 1 go to F14</p> <p>No <input type="radio"/> 2 go to F13</p>										
<p>F10. What type of degree, diploma, certificate or licence was it? (Do not read list; check one only).</p> <p>None <input type="radio"/> 01 go to F15 or</p> <p>Trade or vocational:</p> <p>a. Certificate or diploma <input type="radio"/> 02</p> <p>Community College, CEGEP, Technical Institute, Nursing School:</p> <p>b. Certificate or diploma <input type="radio"/> 03</p> <p>University:</p> <p>c. Certificate or diploma below bachelor level <input type="radio"/> 04</p> <p>d. Bachelor's degree (e.g. B.A., B.Sc., B.A.Sc., 4-year B.Ed.) <input type="radio"/> 05</p> <p>e. Certificate or diploma above bachelor level but below master's level <input type="radio"/> 06</p> <p>f. Master's degree (e.g., M.A., M.Sc., M.Ed.) <input type="radio"/> 07</p> <p>g. Degree in medicine, dentistry, veterinary medicine, law, osteometry or theology (M.D., D.D.S., D.M.D., D.V.M., L.L.B., O.D., M.Div.), or 1-year B. Ed. after a Bachelor's degree <input type="radio"/> 08</p> <p>h. Earned doctorate (e.g., Ph.D., D.Sc., D.Ed.) <input type="radio"/> 09</p> <p>Professional Association:</p> <p>i. Diploma, certificate or licence such as in accounting, banking or insurance <input type="radio"/> 10</p> <p>j. Other (Specify) <input type="radio"/> 11</p> <p style="text-align: center;">↙</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>F13. What was the major field of study or specialization?</p> <p>1st _____</p> <p>_____</p> <p>2nd _____</p> <p>_____</p>										
<p>F14. In what month and year did you, or do you expect to, complete the requirements?</p> <p style="text-align: center;"> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">5</td> <td style="width: 20px; text-align: center;"> </td> <td style="width: 20px; text-align: center;"> </td> <td style="width: 20px; text-align: center;"> </td> <td style="width: 20px; text-align: center;"> </td> </tr> <tr> <td style="text-align: center;">Month</td> <td style="text-align: center;">Year</td> <td colspan="3"></td> </tr> </table> </p> <p>Don't know <input type="radio"/> 6</p> <p>Dropped out <input type="radio"/> 7</p>	5					Month	Year				<p>F15. Since May 1988 have you taken any (other) education or training programs leading to any degrees, diplomas, certificates or licences?</p> <p>Yes <input type="radio"/> 8 go to F16a</p> <p>No <input type="radio"/> 9 go to F18</p>
5											
Month	Year										

F16a. What types of degrees, diplomas, certificates or licences were these? Do not read list; check all that apply.	F16b. What was the major field of study or specialization?	F16c. In what month and year did you, or do you expect to, complete the requirements?
Trade or vocational:		
a. Certificate or diploma	<input type="radio"/> 01 → _____ _____ _____	<input type="checkbox"/> 1 | _____ | _____ Month Year <input type="checkbox"/> Don't know <input type="checkbox"/> Dropped out
Community College, CEGEP, Technical Institute, Nursing School:		
b. Certificate or diploma	<input type="radio"/> 02 → _____ _____ _____	<input type="checkbox"/> 3 | _____ | _____ Month Year <input type="checkbox"/> Don't know <input type="checkbox"/> Dropped out
University:		
c. Certificate or diploma below bachelor level	<input type="radio"/> 03 → _____ _____ _____	<input type="checkbox"/> 7 | _____ | _____ Month Year <input type="checkbox"/> Don't know <input type="checkbox"/> Dropped out
d. Bachelor's degree (e.g. B.A., B.Sc., B.A.Sc. 4-year B.Ed.)	<input type="radio"/> 04 → _____ _____ _____	<input type="checkbox"/> 1 | _____ | _____ Month Year <input type="checkbox"/> Don't know <input type="checkbox"/> Dropped out
e. Certificate or diploma above bachelor level but below master's level	<input type="radio"/> 05 → _____ _____ _____	<input type="checkbox"/> 4 | _____ | _____ Month Year <input type="checkbox"/> Don't know <input type="checkbox"/> Dropped out
f. Master's degree (e.g., M.A., M.Sc., M.Ed.)	<input type="radio"/> 06 → _____ _____ _____	<input type="checkbox"/> 7 | _____ | _____ Month Year <input type="checkbox"/> Don't know <input type="checkbox"/> Dropped out
g. Degree in medicine, dentistry, veterinary medicine, law, optometry or theology (M.D., D.D.S., D.M.D., D.V.M., LL.B., O.D., M.Div.) or 1-year B. Ed. after a Bachelor's degree	<input type="radio"/> 07 → _____ _____ _____	<input type="checkbox"/> 1 | _____ | _____ Month Year <input type="checkbox"/> Don't know <input type="checkbox"/> Dropped out
h. Earned doctorate (e.g., Ph.D., D.Sc., D.Ed.)	<input type="radio"/> 08 → _____ _____ _____	<input type="checkbox"/> 4 | _____ | _____ Month Year <input type="checkbox"/> Don't know <input type="checkbox"/> Dropped out
Professional Association:		
i. Diploma, certificate or licence such as in accounting, banking or insurance	<input type="radio"/> 09 → _____ _____ _____	<input type="checkbox"/> 7 | _____ | _____ Month Year <input type="checkbox"/> Don't know <input type="checkbox"/> Dropped out
j. Other (Specify)	<input type="radio"/> 10 → _____ _____ _____	<input type="checkbox"/> 1 | _____ | _____ Month Year <input type="checkbox"/> Don't know <input type="checkbox"/> Dropped out

F17. Did you take any of these programs as a full-time student?
 Yes No

F18. Given your experiences since completing the educational program in 1966, would you have selected the same educational program, a different program, or not taken any postsecondary program?
 Same go to F23
 Different go to F19
 None go to F23
 Don't know go to F23

F19. Would you have chosen the same field of study or specialization?
 Yes go to F21
 No go to F20
 Don't know go to F21

F20. What field of study or specialization would you have chosen? (If two, record the more important first.)
 1st

 2nd

 Don't know

F21. What kind of program would you have taken: university, college, or trade-vocational?
 University go to F22
 College
 Trade or vocational go to F23
 Don't know
 Other (Specify)

F22. What level of degree or diploma would you have taken? (Do not read list; mark one only.)
 University diploma or certificate below bachelor level
 Bachelor's degree, general or honours (e.g., B.A., B.Sc., 4-year B.Ed.)
 University diploma or certificate above bachelor's level but below master's level
 Master's degree (e.g., M.A., M.Sc., M.Ed.)
 Degree in medicine, dentistry, veterinary medicine, law, optometry or theology (M.D., D.D.S., D.M.D., D.V.M., LL.B., O.D., M.Div.), or 1-year B. Ed. after another Bachelor's degree
 Doctorate (e.g., Ph.D., D.Sc., D.Ed.)
 Don't know
 Other (Specify)

F23. In general, how important is it that any job you get be related to your field of study or specialization? Would you say it is ... (Read first four categories.) ...
 very important?
 important?
 not important?
 not at all important?
 Don't know, no opinion

SECTION G: GENERAL QUESTIONS

G1. Now some general questions. What is your marital status? Are you ... (Read the categories.) ...
 now married or living common-law?
 single, that is, never married?
 a widow or widower?
 separated or divorced?

G2a. Do you have any dependent children?
 Yes → G2b. Please tell me their ages. (Record age in years as of last birthday.)

a	b	c	d	e
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
f	g	h	i	j
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

 No

G3. What was your total personal income from all sources before taxes and deductions for the last 12 months? Was it ...

Less than \$30,000? 11

Less than \$20,000? 12

Less than \$15,000 or more? 13

\$20,000 or more? 14

Less than \$30,000? 15

Less than \$40,000? 16

Less than \$35,000 or more? 17

\$40,000 or more? 18

Less than \$45,000? 19

\$45,000 or more? 20

Less than \$50,000? 21

\$50,000 or more? 22

No income ... 23

Don't know ... 24

Refused ... 25

G4. Are you limited in the kind or amount of activity you can do because of a long-term physical condition, mental condition or health problem ... (Read list.) ...

	Yes	No
a. at home?	<input type="radio"/> 1	<input type="radio"/> 2
b. at school or work?	<input type="radio"/> 3	<input type="radio"/> 4
c. in other activities, such as transportation or leisure-time activities?	<input type="radio"/> 5	<input type="radio"/> 6

G5. INTERVIEWER CHECK-ITEM:

If any "Yes" checked in item G4 ... go to G6a

Otherwise ... go to G7

G6a. Are you handicapped or disabled with regard to ... (Read list.) ...

G6b. How many years have you been handicapped or disabled in this way?

a. Mobility, agility?	No <input type="radio"/> 01	Yes <input type="radio"/> 02	Number of years
b. Sight, seeing?	<input type="radio"/> 03	<input type="radio"/> 04	<input type="text" value="2"/> <input type="text" value=""/>
c. Hearing?	<input type="radio"/> 05	<input type="radio"/> 06	<input type="text" value="3"/> <input type="text" value=""/>
d. Speech, speaking?	<input type="radio"/> 07	<input type="radio"/> 08	<input type="text" value="4"/> <input type="text" value=""/>
e. Learning?	<input type="radio"/> 09	<input type="radio"/> 10	<input type="text" value="5"/> <input type="text" value=""/>
f. Emotions, mental problems?	<input type="radio"/> 11	<input type="radio"/> 12	<input type="text" value="6"/> <input type="text" value=""/>
g. Anything else?	<input type="radio"/> 13	<input type="radio"/> 14	<input type="text" value="7"/> <input type="text" value=""/>

(Specify)

G7. From which of the following groups did your parents or grandparents descend? (Read list; mark all responses reported)

	Yes	No
a) Chinese	<input type="radio"/> 01	<input type="radio"/> 23
b) Japanese	<input type="radio"/> 03	<input type="radio"/> 24
c) Korean	<input type="radio"/> 05	<input type="radio"/> 26
d) Filipino	<input type="radio"/> 07	<input type="radio"/> 28
e) East Indian (from India, Pakistan, Bangladesh, East Africa, Guyana, etc.)	<input type="radio"/> 29	<input type="radio"/> 30
f) Black (from Africa, the Caribbean, the U.S.A., Canada, etc.)	<input type="radio"/> 11	<input type="radio"/> 20
g) North American Indian	<input type="radio"/> 13	<input type="radio"/> 14
h) Metis	<input type="radio"/> 15	<input type="radio"/> 16
i) Inuit (Eskimo)	<input type="radio"/> 17	<input type="radio"/> 18
j) Arab (from Egypt, Jordan, Lebanon, etc.)	<input type="radio"/> 19	<input type="radio"/> 20
k) West Asian (from Syria, Turkey, Afghanistan, Armenia, etc.)	<input type="radio"/> 21	<input type="radio"/> 22
l) South East Asian (from Burma, Cambodia, Kampuchea, Laos, Thailand, Vietnam, etc.)	<input type="radio"/> 23	<input type="radio"/> 24
m) North African (from Egypt, Morocco, Algeria, Tunisia, etc.)	<input type="radio"/> 25	<input type="radio"/> 26
n) Latin American (from Mexico, Central America, South America)	<input type="radio"/> 27	<input type="radio"/> 28
o) British (from England, Scotland, Ireland, etc.)	<input type="radio"/> 29	<input type="radio"/> 30
p) French	<input type="radio"/> 31	<input type="radio"/> 32
q) Any other European groups	<input type="radio"/> 33	<input type="radio"/> 34
r) Canadian	<input type="radio"/> 35	<input type="radio"/> 36
s) Any others	<input type="radio"/> 37	<input type="radio"/> 38

(Specify)

G8a. During 1990, did you take part in any Employment and Immigration Canada training or financial assistance programs?

Yes 1

No 2 go to H1

G8b. Which of the Employment and Immigration Canada programs did you take part in?

Any others?

Any others?

Any others?

SECTION H: ADMINISTRATIVE QUESTIONS

H1. We may wish to contact you again for a follow-up to this survey ... (read address and telephone number from the INFORMATION SHEET.) ... and make any corrections below.

Name

No change 1

or

Surname

Given name

Address

No change 2

or

Street (name and number)

Apartment number, P.O. Box

City, Town, Village

Province

Postal code

No change 3

or

Postal code

Home telephone

No change 4

or

_____-_____
Home telephone

Work telephone

No change 5

or

_____-_____
Work telephone

H2. Would you please give me the name, address and telephone number of someone we could contact if you move, such as a friend, relative or neighbour? We will contact this person only if you have moved in order to obtain your new address or telephone number.

Address and telephone number same as in H1

Name

Surname

Given name

Address

Street (name and number)

Apartment number, P.O. Box

City, Town, Village

Province

Code postal

_____-_____
Code postal

Home telephone

_____-_____
Home telephone

or

Business telephone

_____-_____
Business telephone

Refused 7

H3. INTERVIEWER: READ THE FOLLOWING STATEMENT CONCERNING JOINT COLLECTION AND DATA-SHARING EXACTLY AS WORDED.

To avoid duplication of enquiry, Statistics Canada is again conducting this survey jointly with Employment and Immigration Canada, the Department of the Secretary of State and the provincial Ministries of Education and Labour. The information provided to these departments will not contain names or other identifying data and will be kept confidential and used only for statistical purposes.

Do you agree to share your answers?

Yes

No

H4. END OF INTERVIEW:

Thank you for your participation in this survey.

INTERVIEWER: Please check question H5 and ensure that questions H1 and H2 are completed correctly. Enter the final status of the interview on the front page.

H5. Province or territory where respondent was located when interviewed:

Nfld. 01 Québec 03 Alberta 09

P.E.I. 02 Ontario 08 B.C. 10

N.S. 03 Man. 07 Yukon 11

N.B. 04 Sask. 08 N.W.T. 12

H6. Language of interview:

English 1

French 2

RECORD OF CALLS / TRACING						
	Date	Start time	Finish time	Comments - Results	Telephone Number	Int. Initials
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
COMMENTS:						

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

PAGE 3

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
13	Q5	1	0028	Q5 HAS YOUR MAJOR FIELD OF STUDY/SPECIALIZATION FOR THIS PROGRAM IN ... (ENTRY ON LINE B OF LABEL)? BLANK 1 YES 2 NO	293/ 1931 25651/ 172204 9457/ 70927
NOTE: SEE Q4 FOR MORE DETAIL.					
THIS FIELD IS Q4 ON THE TRADE-VOCATIONAL RECORDS.					
14	Q6	1	0029	Q6 WHAT HAS YOUR MAJOR FIELD OF STUDY OR SPECIALIZATION FOR YOUR PROGRAM IN 1986? (WHEN LABEL LINE B INCORRECT) BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	25651/ 172204 9633/ 71967 117/ 891
NOTE: THE CODED RESPONSES TO THIS QUESTION ARE IN "Q6CODE1" POSITIONS 577-581 FOR THE FIRST MENTION AND "Q6CODE2" POSITIONS 582-586 FOR ANY SECOND MENTION.					
THIS FIELD IS Q5 ON THE TRADE-VOCATIONAL RECORDS.					
15	Q7A	1	0030	Q7A DID YOU HAVE ANY OTHER MAJOR FIELD OF STUDY OR SPECIALIZATION FOR YOUR PROGRAM IN 1986? BLANK 1 YES 2 NO 9 UNKNOWN (NOT STATED)	7824/ 40298 4043/ 29211 23467/ 175316 67/ 237
NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS					
16	Q7TXT	1	0031	Q7TXT WHAT HAS YOUR OTHER MAJOR FIELD OF STUDY OR SPECIALIZATION? BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	31358/ 215851 3929/ 28257 114/ 953
NOTE: THE CODED RESPONSES TO THIS QUESTION ARE IN "Q7BCODE1" POSITIONS 587-591 FOR THE FIRST MENTION AND "Q7BCODE2" POSITIONS 592-596 FOR ANY SECOND MENTION.					
THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS.					
17	Q8Y	2	0032-0033	Q8Y IN WHAT YEAR AND MONTH DID YOU COMPLETE THE REQUIREMENTS FOR THE PROGRAM? 85:86 YEAR 99 UNKNOWN (NOT STATED)	34628/ 239281 773/ 5780
NOTE: THIS FIELD IS Q6Y ON THE TRADE-VOCATIONAL RECORDS					
18	Q8M	2	0034-0035	Q8M IN WHAT YEAR AND MONTH DID YOU COMPLETE THE REQUIREMENTS FOR THE PROGRAM? 01:12 MONTH 99 UNKNOWN (NOT STATED)	34580/ 238980 821/ 6082
NOTE: THIS FIELD IS Q6M ON THE TRADE-VOCATIONAL RECORDS					

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
19	Q7ATV	2	0036-0037	Q7A WHAT WAS THE NORMAL LENGTH OF THE PROGRAM? (WEEKS)	
				BLANK	33803/ 236327
				01:98 WEEKS	1395/ 7839
				99 UNKNOWN (NOT STATED)	203/ 895
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	
20	Q7BTV	2	0038-0039	Q7B WHAT WAS THE NORMAL LENGTH OF THE PROGRAM? (MONTHS)	
				BLANK	28999/ 212705
				01:30 MONTHS	6199/ 31462
				99 UNKNOWN (NOT STATED)	203/ 895
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	
21	Q8ATV	1	0040	Q8A WHO PAID THE FEES FOR THE PROGRAM?	
				BLANK	27577/ 204763
				1 EMPLOYMENT & IMMIGRATION, CANADA MANPOWER	4666/ 24071
				2 THIS PAYER NOT MENTIONED	3051/ 15744
				9 UNKNOWN (NOT STATED)	107/ 482
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	
22	Q8BTV	1	0041	Q8B WHO PAID THE FEES FOR THE PROGRAM?	
				BLANK	27577/ 204763
				1 PROVINCIAL GOVERNMENT	414/ 1877
				2 THIS PAYER NOT MENTIONED	7303/ 37938
				9 UNKNOWN (NOT STATED)	107/ 482
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	
23	Q8CTV	1	0042	Q8C WHO PAID THE FEES FOR THE PROGRAM?	
				BLANK	27577/ 204763
				1 RESPONDENT	2211/ 11676
				2 THIS PAYER NOT MENTIONED	5506/ 28140
				9 UNKNOWN (NOT STATED)	107/ 482
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	
24	Q8DTV	1	0043	Q8D WHO PAID THE FEES FOR THE PROGRAM?	
				BLANK	27577/ 204763
				1 SOMEBODY ELSE	326/ 1674
				2 THIS PAYER NOT MENTIONED	7391/ 38141
				9 UNKNOWN (NOT STATED)	107/ 482
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	
25	Q8ETV	1	0044	Q8E WHO PAID THE FEES FOR THE PROGRAM?	
				BLANK	27577/ 204763
				1 DON'T KNOW	47/ 216
				2 THIS PAYER NOT MENTIONED	7670/ 39600
				9 UNKNOWN (NOT STATED)	107/ 482
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	
26	Q8FTV	1	0045	Q8F WHO PAID THE FEES FOR THE PROGRAM?	
				BLANK	27577/ 204763
				1 NO FEES	105/ 446
				2 THIS PAYER NOT MENTIONED	7612/ 39369
				9 UNKNOWN (NOT STATED)	107/ 482
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTO/WEIGHTED
27	QBCTV	1	0046	Q8G WHO PAID THE FEES FOR THE PROGRAM?	
				BLANK	27577/ 204763
				1 OTHER (SPECIFY)	221/ 1083
				2 THIS PAYER NOT MENTIONED	7496/ 38732
				9 UNKNOWN (NOT STATED)	107/ 482
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	
28	QBXTTV	1	0047	Q8TXT	
				BLANK	35100/ 243598
				1 TEXT PRESENT	217/ 1070
				9 UNKNOWN (NOT STATED)	84/ 393
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	
29	Q9	2	0048-0049	Q9 WHAT WAS THE NORMAL LENGTH IN ACADEMIC YEARS OF THE PROGRAM?	
				BLANK	7824/ 40298
				01 LESS THAN 6 MONTHS	202/ 1169
				02 6 MONTHS-LESS THAN 1 YEAR	755/ 3256
				03 ONE YEAR	2329/ 17797
				04 13 MONTHS-LESS THAN 2 YEARS	559/ 3006
				05 TWO YEARS	9723/ 61244
				06 THREE YEARS	6140/ 64616
				07 FOUR YEARS	6048/ 44724
				08 FIVE YEARS	999/ 5373
				09 MORE THAN 5 YEARS	292/ 1116
				10 NO 'NORMAL' LENGTH, IT VARIES	349/ 1137
				11 DON'T KNOW, NOT STATED	181/ 1326
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
30	Q10	1	0050	Q10 WAS IT A CO-OP PROGRAM?	
				BLANK	7824/ 40298
				1 YES	636/ 4909
				2 NO	26724/ 198578
				9 UNKNOWN (NOT STATED)	217/ 1277
				NOTE: SEE ALSO THE DERIVED VARIABLE "COOPFLG" IN POSITION 572 CONCERNING THE EDITED RESPONSES TO Q10. FOR RESPONSES COMPARABLE TO THE 1984 NATIONAL GRADUATES SURVEY, THE "YES" COUNT MUST INCLUDE RESPONSES EDITED TO "NO" WITH A FLAG SET TO COOPFLG.	
				THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS.	
31	Q11	1	0051	Q11 WERE YOU EVER REGISTERED AS A PART-TIME STUDENT FOR THE PROGRAM?	
				BLANK	7824/ 40298
				1 YES	5592/ 43438
				2 NO	21870/ 160760
				9 UNKNOWN (NOT STATED)	115/ 565
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
32	Q12	1	0052	Q12 DURING YOUR FINAL TERM IN THE PROGRAM, WERE YOU ENROLLED AS A FULL-TIME OR A PART-TIME STUDENT?	
				BLANK	21870/ 160760
				1 FULL-TIME	8873/ 48265
				2 PART-TIME	4344/ 34132
				9 UNKNOWN (NOT STATED)	314/ 1904
				NOTE: THIS FIELD IS Q9 ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	UNMTD/WEIGHTED
33	Q10TV	1	0053	Q10 DURING THOSE THREE MONTHS, DID YOU WORK AT A JOB OR BUSINESS?		
				BLANK	27527/	204430
				1 YES	1436/	7570
				2 NO	6296/	32293
				9 UNKNOWN (NOT STATED)	142/	769
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS		
34	Q13	1	0054	Q13 DURING THE PROGRAM DID YOU EVER TAKE A LEAVE OF ABSENCE FROM YOUR STUDIES?		
				1 YES	2949/	21472
				2 NO	32325/	222836
				9 UNKNOWN (NOT STATED)	127/	753
				NOTE: THIS FIELD IS Q11 ON THE TRADE-VOCATIONAL RECORDS		
35	Q14	1	0055	Q14 INTERVIEWER CHECK-ITEM		
				1 YES IN Q11 OR Q13	7313/	54625
				2 OTHERWISE	28038/	190103
				9 UNKNOWN (NOT STATED)	50/	334
				NOTE: ON THE SECOND DAY OF DATA COLLECTION, WE REALIZED THAT THE TRADE-VOCATIONAL QUESTIONNAIRE HAD AN ERROR IN Q12 WHICH CORRESPONDS TO THE UNIVERSITY-COLLEGE Q14. INSTRUCTIONS WERE IMMEDIATELY ISSUED TO INTERVIEWERS TO REVISE THE CHECK ITEM TO READ "IF PART-TIME IN Q9 OR 'YES' IN Q11, GO TO Q13". WITHOUT THIS CHANGE, Q14(TV) MADE NO SENSE TO SOME RESPONDENTS WHO REPORTED WORKING IN Q10(TV) BUT ONLY PART-TIME, AND IN Q14 PROTESTED THAT THEY DID ATTEND THE PROGRAM FULL-TIME.		
				THIS FIELD IS Q12 ON THE TRADE-VOCATIONAL RECORDS. FOR TRADE-VOCATION RECORDS. CODE 1 = PART-TIME IN Q9 OR YES IN Q11.		
36	Q13ATV	2	0056-0057	Q13A HOW LONG DID IT TAKE YOU TO COMPLETE THE PROGRAM, INCLUDING ANY PERIODS OF ABSENCE FROM YOUR STUDIES?		
				BLANK	35147/	243663
				01:98 WEEKS	47/	261
				99 UNKNOWN (NOT STATED)	207/	1137
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS		
37	Q13BTV	2	0058-0059	Q13B		
				BLANK	34911/	242479
				01:30 MONTHS	283/	1446
				99 UNKNOWN (NOT STATED)	207/	1137
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS		
38	Q15A	2	0060-0061	Q15A HOW LONG DID IT TAKE YOU TO COMPLETE THE PROGRAM, INCLUDING ANY PERIODS OF ABSENCE FROM YOUR STUDIES?		
				BLANK	33969/	233417
				01:98 MONTHS	966/	8114
				99 UNKNOWN (NOT STATED)	466/	3531
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS		

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
39	Q15B	2	0062-0063	Q15B BLANK 01:30 YEARS 99 UNKNOWN (NOT STATED)	 29491/ 200726 5444/ 40804 466/ 3531
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
40	Q16A	2	0064-0065	Q16A HOW MUCH OF THIS TIME WERE YOU ENROLLED FULL-TIME? BLANK 00:98 MONTHS FULL-TIME 99 UNKNOWN (NOT STATED)	 33065/ 229049 1081/ 7502 1255/ 8430
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
41	Q16B	2	0066-0067	Q16B HOW MUCH OF THIS TIME WERE YOU ENROLLED FULL-TIME? BLANK 01:30 YEARS FULL-TIME 99 UNKNOWN (NOT STATED)	 31015/ 214036 3131/ 22595 1255/ 8430
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
42	Q16C	2	0068-0069	Q16C HOW MUCH OF THIS TIME WERE YOU ENROLLED PART-TIME? BLANK 01:98 MONTHS PART-TIME 99 UNKNOWN (NOT STATED)	 33492/ 229791 1375/ 11181 534/ 4089
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
43	Q16D	2	0070-0071	Q16D HOW MUCH OF THIS TIME WERE YOU ENROLLED PART-TIME? BLANK 01:30 YEARS PART-TIME 99 UNKNOWN (NOT STATED)	 31140/ 212528 3727/ 28444 534/ 4089
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
44	Q17A	1	0072	Q17A WHAT WERE THE REASONS YOU DIDN'T ATTEND THE PROGRAM FULL-TIME OR ON A CONTINUOUS BASIS? BLANK 1 LACK OF MONEY 2 THIS REASON NOT OFFERED 9 UNKNOWN (NOT STATED, ALL OF Q17)	 28038/ 190103 688/ 4675 6066/ 45999 609/ 4285
				NOTE: THIS FIELD IS Q14A ON THE TRADE-VOCATIONAL RECORDS	
45	Q17B	1	0073	Q17B BLANK 1 FAMILY RESPONSIBILITIES 2 THIS REASON NOT OFFERED 9 UNKNOWN (NOT STATED, ALL OF Q17)	 28038/ 190103 877/ 6529 5877/ 44145 609/ 4285
				NOTE: THIS FIELD IS Q14B ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	8
					UNWTD/WEIGHTED	
46	Q17C	1	0074	Q17C		
				BLANK	28038/	190103
				1 HAD A FULL-TIME JOB	3269/	23436
				2 THIS REASON NOT OFFERED	3485/	27237
				9 UNKNOWN (NOT STATED, ALL OF Q17)	609/	4285
				NOTE: THIS FIELD IS Q14C ON THE TRADE-VOCATIONAL RECORDS		
47	Q17D	1	0075	Q17D		
				BLANK	28038/	190103
				1 HAD A PART-TIME JOB	561/	4897
				2 THIS REASON NOT OFFERED	6193/	45777
				9 UNKNOWN (NOT STATED, ALL OF Q17)	609/	4285
				NOTE: THIS FIELD IS Q14D ON THE TRADE-VOCATIONAL RECORDS		
48	Q17E	1	0076	Q17E		
				BLANK	28038/	190103
				1 HEALTH REASONS	235/	1881
				2 THIS REASON NOT OFFERED	6519/	48793
				9 UNKNOWN (NOT STATED, ALL OF Q17)	609/	4285
				NOTE: THIS FIELD IS Q14E ON THE TRADE-VOCATIONAL RECORDS		
49	Q17F	1	0077	Q17F		
				BLANK	28038/	190103
				1 STRESS	104/	916
				2 THIS REASON NOT OFFERED	6650/	49758
				9 UNKNOWN (NOT STATED, ALL OF Q17)	609/	4285
				NOTE: THIS FIELD IS Q14F ON THE TRADE-VOCATIONAL RECORDS		
50	Q17G	1	0078	Q17G		
				BLANK	28038/	190103
				1 PROGRAM NOT OFFERED FULL-TIME	251/	1924
				2 THIS REASON NOT OFFERED	6503/	48750
				9 UNKNOWN (NOT STATED, ALL OF Q17)	609/	4285
				NOTE: THIS FIELD IS Q14G ON THE TRADE-VOCATIONAL RECORDS		
51	Q17H	1	0079	Q17H		
				BLANK	28038/	190103
				1 OTHER REASONS (SPECIFY)	1767/	13921
				2 THIS REASON NOT OFFERED	4987/	36753
				9 UNKNOWN (NOT STATED, ALL OF Q17)	609/	4285
				NOTE: THIS FIELD IS Q14H ON THE TRADE-VOCATIONAL RECORDS		
52	Q17TXT	1	0080	Q17TXT OTHER REASONS (SPECIFY)		
				BLANK	33025/	226855
				1 TEXT PRESENT	1752/	13840
				9 UNKNOWN (NOT STATED)	624/	4366
				NOTE: THIS FIELD IS Q14TXT ON THE TRADE-VOCATIONAL RECORDS		

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD ACRONYM LEN POSITION QUESTION AND VARIABLE DESCRIPTIONS UNWTD/WEIGHTED

53 Q15TV 1 0081 Q15 HAS THE PROGRAM PART OF AN APPRENTICESHIP PROGRAM IN WHICH YOU WERE REGISTERED AT THE TIME?

BLANK	27577/	204763
1 YES	1677/	8090
2 NO	6009/	31575
9 UNKNOWN (NOT STATED)	138/	634

NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS

54 Q18A 2 0082-0083 Q18A BEFORE YOU STARTED THE PROGRAM, WHAT WAS THE HIGHEST LEVEL OF EDUCATION YOU HAD COMPLETED?

01 ELEMENTARY	120/	603
02 SOME SECONDARY	2096/	11968
03 COMPLETED SECONDARY OR TECH. HIGH SCHOOL	18052/	136973
04 SOME TRADE-VOCATIONAL	330/	1868
05 TRADE-VOCATIONAL DIPLOMA OR CERTIFICATE	680/	3529
06 SOME COLLEGE OR CEGEP	1367/	10353
07 COLL/CEGEP OR NURSING SCHOOL DIPLOMA OR CERT.	2568/	30281
08 SOME UNIVERSITY (INCL UNIV TRANS IN ALTA & BC)	2067/	11563
09 DIPLOMA OR CERT. BELOW BACHELOR LEVEL	298/	3110
10 BACHELOR DEGREE	6079/	28335
11 DIPLOMA OR CERT. ABOVE BACHELOR LEVEL	199/	875
12 MASTER'S DEGREE	1020/	2817
13 FIRST PROFESSIONAL DEGREE	163/	537
14 EARNED DOCTORATE	52/	219
15 OTHER (SPECIFY)	162/	1186
99 UNKNOWN (NOT STATED)	148/	843

NOTE: THIS FIELD IS Q16A ON THE TRADE-VOCATIONAL RECORDS

55 Q18ATXT 1 0084 Q18ATXT OTHER EDUCATION SPECIFIED

BLANK	35085/	243013
1 TEXT PRESENT	153/	1129
9 UNKNOWN (NOT STATED)	163/	920

NOTE: THIS FIELD IS Q16ATXT ON THE TRADE-VOCATIONAL RECORDS

56 Q18BTXT 1 0085 Q18BTXT MAJOR FIELD OF STUDY OR SPECIALIZATION.

BLANK	20274/	149564
1 TEXT PRESENT	14786/	93434
9 UNKNOWN (NOT STATED)	341/	2064

NOTE: CODED RESPONSES ARE IN "Q18BCD1" POSITIONS 597-601 FOR THE FIRST FIELD OF STUDY MENTIONED, AND "Q18BCD2" POSITIONS 603-607 FOR ANY SECOND FIELD OF STUDY. NOTE THAT THE CODES FOR "Q18BCD1" ARE IDENTIFIED AS USIS OR CCSIS ACCORDING TO "Q18BCBK1" POSITION 602, AND THOSE FOR "Q18BCD2" ACCORDING TO "Q18BCBK2" POSITION 608.

THIS FIELD IS Q16BTXT ON THE TRADE-VOCATIONAL RECORDS.

57 Q19 1 0086 Q19 BEFORE COMPLETING POSTSECONDARY STUDIES, DID YOU EVER WORK FULL-TIME?

1 YES	17285/	102602
2 NO	18017/	141878
9 UNKNOWN (NOT STATED)	99/	581

NOTE: THIS FIELD IS Q17 ON THE TRADE-VOCATIONAL RECORDS

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
58	Q20	1	0087	Q20 TOTAL NUMBER OF YEARS OF FULL-TIME WORK EXPERIENCE BEFORE COMPLETING PROGRAM.	
				BLANK	18017/ 141878
				1 LESS THAN 6 MONTHS	837/ 5247
				2 6 MONTHS - LESS THAN 1 YEAR	1661/ 10877
				3 FROM 1 YR. TO LESS THAN 3 YRS.	4275/ 25024
				4 FROM 3 YRS. TO LESS THAN 5 YRS.	2670/ 15112
				5 FROM 5 YRS. TO LESS THAN 7 YRS.	1761/ 10086
				6 7 YEARS OR MORE	6002/ 36604
				7 DON'T KNOW	79/ 452
				9 UNKNOWN (NOT STATED)	99/ 581
				NOTE: THIS FIELD IS Q18 ON THE TRADE-VOCATIONAL RECORDS	
59	Q21	1	0088	Q21 BEFORE COMPLETING THE PROGRAM, DID YOU WORK AT A FULL-TIME JOB FOR THE SAME EMPLOYER FOR A PERIOD OF 6 CONSECUTIVE MONTHS OR MORE?	
				BLANK	18854/ 147126
				1 YES	14215/ 84226
				2 NO	2233/ 13129
				9 UNKNOWN (NOT STATED)	99/ 581
				NOTE: THIS FIELD IS Q19 ON THE TRADE-VOCATIONAL RECORDS	
60	Q22	2	0089-0090	Q22 IN WHAT YEAR DID YOU LAST WORK AT A FULL-TIME JOB THAT LASTED 6 MONTHS OR MORE?	
				BLANK	21087/ 140254
				30:86 YEAR	10796/ 65717
				99 UNKNOWN (NOT STATED)	3518/ 19089
				NOTE: IF RESPONDENT CHECKED "STILL WORKING AT IT", FIELD WAS CODED TO "86". WE HOPED THAT RESPONDENTS WOULD UNDERSTAND THIS QUESTION AS CONTINUING TO REFER TO THE TIME PERIOD OF Q21, I.E. "BEFORE YOU COMPLETED THE PROGRAM". WE SUSPECT THAT SOME RESPONDENTS DID NOT UNDERSTAND THE IMPLIED TIME-REFERENCE LIMITATION, SINCE A HIGHER NUMBER OF RESPONSES THAN WE EXPECTED WERE "1987", "1988" OR "STILL WORKING AT IT" ALL RESPONSES LATER THAN "1986" HAVE BEEN RECORDED TO 1986.	
				THIS FIELD IS Q20 ON THE TRADE-VOCATIONAL RECORDS.	
61	Q23	1	0091	Q23 FOR WHOM DID YOU WORK?	
				BLANK	21087/ 140254
				1 TEXT PRESENT	11756/ 71282
				9 UNKNOWN (NOT STATED)	2558/ 13525
				NOTE: RESPONSES WERE CODED ACCORDING TO THE STANDARD INDUSTRIAL CLASSIFICATION SYSTEM. THE CODES ARE GIVEN IN "Q2324SIC" POSITIONS 609-611.	
				THIS FIELD IS Q21 ON THE TRADE-VOCATIONAL RECORDS.	
62	Q24	1	0092	Q24 WHAT KIND OF BUSINESS WAS THIS?	
				BLANK	21087/ 140254
				1 TEXT PRESENT	11807/ 71681
				9 UNKNOWN (NOT STATED)	2507/ 13126
				NOTE: RESPONSES WERE CODED ACCORDING TO THE STANDARD INDUSTRIAL CLASSIFICATION SYSTEM. THE CODES ARE GIVEN IN "Q2324SIC" POSITIONS 609-611.	
				THIS FIELD IS Q22 ON THE TRADE-VOCATIONAL RECORDS.	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
63	Q25	1	0093	Q25 WHAT KIND OF WORK DID YOU DO? BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	 21087/ 160254 11818/ 71715 2496/ 13092
NOTE: RESPONSES WERE CODED ACCORDING TO THE STANDARD OCCUPATIONAL CLASSIFICATION SYSTEM. THE CODES ARE GIVEN IN "Q2526SOC" POSITIONS 612-615.					
THIS FIELD IS Q23 ON THE TRADE-VOCATIONAL RECORDS.					
64	Q26	1	0094	Q26 WHAT WERE YOUR MOST IMPORTANT DUTIES? BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	 21087/ 160254 11805/ 71648 2509/ 13159
NOTE: RESPONSES WERE CODED ACCORDING TO THE STANDARD OCCUPATIONAL CLASSIFICATION SYSTEM. THE CODES ARE GIVEN IN "Q2526SOC" POSITIONS 612-615.					
THIS FIELD IS Q24 ON THE TRADE-VOCATIONAL RECORDS.					
65	Q27	1	0095	Q27 DURING THE 12 MONTHS BEFORE YOU ENROLLED IN THE PROGRAM, WHAT WAS YOUR MAJOR ACTIVITY? 1 GOING TO SCHOOL 2 WORKING 3 LOOKING FOR WORK 4 HOUSEHOLD RESPONSIBILITIES 5 OTHER (SPECIFY) 9 UNKNOWN (NOT STATED)	 17812/ 143033 13307/ 76574 2306/ 12337 1308/ 8699 487/ 3311 181/ 1108
NOTE: THIS FIELD IS Q25 ON THE TRADE-VOCATIONAL RECORDS					
66	Q27TXT	1	0096	Q27TXT OTHER (SPECIFY) BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	 34762/ 240803 484/ 3294 155/ 965
NOTE: THIS FIELD IS Q25TXT ON THE TRADE-VOCATIONAL RECORDS					
67	Q28	1	0097	Q28 WHAT KIND OF SCHOOL WAS THAT? BLANK 1 HIGH SCHOOL 2 VOCATIONAL SCHOOL OR INSTITUTE 3 COLLEGE OR CECEP 4 UNIVERSITY 5 OTHER 9 UNKNOWN (NOT STATED)	 17408/ 100921 10874/ 94495 317/ 1804 2137/ 24811 4289/ 20634 142/ 909 234/ 1487
NOTE: THIS FIELD IS Q26 ON THE TRADE-VOCATIONAL RECORDS					
68	Q27TV	1	0098	Q27TV DURING THE 12 MONTHS BEFORE YOU STARTED THE PROGRAM, WERE YOU WITHOUT WORK AND LOOKING FOR WORK FOR A PERIOD OF FOUR MONTHS OR MORE? BLANK 1 YES 2 NO 3 DON'T KNOW 9 UNKNOWN (NOT STATED)	 27521/ 204391 3001/ 15985 4647/ 23458 63/ 327 169/ 901
NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS					

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
69	Q29	1	0099	Q29 DURING THE 12 MONTHS BEFORE YOU ENROLLED IN THE PROGRAM, WAS YOUR PRINCIPAL RESIDENCE IN ...(PROVINCE LISTED IN LINE C ON LABEL)?	
				1 YES	32248/ 229296
				2 NO	3014/ 14875
				9 UNKNOWN (NOT STATED)	139/ 890
				NOTE: THE INSTITUTIONS PROVINCE WAS LISTED ON LINE C OF THE LABEL. THIS INFORMATION IS CODED IN "SAM_PROV" POSITION 474.	
				THIS FIELD IS Q28 ON THE TRADE-VOCATIONAL RECORDS.	
70	Q30	2	0100-0101	Q30 IN WHAT PROVINCE WAS IT?	
				BLANK	32248/ 229296
				01 NFLD.	133/ 407
				02 PEI.	65/ 262
				03 N.S.	228/ 838
				04 N.B.	217/ 946
				05 QUE.	337/ 2521
				06 ONT.	438/ 2064
				07 MAN.	165/ 820
				08 SASK.	229/ 921
				09 ALTA.	348/ 1913
				10 B.C.	363/ 1602
				11 YUKON OR NWT.	52/ 227
				12 OUTSIDE CANADA	406/ 2118
				99 UNKNOWN (NOT STATED)	172/ 1127
				NOTE: THIS FIELD IS Q29 ON THE TRADE-VOCATIONAL RECORDS	
71	Q31	1	0102	Q31 DID YOU MOVE FROM THAT PROV./COUNTRY SPECIFICALLY TO ENROLL IN THE PROGRAM OR FOR SOME OTHER REASON?	
				BLANK	32248/ 229296
				1 ENROLL	2288/ 10483
				2 OTHER REASON	523/ 3138
				3 DID NOT MOVE	162/ 999
				9 UNKNOWN (NOT STATED)	180/ 1145
				NOTE: THIS FIELD IS Q30 ON THE TRADE-VOCATIONAL RECORDS	
72	Q32A	1	0103	Q32A DURING THE LAST WEEK OF JANUARY 1987, WERE YOU ENROLLED IN ANY CREDIT COURSES AT AN EDUCATIONAL OR TRAINING INSTITUTION?	
				1 YES	8156/ 77892
				2 NO	26990/ 165417
				3 DON'T KNOW	116/ 900
				9 UNKNOWN (NOT STATED)	139/ 852
				NOTE: Q32-Q40. WE EXPECTED THAT MANY RESPONDENTS WOULD NOT BE ABLE TO PRECISELY REMEMBER THEIR STATUS OR CONDITION IN THE LAST WEEK OF JANUARY 1987, 17 MONTHS BEFORE INTERVIEWING. THEY WOULD, WE THOUGHT, REPORT TO US ABOUT THEIR GENERAL RECOLLECTION OF THEIR CONDITION OR STATUS AT ABOUT THAT TIME, I.E., IN JANUARY IN TOTAL, OR IN THE FIRST TWO OR THREE MONTHS OF 1987. WE WERE PREPARED TO ACCEPT SUCH GENERALIZED RESPONSES AS ADEQUATE FOR APPLICATION TO THE ONE WEEK. THE PARTICULAR WEEK WAS CHOSEN TO PROVIDE COMPARABILITY OF RESPONSES TO THE 1984 NGS, I.E., AS A WEEK JUST AFTER THE GRADUATION REFERENCE-YEAR 1986, AND (BY TAKING A WEEK AT THE END OF JANUARY) ONE IN WHICH RESPONDENTS (IF CONTINUING THEIR FULL-TIME EDUCATION) WOULD BE BACK AT SCHOOL.	
				THIS FIELD IS Q31A ON THE TRADE-VOCATIONAL RECORDS.	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNNTD/WEIGHTED
73	Q32B	1	0104	Q32B WAS IT FULL-TIME OR PART-TIME? BLANK 1 FULL-TIME 2 PART-TIME 9 UNKNOMN (NOT STATED)	 27106/ 166317 5083/ 51416 3034/ 26125 178/ 1204
NOTE: SEE Q32A FOR MORE DETAIL.					
THIS FIELD IS Q31B ON THE TRADE-VOCATIONAL RECORDS.					
74	Q33	1	0105	Q33 DURING THAT WEEK, DID YOU DO ANY WORK AT A JOB OR BUSINESS? 1 YES 2 NO 9 UNKNOMN (NOT STATED)	 26969/ 181180 8238/ 62641 194/ 1240
NOTE: SEE Q32A FOR MORE DETAIL.					
THIS FIELD IS Q32 ON THE TRADE-VOCATIONAL RECORDS.					
75	Q34	1	0106	Q34 THAT WEEK, DID YOU HAVE A JOB OR BUSINESS AT WHICH YOU DID NOT WORK? BLANK 1 YES 2 NO 9 UNKNOMN (NOT STATED)	 26969/ 181180 587/ 3407 7650/ 59226 195/ 1249
NOTE: SEE Q32A FOR MORE DETAIL.					
THIS FIELD IS Q33 ON THE TRADE-VOCATIONAL RECORDS.					
76	Q35	1	0107	Q35 WERE YOU ABSENT FROM WORK BECAUSE OF A TEMPORARY LAYOFF? BLANK 1 YES 2 NO 3 DON'T KNOM 9 UNKNOMN (NOT STATED)	 34619/ 240406 226/ 1067 337/ 2212 24/ 128 195/ 1249
NOTE: SEE Q32A FOR MORE DETAIL.					
THIS FIELD IS Q34 ON THE TRADE-VOCATIONAL RECORDS.					
77	Q36	1	0108	Q36 WAS THE JOB YOU HAD DURING THAT WEEK A FULL-TIME JOB, THAT IS, USUALLY 30 OR MORE HOURS A WEEK? BLANK 1 YES 2 NO 9 UNKNOMN (NOT STATED)	 7650/ 59226 23215/ 147313 4341/ 37273 195/ 1249
NOTE: SEE Q32A FOR MORE DETAIL.					
THIS FIELD IS Q35 ON THE TRADE-VOCATIONAL RECORDS.					
78	Q37	1	0109	Q37 DID YOU HAVE A FULL-TIME JOB TO START AT A DEFINITE DATE IN THE FUTURE? BLANK 1 YES 2 NO 9 UNKNOMN (NOT STATED)	 30865/ 206539 476/ 3708 3864/ 33539 196/ 1276
NOTE: SEE Q32A FOR MORE DETAIL.					
THIS FIELD IS Q36 ON THE TRADE-VOCATIONAL RECORDS.					

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED	
79	Q38A	1	0110	Q38A DURING THE LAST WEEK OF JANUARY 1987, DID YOU HAVE A JOB TO START AT A DEFINITE DATE IN THE FUTURE?		
				BLANK	27555/	184560
				1 YES	852/	5384
				2 NO	6750/	53428
				9 UNKNOMN (NOT STATED)	244/	1690
				NOTE: SEE Q32A FOR MORE DETAIL.		
				THIS FIELD IS Q37A ON THE TRADE-VOCATIONAL RECORDS.		
80	Q38B	1	0111	Q38B WAS THAT JOB FULL-TIME, THAT IS 30 OR MORE HOURS A WEEK?		
				BLANK	34305/	237987
				1 YES	729/	4579
				2 NO	123/	805
				9 UNKNOMN (NOT STATED)	244/	1690
				NOTE: SEE Q32A FOR MORE DETAIL.		
				THIS FIELD IS Q37B ON THE TRADE-VOCATIONAL RECORDS.		
81	Q39	1	0112	Q39 WERE YOU LOOKING FOR A JOB DURING THE LAST WEEK OF JANUARY 1987?		
				BLANK	28407/	189944
				1 YES	3216/	20991
				2 NO	3534/	32437
				9 UNKNOMN (NOT STATED)	244/	1690
				NOTE: SEE Q32A FOR MORE DETAIL.		
				THIS FIELD IS Q38 ON THE TRADE-VOCATIONAL RECORDS.		
82	Q40	1	0113	Q40 WERE YOU LOOKING FOR A FULL-TIME JOB?		
				BLANK	27954/	188037
				1 YES	4908/	31852
				2 NO	2235/	22885
				9 UNKNOMN (NOT STATED)	304/	2287
				NOTE: SEE Q32A FOR MORE DETAIL.		
				THIS FIELD IS Q39 ON THE TRADE-VOCATIONAL RECORDS.		
83	Q41A	1	0114	Q41A WERE YOU ENROLLED IN ANY CREDIT COURSES AT AN EDUCATIONAL OR TRAINING INSTITUTION DURING THE LAST WEEK OF OCTOBER, 1987?		
				1 YES	7824/	74240
				2 NO	27318/	169134
				3 DON'T KNOW	113/	770
				9 UNKNOMN (NOT STATED)	146/	917
				NOTE: THIS FIELD IS Q40A ON THE TRADE-VOCATIONAL RECORDS		
84	Q41B	1	0115	Q41B WAS IT FULL-TIME OR PART-TIME?		
				BLANK	27431/	169905
				1 FULL-TIME	4570/	45934
				2 PART-TIME	3188/	27653
				9 UNKNOMN (NOT STATED)	212/	1569
				NOTE: THIS FIELD IS Q40B ON THE TRADE-VOCATIONAL RECORDS		

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTO/WEIGHTED
85	Q42	1	0116	Q42 DURING THE LAST WEEK OF OCTOBER 1987, DID YOU DO ANY WORK AT A JOB OR BUSINESS?	
				1 YES	28817/ 193435
				2 NO	6382/ 50303
				9 UNKNOWN (NOT STATED)	202/ 1323
				NOTE: THIS FIELD IS Q41 ON THE TRADE-VOCATIONAL RECORDS	
86	Q43	1	0117	Q43 THAT WEEK, DID YOU HAVE A JOB OR BUSINESS AT WHICH YOU DID NOT WORK?	
				BLANK	28817/ 193435
				1 YES	562/ 3275
				2 NO	5819/ 47026
				9 UNKNOWN (NOT STATED)	203/ 1324
				NOTE: THIS FIELD IS Q42 ON THE TRADE-VOCATIONAL RECORDS	
87	Q44	1	0118	Q44 WERE YOU ABSENT FROM WORK BECAUSE OF A TEMPORARY LAYOFF?	
				BLANK	34636/ 240462
				1 YES	132/ 711
				2 NO	400/ 2340
				9 UNKNOWN (NOT STATED)	233/ 1549
				NOTE: THIS FIELD IS Q43 ON THE TRADE-VOCATIONAL RECORDS	
88	Q45	1	0119	Q45 WAS THE JOB YOU HAD DURING THAT WEEK A FULL-TIME JOB, THAT IS, USUALLY 30 OR MORE HOURS A WEEK?	
				BLANK	5819/ 47026
				1 YES	25466/ 163545
				2 NO	3912/ 33162
				9 UNKNOWN (NOT STATED)	204/ 1327
				NOTE: THIS FIELD IS Q44 ON THE TRADE-VOCATIONAL RECORDS	
89	Q46	1	0120	Q46 DID YOU HAVE A FULL-TIME JOB TO START AT A DEFINITE DATE IN THE FUTURE?	
				BLANK	31285/ 210572
				1 YES	296/ 2437
				2 NO	3615/ 30692
				9 UNKNOWN (NOT STATED)	205/ 1361
				NOTE: THIS FIELD IS Q45 ON THE TRADE-VOCATIONAL RECORDS	
90	Q47A	1	0121	Q47A DURING THE LAST WEEK OF OCTOBER 1987, DID YOU HAVE A JOB TO START AT A DEFINITE DATE IN THE FUTURE?	
				BLANK	29377/ 196674
				1 YES	477/ 3326
				2 NO	5283/ 43018
				9 UNKNOWN (NOT STATED)	264/ 2043
				NOTE: THIS FIELD IS Q46A ON THE TRADE-VOCATIONAL RECORDS	
91	Q47B	1	0122	Q47B WAS THAT JOB FULL-TIME, THAT IS 30 OR MORE HOURS A WEEK?	
				BLANK	34660/ 239692
				1 YES	401/ 2733
				2 NO	76/ 594
				9 UNKNOWN (NOT STATED)	264/ 2043
				NOTE: THIS FIELD IS Q46B ON THE TRADE-VOCATIONAL RECORDS	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
92	Q48	1	0123	Q48 WERE YOU LOOKING FOR A JOB DURING THE LAST WEEK OF OCTOBER 1987?	
				BLANK	
				1 YES	29854/ 200000
				2 NO	2151/ 14279
				9 UNKNOWN (NOT STATED)	3132/ 28739
					264/ 2043
				NOTE: THIS FIELD IS Q47 ON THE TRADE-VOCATIONAL RECORDS	
93	Q49	1	0124	Q49 WERE YOU LOOKING FOR A FULL-TIME JOB?	
				BLANK	
				1 YES	29295/ 197453
				2 NO	3525/ 22453
				9 UNKNOWN (NOT STATED)	2269/ 22526
					312/ 2629
				NOTE: THIS FIELD IS Q48 ON THE TRADE-VOCATIONAL RECORDS	
94	Q50A	1	0125	Q50A AFTER COMPLETING THE PROGRAM WERE YOU EVER WITHOUT A JOB BECAUSE YOU WERE... GOING TO SCHOOL?	
				1 YES	4903/ 45516
				2 NO OR NOT STATED	30424/ 199155
				9 UNKNOWN	74/ 391
				NOTE: THIS QUESTION WAS INTENDED PRIMARILY AS A LEAD-IN TO Q52-Q62. WE WANTED TO CONVEY TO RESPONDENTS THAT BEING "WITHOUT A JOB" INCLUDED BOTH BEING UNEMPLOYED AND BEING OUT OF THE LABOUR FORCE, SO THAT THE TOTAL THEY WOULD REPORT FOR Q53 WOULD INCLUDE BOTH CONDITIONS. THE ALTERNATIVE WOULD HAVE BEEN TO INCLUDE A DEFINITION OF "WITHOUT A JOB" IN Q53. HOWEVER, WE WERE CONCERNED THAT THIS WOULD MAKE Q53 A LONG QUESTION AND THUS MIGHT NOT CONVEY THE CONCEPT ADEQUATELY. Q52 WAS INCLUDED IN ORDER TO CONFIRM WITH RESPONDENTS WHO ANSWERED "NO" TO ALL OF Q50 THAT THEY REALLY DID MEAN THAT THEY HAD A JOB OR JOBS FOR ALL OF THE TIME SINCE THEY GRADUATED IN 1986.	
				THIS FIELD IS Q49A ON THE TRADE-VOCATIONAL RECORDS.	
95	Q50B	1	0126	Q50B ....BECAUSE YOU HAD PERSONAL OR FAMILY RESPONSIBILITIES?	
				1 YES	1716/ 11582
				2 NO OR NOT STATED	33611/ 233088
				9 UNKNOWN	74/ 391
				NOTE: THIS FIELD IS Q49B ON THE TRADE-VOCATIONAL RECORDS	
96	Q50C	1	0127	Q50C ....BECAUSE YOU COULDN'T FIND WORK?	
				1 YES	10253/ 62452
				2 NO OR NOT STATED	25074/ 182219
				9 UNKNOWN	74/ 391
				NOTE: THIS FIELD IS Q49C ON THE TRADE-VOCATIONAL RECORDS	
97	Q50D	1	0128	Q50D ....OR FOR ANY OTHER REASON?	
				1 YES	2705/ 18727
				2 NO OR NOT STATED	32622/ 225944
				9 UNKNOWN	74/ 391
				NOTE: THIS FIELD IS Q49D ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
98	Q50TXT	1	0129	Q50TXT OTHER REASON (SPECIFY) BLANK 1 TEXT PRESENT 9 UNKNOWNN (NOT STATED)	 32514/ 225144 2366/ 16492 521/ 3425
				NOTE: THIS FIELD IS Q49TXT ON THE TRADE-VOCATIONAL RECORDS	
99	Q51	1	0130	Q51 INTERVIEWER CHECK-ITEM 1 IF ANY YES IN Q50 2 OTHERWISE	 16796/ 119536 18605/ 125525
				NOTE: THIS FIELD IS Q50 ON THE TRADE-VOCATIONAL RECORDS. FOR TRADE-VOCATION RECORDS, CODE 1 = FOR ANY "YES" IN Q49	
100	Q52	1	0131	Q52 HAVE YOU ALWAYS HAD A JOB DURING THE ENTIRE 2 YEARS OR SO SINCE YOU COMPLETED THE PROGRAM? BLANK (INCLUDES UNKNOWNN) 1 YES 2 NO	 12364/ 96620 18525/ 125102 4512/ 23339
				NOTE: SEE Q50A FOR MORE DETAILS. THIS FIELD IS Q51 ON THE TRADE-VOCATIONAL RECORDS.	
101	Q53	2	0132-0133	Q53 CONSIDERING ALL THESE REASONS, HOW LONG IN TOTAL WERE YOU WITHOUT A JOB DURING THAT PERIOD? BLANK 01:45 MONTHS 99 UNKNOWNN (NOT STATED)	 18525/ 125102 16661/ 118683 215/ 1276
				NOTE: THIS FIELD IS Q52 ON THE TRADE-VOCATIONAL RECORDS	
102	Q54	1	0134	Q54 WAS THERE ANY TIME DURING THIS PERIOD WHEN YOU WERE NOT LOOKING FOR A JOB? BLANK (INCLUDES UNKNOWNN) 1 YES 2 NO	 18599/ 125493 6896/ 58588 9906/ 60980
				NOTE: THIS FIELD IS Q53 ON THE TRADE-VOCATIONAL RECORDS	
103	Q55	1	0135	Q55 AT ANY TIME DURING THIS PERIOD, WAS THERE ANY TIME YOU WERE LOOKING FOR A JOB? BLANK (INCLUDES UNKNOWNN) 1 YES 2 NO	 28505/ 186473 2731/ 21825 4165/ 36763
				NOTE: THIS FIELD IS Q54 ON THE TRADE-VOCATIONAL RECORDS	
104	Q56	2	0136-0137	Q56 DURING THIS PERIOD, HOW LONG IN TOTAL WERE YOU LOOKING FOR A JOB? BLANK 01:45 MONTHS 99 UNKNOWNN (NOT STATED)	 32596/ 222846 2580/ 20687 225/ 1529
				NOTE: THIS FIELD IS Q55 ON THE TRADE-VOCATIONAL RECORDS	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED	
105	Q57	1	0138	Q57 AT ANY TIME DURING THE PERIOD YOU WERE LOOKING FOR A JOB, WERE YOU A FULL-TIME STUDENT?		
				BLANK (INCLUDES UNKNOWN)	32670/	223236
				1 YES	818/	8345
				2 NO	1913/	13479
				NOTE: THIS FIELD IS Q56 ON THE TRADE-VOCATIONAL RECORDS		
106	Q58	2	0139-0140	Q58 HOW MUCH OF THIS PERIOD WERE YOU A FULL-TIME STUDENT?		
				BLANK	34509/	236325
				01:45 MONTHS	570/	6355
				99 UNKNOWN (NOT STATED)	322/	2381
				NOTE: THIS FIELD IS Q57 ON THE TRADE-VOCATIONAL RECORDS		
107	Q59	1	0141	Q59 DURING THE PERIOD WERE YOU EVER NOT LOOKING FOR A JOB, WERE YOU EVER WAITING TO START A NEW JOB OR RETURN TO AN OLD JOB?		
				BLANK (INCLUDES UNKNOWN)	28505/	186473
				1 YES	2672/	23103
				2 NO	4224/	35486
				NOTE: THIS FIELD IS Q58 ON THE TRADE-VOCATIONAL RECORDS		
108	Q60	2	0142-0143	Q60 HOW LONG WERE YOU WAITING?		
				BLANK	32655/	221568
				01:45 MONTHS	2231/	18478
				99 UNKNOWN (NOT STATED)	515/	5015
				NOTE: THIS FIELD IS Q59 ON THE TRADE-VOCATIONAL RECORDS		
109	Q61	1	0144	Q61 AT ANY TIME DURING THE PERIOD YOU WERE LOOKING FOR A JOB, WERE YOU EVER A FULL-TIME STUDENT?		
				BLANK (INCLUDES UNKNOWN)	25495/	184081
				1 YES	765/	6496
				2 NO	9141/	54484
				NOTE: THIS FIELD IS Q60 ON THE TRADE-VOCATIONAL RECORDS		
110	Q62	2	0145-0146	Q62 HOW MUCH OF THIS PERIOD WERE YOU A FULL-TIME STUDENT?		
				BLANK	34562/	238174
				01:45 MONTHS	641/	5634
				99 UNKNOWN (NOT STATED)	198/	1253
				NOTE: THIS FIELD IS Q61 ON THE TRADE-VOCATIONAL RECORDS		
111	Q63	1	0147	Q63 DURING THE WEEK OF MAY 1-7, 1988 DID YOU WORK AT A JOB OR BUSINESS?		
				1 YES	28971/	197648
				2 NO	6251/	46324
				9 UNKNOWN (NOT STATED)	174/	1090
				NOTE: THIS FIELD IS Q62 ON THE TRADE-VOCATIONAL RECORDS		

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNNTD/WEIGHTED	
112	Q64	1	0148	Q64 DID YOU HAVE MORE THAN ONE JOB OR BUSINESS DURING THE WEEK OF MAY 1-7, 1988?		
				BLANK	6252/	46324
				1 YES	3225/	24556
				2 NO	25711/	172890
				9 UNKNOMN (NOT STATED)	213/	1292
				NOTE: THIS FIELD IS Q63 ON THE TRADE-VOCATIONAL RECORDS		
113	Q65	1	0149	Q65 THAT WEEK, DID YOU HAVE A JOB OR BUSINESS AT WHICH YOU DID NOT WORK?		
				BLANK	28971/	197648
				1 YES	919/	6830
				2 NO	5331/	40284
				9 UNKNOMN (NOT STATED)	180/	1099
				NOTE: THIS FIELD IS Q64 ON THE TRADE-VOCATIONAL RECORDS		
114	Q66	1	0150	Q66 WERE YOU ABSENT FROM WORK BECAUSE OF A TEMPORARY LAYOFF?		
				BLANK	34302/	237932
				1 YES	172/	942
				2 NO	706/	4834
				9 UNKNOMN (NOT STATED)	221/	1353
				NOTE: THIS FIELD IS Q65 ON THE TRADE-VOCATIONAL RECORDS		
115	Q67	1	0151	Q67 DID YOU HAVE MORE THAN ONE JOB OR BUSINESS THAT WEEK?		
				BLANK	34302/	237932
				1 YES	60/	553
				2 NO	820/	5228
				9 UNKNOMN (NOT STATED)	219/	1348
				NOTE: THIS FIELD IS Q66 ON THE TRADE-VOCATIONAL RECORDS		
116	Q68A	1	0152	Q68A DURING THE WEEK OF MAY 1 TO 7, DID YOU HAVE A JOB TO START AT A DEFINITE DATE IN THE FUTURE?		
				BLANK	29890/	203679
				1 YES	950/	7941
				2 NO	4378/	32308
				9 UNKNOMN (NOT STATED)	183/	1134
				NOTE: THIS FIELD IS Q67A ON THE TRADE-VOCATIONAL RECORDS		
117	Q68B	1	0153	Q68B IS THAT JOB FULL-TIME, THAT IS, 30 OR MORE HOURS A WEEK?		
				BLANK	34268/	235986
				1 YES	827/	6956
				2 NO	121/	978
				9 UNKNOMN (NOT STATED)	185/	1142
				NOTE: THIS FIELD IS Q67B ON THE TRADE-VOCATIONAL RECORDS		
118	Q69A	1	0154	Q69A DURING THE WEEK OF MAY 1 TO 7, WERE YOU LOOKING FOR A JOB?		
				BLANK	30840/	211620
				1 YES	2511/	17612
				2 NO	1867/	14696
				9 UNKNOMN (NOT STATED)	183/	1134
				NOTE: THIS FIELD IS Q68A ON THE TRADE-VOCATIONAL RECORDS		

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
119	Q69B	1	0155	Q69B WERE YOU LOOKING FOR A FULL-TIME JOB? BLANK 1 YES 2 NO 9 UNKNOWN (NOT STATED)	32707/ 226316 2371/ 16473 139/ 1134 184/ 1139
NOTE: THIS FIELD IS Q68B ON THE TRADE-VOCATIONAL RECORDS					
120	Q70	2	0156-0157	Q70 WHAT WAS THE MAIN REASON YOU DID NOT LOOK FOR A JOB THAT WEEK? BLANK 01 OWN ILLNESS OR DISABILITY 02 PERSONAL OR FAMILY RESPONSIBILITIES 03 GOING TO SCHOOL 04 NO LONGER INTERESTED IN FINDING A JOB 05 WAITING FOR RECALL (TO FORMER JOB) 06 HAS ALREADY FOUND A NEW JOB 07 WAITING FOR REPLIES FROM EMPLOYER 08 COULDN'T FIND THE KIND OF JOB WANTED 09 DISCOURAGED WITH LOOKING 10 NO REASON GIVEN 11 OTHER REASON (SPECIFY) 99 UNKNOWN (NOT STATED)	33351/ 229231 74/ 629 335/ 2566 1133/ 8735 29/ 358 21/ 161 17/ 220 12/ 128 9/ 68 13/ 79 16/ 126 201/ 1603 190/ 1186
NOTE: THIS FIELD IS Q69 ON THE TRADE-VOCATIONAL RECORDS					
121	Q70TXT	1	0158	Q70TXT OTHER REASON (SPECIFY) BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	35010/ 242302 199/ 1573 192/ 1187
NOTE: THIS FIELD IS Q69TXT ON THE TRADE-VOCATIONAL RECORDS					
122	Q71	1	0159	Q71 WHAT IS THE MAIN REASON YOU HAD A PART-TIME JOB? BLANK 1 OWN ILLNESS OR DISABILITY 2 PERSONAL OR FAMILY RESPONSIBILITIES 3 GOING TO SCHOOL 4 COULD ONLY FIND PART-TIME WORK 5 DID NOT WANT FULL-TIME WORK 6 FULL-TIME WORK IS UNDER 30 HRS. A WEEK 7 OTHER REASON (SPECIFY) 9 UNKNOWN (NOT STATED)	35095/ 242942 0/ 0 8/ 48 37/ 311 42/ 351 12/ 67 2/ 19 13/ 128 192/ 1195
NOTE: THIS FIELD IS Q70 ON THE TRADE-VOCATIONAL RECORDS					
123	Q71TXT	1	0160	Q71TXT OTHER REASON (SPECIFY) BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	35196/ 243738 13/ 128 192/ 1195
NOTE: THIS FIELD IS Q70TXT ON THE TRADE-VOCATIONAL RECORDS					

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
124	Q72	1	0161	Q72 FOR WHOM DID YOU WORK? BLANK 1 SAME EMPLOYER AS IN Q23 9 UNKNOWN (NOT STATED)	29929/ 211749 5100/ 30263 372/ 3049
NOTE: Q72-Q94. IF THE JOB UNDER DISCUSSION WAS A FUTURE-START JOB (FROM Q68), INTERVIEWERS WERE ADVISED TO CHANGE VERB TENSES TO FUTURE WHERE APPROPRIATE. Q72-Q73. RESPONSES WERE CODED ACCORDING TO THE STANDARD INDUSTRIAL CLASSIFICATION SYSTEM. THE CODES ARE GIVEN IN "Q7273SIC" POSITIONS 616-618. IF THE RESPONSE IN Q73 WAS "SAME BUSINESS AS IN 24", THE CODE WAS CARRIED FORWARD FROM POSITIONS 609-611. THIS FIELD IS Q71 ON THE TRADE-VOCATIONAL RECORDS. ON TRADE-VOCATIONAL FILE, CODE 1 = SAME EMPLOYER AS IN Q21.					
125	Q72TXT	1	0162	Q72TXT BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	9478/ 62570 25551/ 179442 372/ 3049
NOTE: THIS FIELD IS Q71TXT ON THE TRADE-VOCATIONAL RECORDS					
126	Q73	1	0163	Q73 WHAT KIND OF BUSINESS, INDUSTRY OR SERVICE IS THIS? BLANK 1 SAME BUSINESS AS IN Q24 9 UNKNOWN (NOT STATED)	29892/ 212107 5212/ 31073 297/ 1881
NOTE: THIS FIELD IS Q72 ON THE TRADE-VOCATIONAL RECORDS. ON TRADE-VOCATIONAL FILE, CODE 1 = SAME JOB AS IN Q22.					
127	Q73TXT	1	0164	Q73TXT BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	9590/ 63381 25514/ 179799 297/ 1881
NOTE: THIS FIELD IS Q72TXT ON THE TRADE-VOCATIONAL RECORDS					
128	Q74	1	0165	Q74 WHAT KIND OF WORK DID YOU DO? BLANK 1 SAME KIND OF WORK AS IN Q25 9 UNKNOWN (NOT STATED)	30342/ 214681 4781/ 28565 278/ 1815
NOTE: Q74-Q75. RESPONSES WERE CODED ACCORDING TO THE STANDARD OCCUPATIONAL CLASSIFICATION SYSTEM. THE CODES ARE GIVEN IN "Q7475SOC" POSITIONS 619-622. IF THE RESPONSE IN Q74 WAS "SAME KIND OF WORK AS IN 25", THE CODE WAS CARRIED FORWARD FROM POSITIONS 612-615. THIS FIELD IS Q73 ON THE TRADE-VOCATIONAL RECORDS. ON THE TRADE-VOCATIONAL FILE, CODE 1 = SAME KIND OF WORK AS IN Q23.					
129	Q74TXT	1	0166	Q74TXT BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	9159/ 60872 25964/ 182374 278/ 1815
NOTE: THIS FIELD IS Q73TXT ON THE TRADE-VOCATIONAL RECORDS					

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
130	Q75	1	0167	Q75 IN THIS WORK, WHAT WERE YOUR MOST IMPORTANT ACTIVITIES OR DUTIES?	
				BLANK	30303/ 214331
				1 SAME ACTIVITIES OR DUTIES AS IN Q26	4790/ 28677
				9 UNKNOWN (NOT STATED)	308/ 2053
				NOTE: THIS FIELD IS Q74 ON THE TRADE-VOCATIONAL RECORDS - CODE 1 = SAME ACTIVITIES OR DUTIES AS IN Q24	
131	Q75TXT	1	0168	Q75TXT	
				BLANK	9168/ 60985
				1 TEXT PRESENT	25925/ 182024
				9 UNKNOWN (NOT STATED)	308/ 2053
				NOTE: THIS FIELD IS Q74TXT ON THE TRADE-VOCATIONAL RECORDS	
132	Q76A	3	0169-0171	Q76A IF YOU WERE TO WORK YOUR USUAL HOURS AT THAT JOB FOR 12 MONTHS, APPROXIMATELY WHAT WOULD BE YOUR GROSS EARNINGS?	
				BLANK	7182/ 53202
				000:998 DOLLARS	27945/ 190165
				999 UNKNOWN (NOT STATED)	274/ 1694
				NOTE: RESPONSES TO THIS QUESTION SHOULD BE INTERPRETED ONLY AS INDICATIVE OF THE RELATIVE ECONOMIC MORTH OR VALUE OF ONE JOB TO ANOTHER. THEY SHOULD NOT BE UNDERSTOOD AS INDICATING THE RESPONDENT'S ACTUAL EARNINGS OR INCOME. RESPONDENTS MAY NOT HAVE HAD THE MAY 1988 JOB FOR 12 MONTHS, OR MAY NOT HAVE KEPT IT FOR 12 MONTHS; THEY MAY HAVE BEEN CURRENTLY WORKING PART-TIME, THEN SWITCHED TO FULL-TIME, OR VISA-VERSA OR HAVE SWITCHED DURING THE LAST 12 MONTHS; THEY MAY HAVE HAD OTHER SOURCES OF INCOME. RATES OF PAY MAY GO UP OR DOWN. TOTAL-INCOME INFORMATION FOR 12 MONTHS HAS OBTAINED IN Q161, POSITIONS 430-432.	
				THIS FIELD IS Q75A ON THE TRADE-VOCATIONAL RECORDS.	
133	Q76B	1	0172	Q76B	
				BLANK	32323/ 222473
				1 DON'T KNOM	1860/ 14545
				2 REFUSED	944/ 6329
				9 UNKNOWN (NOT STATED)	274/ 1694
				NOTE: THIS FIELD IS Q75B ON THE TRADE-VOCATIONAL RECORDS	
134	Q77	1	0173	Q77 DO YOU THINK THE PROGRAM WAS INTENDED TO PREPARE YOU FOR A SPECIFIC JOB OR CAREER?	
				BLANK	10929/ 65845
				1 YES	17125/ 113144
				2 NO	7155/ 64936
				9 UNKNOWN (NOT STATED)	192/ 1137
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
135	Q78	1	0174	Q78 WAS THE JOB YOU HAD IN THE WEEK OF MAY 1 TO 7 ONE FOR WHICH YOUR EDUCATIONAL PROGRAM WAS DESIGNED?	
				BLANK	11537/ 97269
				1 YES	17276/ 185698
				2 NO	6236/ 39624
				3 DON'T KNOM	147/ 1168
				9 UNKNOWN (NOT STATED)	205/ 1318
				NOTE: THIS FIELD IS Q76 ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
136	Q79	1	0175	Q79 WERE YOU A PAID WORKER OR SELF-EMPLOYED?	
				BLANK	4378/ 32308
				1 PAID WORKER	29317/ 201771
				2 SELF-EMPLOYED	1438/ 9223
				3 OTHER	51/ 368
				9 UNKNOMN (NOT STATED)	217/ 1392
				NOTE: THIS FIELD IS Q77 ON THE TRADE-VOCATIONAL RECORDS	
137	Q80	1	0176	Q80 IS THIS A PERMANENT POSITION OR A TEMPORARY POSITION?	
				BLANK	5867/ 41898
				1 PERMANENT	23279/ 153809
				2 TEMPORARY	6014/ 47806
				9 UNKNOMN (NOT STATED)	241/ 1548
				NOTE: THIS FIELD IS Q78 ON THE TRADE-VOCATIONAL RECORDS	
138	Q79TV	2	0177-0178	Q79 WHEN YOU WERE SELECTED FOR THAT JOB, WHAT LEVEL OF EDUCATION WAS NEEDED TO GET THE JOB?	
				BLANK	29083/ 212316
				01 DON'T KNOM	302/ 1408
				02 NO QUALIFICATIONS SPECIFIED	1676/ 8636
				03 SOME HIGH SCHOOL	51/ 254
				04 GRADE 10 OR LESS	179/ 911
				05 GRADE 11	80/ 365
				06 GRADE 12 OR 13, COMPLETED HIGH SCHOOL	794/ 4392
				07 SOME POSTSECONDARY EDUCATION	98/ 535
				08 SOME TRADE-VOCATIONAL	215/ 1128
				09 TRADE-VOCATIONAL DIPLOMA OR CERTIFICATE	2038/ 9978
				10 SOME COLLEGE OR CECEP	73/ 390
				11 COLL/CEGEP OR NURSING SCHOOL DIPLOMA OR CERT.	392/ 2410
				12 SOME UNIVERSITY (INCL UNIV TRANSF IN ALTA & BC)	11/ 46
				13 DIPLOMA OR CERT. BELOW BACHELOR LEVEL	6/ 34
				14 DEGREE, LEVEL NOT SPECIFIED	3/ 14
				15 BACHELOR DEGREE	18/ 88
				16 DIPLOMA OR CERT., LEVEL NOT SPECIFIED	1/ 1
				17 DIPLOMA OR CERT., ABOVE BACHELOR LEVEL	1/ 5
				18 MASTER'S DEGREE	0/ 0
				19 FIRST PROFESSIONAL DEGREE	2/ 8
				20 EARNED DOCTORATE	1/ 5
				21 OTHER SPECIFY	156/ 717
				99 UNKNOMN (NOT STATED)	221/ 1422
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	
139	Q79TXXTV	1	0179	Q79TXXTV OTHER EDUCATION SPECIFIED	
				BLANK	35024/ 242923
				1 TEXT PRESENT	155/ 709
				9 UNKNOMN (NOT STATED)	222/ 1429
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	
140	Q80TV	1	0180	Q80 DID THE EMPLOYER SPECIFY THAT THE PROGRAM YOU COMPLETED WAS NECESSARY TO GET THE JOB?	
				BLANK	32147/ 228220
				1 YES	1914/ 9761
				2 NO	1030/ 5184
				3 DON'T KNOM	62/ 372
				9 UNKNOMN (NOT STATED)	248/ 1524
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
141	Q81	2	0181-0182	Q81 WHEN YOU WERE SELECTED FOR THAT JOB, WHAT LEVEL OF EDUCATION WAS NEEDED TO GET THE JOB?	
				BLANK	12057/ 73731
				01 DON'T KNOM	607/ 3367
				02 NO QUALIFICATIONS SPECIFIED	2458/ 23319
				03 SOME HIGH SCHOOL	256/ 2176
				04 COMPLETED HIGH SCHOOL	2085/ 18568
				07 SOME POSTSECONDARY EDUCATION	294/ 1976
				08 TRADE-VOCATIONAL, LEVEL NOT SPECIFIED	76/ 451
				09 TRADE-VOCATIONAL DIPLOMA OR CERTIFICATE	580/ 3135
				10 SOME COLLEGE OR CECEP	458/ 3505
				11 COLL/CECEP OR NURSING SCHOOL DIPLOMA OR CERT.	6022/ 48595
				12 SOME UNIVERSITY (INCL UNIV TRANSF IN ALTA & BC)	438/ 4426
				13 DIPLOMA OR CERT. BELOW BACHELOR LEVEL	387/ 3856
				14 DEGREE, LEVEL NOT SPECIFIED	233/ 2436
				15 BACHELOR DEGREE	5977/ 45593
				16 DIPLOMA OR CERT., LEVEL NOT SPECIFIED	72/ 445
				17 DIPLOMA OR CERT., ABOVE BACHELOR LEVEL	212/ 1468
				18 MASTER'S DEGREE	1689/ 5041
				19 FIRST PROFESSIONAL DEGREE	421/ 3392
				20 EARNED DOCTORATE	561/ 943
				21 OTHER SPECIFY	370/ 2807
				99 UNKNOWN (NOT STATED)	148/ 1031
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
142	Q81TXT	1	0183	Q81TXT OTHER EDUCATION SPECIFIED	
				BLANK	34883/ 241223
				1 TEXT PRESENT	378/ 2809
				9 UNKNOWN (NOT STATED)	148/ 1030
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
143	Q82	1	0184	Q82 DID THE EMPLOYER SPECIFY THAT IT MUST BE IN A SPECIFIC FIELD OR FIELDS OF STUDY?	
				BLANK	17463/ 123160
				1 YES	13276/ 86583
				2 NO	4389/ 33465
				9 UNKNOWN (NOT STATED)	273/ 1853
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
144	Q82TXT	1	0185	Q82TXT WHAT FIELD(S) OF STUDY?	
				BLANK	21852/ 156625
				1 TEXT PRESENT	13888/ 85546
				9 UNKNOWN (NOT STATED)	461/ 2890
				NOTE: RESPONSES HAVE BEEN CODED ACCORDING TO USIS OR CCSIS CODES. THE CODES ARE IN "Q82BCD1" POSITIONS 623-627 FOR THE FIRST FIELD OF STUDY MENTIONED, AND "Q82BCD2" POSITIONS 629-633 FOR THE SECOND FIELD OF STUDY. NOTE THAT THE CODES OF Q82BCD1 ARE IDENTIFIED AS USIS OR CCSIS IN "Q82BCBK1" POSITION 628, AND THOSE OF "Q82BCD2", IN "Q82BCBK2" POSITION 634.	
				THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS.	
145	Q83	1	0186	Q83 DID THE EMPLOYER SPECIFY THAT RELATED WORK EXPERIENCE WAS ESSENTIAL FOR THAT JOB?	
				BLANK	5867/ 41898
				1 YES	13734/ 88064
				2 NO	15104/ 110459
				3 DON'T KNOM	479/ 3248
				9 UNKNOWN (NOT STATED)	217/ 1392
				NOTE: THIS FIELD IS Q81 ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
146	Q84	1	0187	Q84 INTERVIEWER CHECK-ITEM BLANK 1 YES IN Q68A 2 OTHERWISE 9 UNKNOWN (NOT STATED)	 4429/ 32676 943/ 7883 29812/ 203111 217/ 1392
NOTE: THIS FIELD IS Q82 ON THE TRADE-VOCATIONAL RECORDS. ON THE TRADE-VOCATIONAL FILE, CODE 1 = "YES" IN Q67.					
147	Q85	1	0188	Q85 IN THIS JOB, DID YOU USE ANY OF THE SKILLS ACQUIRED FROM THE PROGRAM? BLANK 1 YES 2 NO 9 UNKNOWN (NOT STATED)	 5372/ 40559 24804/ 159604 4844/ 42452 381/ 2447
NOTE: THIS FIELD IS Q83 ON THE TRADE-VOCATIONAL RECORDS					
148	Q86	1	0189	Q86 CONSIDERING ALL ASPECTS OF THE JOB YOU HAD IN THE WEEK OF MAY 1 TO 7, HOW SATISFIED WERE YOU WITH THE JOB? BLANK 1 VERY SATISFIED? 2 SATISFIED? 3 DISSATISFIED? 4 VERY DISSATISFIED? 5 DON'T KNOW, NO OPINION 9 UNKNOWN (NOT STATED)	 5372/ 40559 13690/ 89168 13445/ 94639 1901/ 13818 576/ 4225 200/ 1260 217/ 1392
NOTE: THIS FIELD IS Q84 ON THE TRADE-VOCATIONAL-RECORDS					
149	Q87	1	0190	Q87 CONSIDERING THE DUTIES & RESPONSIBILITIES OF THAT JOB, HOW SATISFIED WERE YOU WITH THE MONEY YOU MADE? BLANK 1 VERY SATISFIED? 2 SATISFIED? 3 DISSATISFIED? 4 VERY DISSATISFIED? 5 DON'T KNOW, NO OPINION... 9 UNKNOWN (NOT STATED)	 5372/ 40559 5969/ 39788 16497/ 111994 5715/ 39887 1371/ 9836 260/ 1606 217/ 1392
NOTE: THIS FIELD IS Q85 ON THE TRADE-VOCATIONAL RECORDS					
150	Q88	1	0191	Q88 WAS THE JOB YOU HAD DURING THAT WEEK A FULL-TIME JOB, THAT IS, USUALLY 30 OR MORE HOURS A WEEK? BLANK 1 YES 2 NO 9 UNKNOWN (NOT STATED)	 5321/ 40190 26812/ 178853 2943/ 23985 325/ 2033
NOTE: THIS FIELD IS Q86 ON THE TRADE-VOCATIONAL RECORDS					
151	Q89	2	0192-0193	Q89 HOW MANY HOURS A WEEK DO YOU USUALLY WORK AT THAT JOB? BLANK 20:98 99 UNKNOWN (NOT STATED)	 8264/ 64175 26743/ 178355 394/ 2531
NOTE: THIS FIELD IS Q87 ON THE TRADE-VOCATIONAL RECORDS					

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
152	Q90	1	0194	Q90 WHAT IS THE MAIN REASON YOU HAD A PART-TIME JOB?	
				BLANK	32133/ 219043
				1 OWN ILLNESS OR DISABILITY	14/ 91
				2 PERSONAL OR FAMILY RESPONSIBILITIES	373/ 2531
				3 GOING TO SCHOOL	532/ 6201
				4 COULD ONLY FIND PART-TIME WORK	1243/ 9143
				5 DID NOT WANT FULL-TIME WORK	280/ 2271
				6 FULL-TIME WORK IS UNDER 30 HRS. A WEEK	121/ 972
				7 OTHER REASON (SPECIFY)	293/ 2091
				9 UNKNOWN (NOT STATED)	412/ 2718
				NOTE: THIS FIELD IS Q88 ON THE TRADE-VOCATIONAL RECORDS	
153	Q90TXT	1	0195	Q90TXT OTHER REASON (SPECIFY)	
				BLANK	34696/ 240252
				1 TEXT PRESENT	291/ 2069
				9 UNKNOWN (NOT STATED)	414/ 2741
				NOTE: THIS FIELD IS Q88TXT ON THE TRADE-VOCATIONAL RECORDS	
154	Q91	2	0196-0197	Q91 HOW MANY HOURS A WEEK DO YOU USUALLY WORK AT THAT JOB?	
				BLANK	32133/ 219043
				01:29 HOURS	2747/ 22795
				99 UNKNOWN (NOT STATED)	521/ 3223
				NOTE: THIS FIELD IS Q89 ON THE TRADE-VOCATIONAL RECORDS	
155	Q92Y	2	0198-0199	Q92Y WHEN DID YOU BEGIN THAT JOB?	
				BLANK	32133/ 219043
				30:88 YEAR	2861/ 23437
				99 UNKNOWN (NOT STATED)	407/ 2581
				NOTE: THE DATE OF START OF THE JOB HELD IN THE WEEK OF MAY 1-7, 1988 WAS ASKED IN FOUR DIFFERENT PLACES IN THE QUESTIONNAIRE, TO ACCOMMODATE SKIP PATTERNS. NO RESPONDENT WAS ASKED THE QUESTION MORE THAN ONCE. SEE ALSO Q97, Q100 AND Q120. THE RESPONSES FROM ALL FOUR QUESTIONS HAVE BEEN CONSOLIDATED IN "MAYSTYR" AND "MAYSTMO" POSITIONS 517-520. "MAYSTFLG" POSITION 521 INDICATES WHICH QUESTION WAS THE SOURCE OF THE DATES IN "MAYSTYR" AND "MAYSTMO".	
				THIS FIELD IS Q90Y ON THE TRADE-VOCATIONAL RECORDS.	
156	Q92M	2	0200-0201	Q92M	
				BLANK	32134/ 219046
				01:12 MONTH	2848/ 23334
				99 UNKNOWN (NOT STATED)	419/ 2681
				NOTE: THIS FIELD IS Q90M ON THE TRADE-VOCATIONAL RECORDS	
157	Q93	1	0202	Q93 DID YOU HAVE A FULL-TIME JOB TO START AT A DEFINITE DATE IN THE FUTURE?	
				BLANK	32133/ 219043
				1 YES	268/ 2463
				2 NO	2599/ 21032
				9 UNKNOWN (NOT STATED)	401/ 2523
				NOTE: THIS FIELD IS Q91 ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
158	Q94	1	0203	Q94 DURING THAT WEEK, WERE YOU LOOKING FOR A FULL-TIME JOB?	
				BLANK	32401/ 221506
				1 YES	1072/ 7747
				2 NO	1510/ 13184
				9 UNKNOWN (NOT STATED)	418/ 2624
				NOTE: THIS FIELD IS Q92 ON THE TRADE-VOCATIONAL RECORDS	
159	Q95	1	0204	Q95 HAVE YOU WORKED AT THAT JOB FULL-TIME FOR SIX MONTHS OR MORE?	
				BLANK	8264/ 64175
				1 YES	22636/ 146083
				2 NO	4173/ 32753
				9 UNKNOWN (NOT STATED)	328/ 2050
				NOTE: THIS FIELD IS Q93 ON THE TRADE-VOCATIONAL RECORDS	
160	Q96	1	0205	Q96 HAS THAT THE FIRST JOB AT WHICH YOU WORKED FULL-TIME FOR SIX MONTHS OR MORE AFTER COMPLETING THE PROGRAM?	
				BLANK	12436/ 96922
				1 YES	20580/ 134041
				2 NO	2050/ 11990
				9 UNKNOWN (NOT STATED)	335/ 2108
				NOTE: THIS FIELD IS Q94 ON THE TRADE-VOCATIONAL RECORDS	
161	Q97Y	2	0206-0207	Q97Y WHEN DID YOU BEGIN THAT JOB?	
				BLANK	30893/ 210201
				30:88 YEAR	4104/ 32178
				99 UNKNOWN (NOT STATED)	404/ 2683
				NOTE: THIS FIELD IS Q95Y ON THE TRADE-VOCATIONAL RECORDS	
162	Q97M	2	0208-0209	Q97M WHEN DID YOU BEGIN THAT JOB?	
				BLANK	30893/ 210201
				01:12 MONTH	4102/ 32153
				99 UNKNOWN (NOT STATED)	406/ 2707
				NOTE: THIS FIELD IS Q95M ON THE TRADE-VOCATIONAL RECORDS	
163	Q98	1	0210	Q98 HAVE YOU EVER HELD A FULL-TIME JOB LASTING SIX MONTHS OR MORE?	
				BLANK	22630/ 146032
				1 YES	7395/ 46767
				2 NO	5013/ 50028
				9 UNKNOWN (NOT STATED)	363/ 2235
				NOTE: THIS FIELD IS Q96 ON THE TRADE-VOCATIONAL RECORDS	
164	Q99	1	0211	Q99 HAVE YOU HAD A JOB AT WHICH YOU WORKED FULL-TIME FOR SIX MONTHS OR MORE AFTER COMPLETING THE PROGRAM?	
				BLANK	27643/ 196060
				1 YES	4110/ 26066
				2 NO	3282/ 20689
				9 UNKNOWN (NOT STATED)	366/ 2247
				NOTE: THIS FIELD IS Q97 ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
165	Q100Y	2	0212-0213	Q100Y WHEN DID YOU BEGIN THE JOB YOU HAD IN THE WEEK OF MAY 1 TO 7? BLANK 30:88 YEAR 99 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q98Y ON THE TRADE-VOCATIONAL RECORDS	 32985/ 230824 1968/ 11493 448/ 2744
166	Q100M	2	0214-0215	Q100M WHEN DID YOU BEGIN THE JOB YOU HAD IN THE WEEK OF MAY 1 TO 7? BLANK 01:12 MONTH 99 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q98M ON THE TRADE-VOCATIONAL RECORDS	 32985/ 230824 1966/ 11480 450/ 2757
167	Q101YS	2	0216-0217	Q101YS WHEN DID YOU START THE FIRST JOB AT WHICH YOU WORKED FULL-TIME FOR SIX MONTHS OR MORE AFTER COMPLETING THE PROGRAM? BLANK 30:88 YEAR 99 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q99YS ON THE TRADE-VOCATIONAL RECORDS	 28875/ 204758 6093/ 37516 433/ 2787
168	Q101MS	2	0218-0219	Q101MS WHEN DID YOU START THE FIRST JOB AT WHICH YOU WORKED FULL-TIME FOR SIX MONTHS OR MORE AFTER COMPLETING THE PROGRAM? BLANK 01:12 MONTH 99 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q99MS ON THE TRADE-VOCATIONAL RECORDS	 28875/ 204758 6081/ 37467 445/ 2836
169	Q101YE	2	0220-0221	Q101YE WHEN DID YOU END THE FIRST JOB AT WHICH YOU WORKED FULL-TIME FOR SIX MONTHS OR MORE AFTER COMPLETING THE PROGRAM? BLANK 85:88 YEAR 99 UNKNOWN (NOT STATED) NOTE: IF RESPONDENT CHECKED "STILL WORKING AT IT", FIELD WAS CODED TO "88". THIS FIELD IS Q99YE ON THE TRADE-VOCATIONAL RECORDS.	 28875/ 204758 5661/ 35175 865/ 5128
170	Q101ME	2	0222-0223	Q101ME WHEN DID YOU END THE FIRST JOB AT WHICH YOU WORKED FULL-TIME FOR SIX MONTHS OR MORE AFTER COMPLETING THE PROGRAM? BLANK 01:12 MONTH 99 UNKNOWN (NOT STATED) NOTE: IF RESPONDENT CHECKED "STILL WORKING AT IT", FIELD WAS CODED TO "07". THIS FIELD IS Q99ME ON THE TRADE-VOCATIONAL RECORDS.	 28875/ 204758 5655/ 35153 871/ 5151
171	FILLERS	1	0224		

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
172	Q102	1	0225	Q102 FOR WHOM DID YOU WORK?	
				BLANK	28875/ 204758
				1 TEXT PRESENT	5994/ 36844
				9 UNKNOMN (NOT STATED)	532/ 3459
				NOTE: Q102-Q013. RESPONSES WERE CODED ACCORDING TO THE STANDARD INDUSTRIAL CLASSIFICATION SYSTEM. THE CODES WERE GIVEN IN "Q102103" POSITIONS 635-637.	
				THIS FIELD IS Q100 ON THE TRADE-VOCATIONAL RECORDS.	
173	Q103	1	0226	Q103 WHAT KIND OF BUSINESS, INDUSTRY OR SERVICE IS THIS?	
				BLANK	28875/ 204758
				1 TEXT PRESENT	6015/ 37097
				9 UNKNOMN (NOT STATED)	511/ 3207
				NOTE: SEE Q102 FOR MORE DETAIL.	
				THIS FIELD IS Q101 ON THE TRADE-VOCATIONAL RECORDS.	
174	Q104	1	0227	Q104 WHAT KIND OF WORK DID YOU DO?	
				BLANK	28875/ 204758
				1 TEXT PRESENT	6031/ 37196
				9 UNKNOMN (NOT STATED)	495/ 3108
				NOTE: Q104-Q105. RESPONSES WERE CODED ACCORDING TO THE STANDARD OCCUPATIONAL CLASSIFICATION SYSTEM. THE CODES WERE GIVEN IN "Q104105" POSITIONS 638-641.	
				THIS FIELD IS Q102 ON THE TRADE-VOCATIONAL RECORDS.	
175	Q105	1	0228	Q105 IN THIS WORK, WHAT WERE YOUR MOST IMPORTANT ACTIVITIES OR DUTIES?	
				BLANK	28875/ 204758
				1 TEXT PRESENT	6016/ 37117
				9 UNKNOMN (NOT STATED)	510/ 3106
				NOTE: SEE Q104 FOR MORE DETAIL.	
				THIS FIELD IS Q103 ON THE TRADE-VOCATIONAL RECORDS.	
176	Q106YQ8	2	0229-0230	Q106YQ8 INTERVIEWER CHECK ITEM - YEAR FROM Q8	
				BLANK	28875/ 204758
				85:86 YEAR	6043/ 37377
				99 UNKNOMN (NOT STATED)	483/ 2926
				NOTE: THIS FIELD IS Q104YQ6 ON THE TRADE-VOCATIONAL RECORDS	
177	Q106MQ8	2	0231-0232	Q106MQ8 - MONTH FROM Q8	
				BLANK	28875/ 204758
				01:12 MONTH	6040/ 37368
				99 UNKNOMN (NOT STATED)	486/ 2936
				NOTE: THIS FIELD IS Q104MQ6 ON THE TRADE-VOCATIONAL RECORDS	
178	Q106Y101	2	0233-0234	Q106Y101 - YEAR START FROM Q101	
				BLANK	28875/ 204758
				30:88 YEAR	6090/ 37494
				99 UNKNOMN (NOT STATED)	436/ 2809
				NOTE: THIS FIELD IS Q104Y99 ON THE TRADE-VOCATIONAL RECORDS	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
179	Q106M101	2	0235-0236	Q106M101 - MONTH START FROM Q101 BLANK 01:12 MONTH 99 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q104M99 ON THE TRADE-VOCATIONAL RECORDS	28875/ 204758 6078/ 37445 448/ 2858
180	Q106CK	1	0237	Q106CK BLANK 1 JOB START DATE AFTER OF COMPLETION OF STUDIES 2 OTHERWISE 9 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q104CK ON THE TRADE-VOCATIONAL RECORDS	28875/ 204758 5316/ 32813 652/ 3997 558/ 3494
181	Q107A	1	0238	Q107A DURING THE TIME BETWEEN COMPLETING THE PROGRAM AND STARTING THIS JOB, WERE YOU EVER WITHOUT A JOB BECAUSE YOU WERE GOING TO SCHOOL? BLANK 1 YES 2 NO 9 UNKNOWN (NOT STATED) NOTE: THIS QUESTION WAS INTENDED PRIMARILY AS A LEAD-IN TO Q109-Q119. WE WANTED TO CONVEY TO RESPONDENTS THAT BEING "WITHOUT A JOB" INCLUDED BOTH BEING UNEMPLOYED AND BEING OUT OF THE LABOUR FORCE, SO THAT THE TOTAL THEY WOULD REPORT FOR Q110 WOULD INCLUDE BOTH CONDITIONS. THE ALTERNATIVE WOULD HAVE BEEN TO INCLUDE A DEFINITION OF "WITHOUT A JOB" IN Q110; HOWEVER, WE WERE CONCERNED THAT THIS WOULD MAKE Q110 A LONG QUESTION AND MIGHT THUS NOT CONVEY THE CONCEPT ADEQUATELY. Q109 WAS INCLUDED IN ORDER TO CONFIRM WITH RESPONDENTS WHO ANSWERED "NO" TO ALL OF Q107 THAT THEY REALLY DID MEAN THAT THEY HAD A JOB OR JOBS FOR ALL OF THE TIME SINCE THEY GRADUATED IN 1986 AND THE START OF THE FIRST FULL-TIME JOB THAT LASTED SIX MONTHS AFTER GRADUATION. THIS FIELD IS Q105A ON THE TRADE-VOCATIONAL RECORDS. TV "UNKNOWN" RESPONSES HAVE BEEN INCLUDED IN CODE 2.	28960/ 205232 179/ 1426 5904/ 35933 358/ 2471
182	Q107B	1	0239	Q107B ....BECAUSE YOU HAD PERSONAL OR FAMILY RESPONSIBILITIES? BLANK 1 YES 2 NO 9 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q105B ON THE TRADE-VOCATIONAL RECORDS. TV "UNKNOWN" RESPONSES HAVE BEEN INCLUDED IN CODE 2.	28960/ 205232 138/ 927 5945/ 36432 358/ 2471
183	Q107C	1	0240	Q107C ....BECAUSE YOU COULDN'T FIND WORK? BLANK 1 YES 2 NO 9 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q105C ON THE TRADE-VOCATIONAL RECORDS. TV "UNKNOWN" RESPONSES HAVE BEEN INCLUDED IN CODE 2.	28960/ 205232 1556/ 9155 4527/ 28204 358/ 2471

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
184	Q107D	1	0241	Q107D ....OR FOR ANY OTHER REASONS? (SPECIFY)	
				BLANK	28960/ 205232
				1 YES	478/ 2904
				2 NO	5605/ 34455
				9 UNKNOWN (NOT STATED)	358/ 2471
				NOTE: THIS FIELD IS Q105D ON THE TRADE-VOCATIONAL RECORDS. TV "UNKNOWN" RESPONSES HAVE BEEN INCLUDED IN CODE 2.	
185	Q107TXT	1	0242	Q107TXT OTHER REASONS (SPECIFY)	
				BLANK	34340/ 238549
				1 TEXT PRESENT	403/ 2518
				9 UNKNOWN (NOT STATED)	658/ 3994
				NOTE: THIS FIELD IS Q105TXT ON THE TRADE-VOCATIONAL RECORDS	
186	Q108	1	0243	Q108 INTERVIENER CHECK ITEM	
				BLANK	28960/ 205232
				1 IF ANY YES IN Q107	2137/ 15161
				2 OTHERWISE	3946/ 24198
				9 UNKNOWN (NOT STATED)	358/ 2471
				NOTE: THIS FIELD IS Q106 ON THE TRADE-VOCATIONAL RECORDS. ON TRADE-VOCATIONAL FILE, CODE 1 = ANY YES IN Q105. TV "UNKNOWN" RESPONSES HAVE BEEN INCLUDED IN CODE 2.	
187	Q109	1	0244	Q109 DID YOU ALWAYS HAVE A JOB DURING THE ENTIRE PERIOD BETWEEN (DATE IN Q106A) AND (DATE IN Q106B)?	
				BLANK	31097/ 218393
				1 YES	3937/ 24141
				2 NO	9/ 56
				9 UNKNOWN (NOT STATED)	358/ 2471
				NOTE: THIS FIELD IS Q107 ON THE TRADE-VOCATIONAL RECORDS AND REFERS TO TRADE-VOCATIONAL Q104A AND Q104B. TV "UNKNOWN" RESPONSES HAVE BEEN INCLUDED IN CODE 2.	
188	Q110	2	0245-0246	Q110 CONSIDERING ALL THESE REASONS, HOW LONG IN TOTAL WERE YOU WITHOUT A JOB DURING THAT PERIOD?	
				BLANK	32897/ 229373
				01:45 MONTHS	2069/ 12764
				99 UNKNOWN (NOT STATED)	435/ 2925
				NOTE: THIS FIELD IS Q108 ON THE TRADE-VOCATIONAL RECORDS	
189	Q111	1	0247	Q111 WAS THERE ANY TIME DURING THIS PERIOD WHEN YOU WERE NOT LOOKING FOR A JOB?	
				BLANK	32897/ 229373
				1 YES	604/ 3910
				2 NO	1542/ 9308
				9 UNKNOWN (NOT STATED)	358/ 2471
				NOTE: THIS FIELD IS Q109 ON THE TRADE-VOCATIONAL RECORDS. TV "UNKNOWN" RESPONSES HAVE BEEN INCLUDED IN CODE 2.	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
190	Q112	1	0248	Q112 AT ANY TIME DURING THIS PERIOD, WAS THERE ANY TIME YOU WERE LOOKING FOR A JOB?	
				BLANK	34439/ 238681
				1 YES	201/ 1287
				2 NO	403/ 2623
				9 UNKNOWN (NOT STATED)	358/ 2471
				NOTE: THIS FIELD IS Q110 ON THE TRADE-VOCATIONAL RECORDS. TV "UNKNOWN" RESPONSES HAVE BEEN INCLUDED IN CODE 2.	
191	Q113	2	0249-0250	Q113 DURING THIS PERIOD, HOW LONG IN TOTAL WERE YOU LOOKING FOR A JOB?	
				BLANK	34842/ 241304
				01:45 MONTHS	120/ 796
				99 UNKNOWN (NOT STATED)	439/ 2962
				NOTE: THIS FIELD IS Q111 ON THE TRADE-VOCATIONAL RECORDS	
192	Q114	1	0251	Q114 AT ANY TIME DURING THIS PERIOD YOU WERE LOOKING FOR A JOB, WERE YOU A FULL-TIME STUDENT?	
				BLANK	34842/ 241304
				1 YES	99/ 642
				2 NO	102/ 644
				9 UNKNOWN (NOT STATED)	358/ 2471
				NOTE: THIS FIELD IS Q112 ON THE TRADE-VOCATIONAL RECORDS. TV "UNKNOWN" RESPONSES HAVE BEEN INCLUDED IN CODE 2.	
193	Q115	2	0252-0253	Q115 HOW MUCH OF THIS PERIOD WERE YOU A FULL-TIME STUDENT?	
				BLANK	34944/ 241948
				01:45 MONTHS	11/ 87
				99 UNKNOWN (NOT STATED)	446/ 3026
				NOTE: THIS FIELD IS Q113 ON THE TRADE-VOCATIONAL RECORDS	
194	Q116	1	0254	Q116 DURING THE PERIOD WHEN YOU WERE NOT LOOKING FOR A JOB, WERE YOU EVER WAITING TO START A NEW JOB OR RETURN TO AN OLD JOB?	
				BLANK	34439/ 238681
				1 YES	484/ 3095
				2 NO	128/ 814
				9 UNKNOWN (NOT STATED)	358/ 2471
				NOTE: THIS FIELD IS Q114 ON THE TRADE-VOCATIONAL RECORDS. TV "UNKNOWN" RESPONSES HAVE BEEN INCLUDED IN CODE 2.	
195	Q117	2	0255-0256	Q117 HOW LONG WERE YOU WAITING?	
				BLANK	34559/ 239495
				01:45 MONTHS	121/ 806
				99 UNKNOWN (NOT STATED)	721/ 4760
				NOTE: THIS FIELD IS Q115 ON THE TRADE-VOCATIONAL RECORDS	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
196	Q118	1	0257	Q118 AT ANY TIME DURING THIS PERIOD YOU WERE LOOKING FOR A JOB, WERE YOU EVER A FULL-TIME STUDENT?	
				BLANK	33501/ 233282
				1 YES	121/ 908
				2 NO	1421/ 8400
				9 UNKNOWN (NOT STATED)	358/ 2471
				NOTE: THIS FIELD IS Q116 ON THE TRADE-VOCATIONAL RECORDS. TV "UNKNOWN" RESPONSES HAVE BEEN INCLUDED IN CODE 2.	
197	Q119	2	0258-0259	Q119 HOW MUCH OF THIS PERIOD WERE YOU A FULL-TIME STUDENT?	
				BLANK	34922/ 241683
				01:45 MONTHS	24/ 210
				99 UNKNOWN (NOT STATED)	455/ 3169
				NOTE: THIS FIELD IS Q117 ON THE TRADE-VOCATIONAL RECORDS	
198	Q120Y	2	0260-0261	Q120Y WHEN DID YOU BEGIN THE JOB YOU HAD IN THE WEEK OF MAY 1 TO 7?	
				BLANK	14455/ 108773
				30:88 YEAR	20448/ 133139
				99 UNKNOWN (NOT STATED)	498/ 3149
				NOTE: THIS FIELD IS Q118Y ON THE TRADE-VOCATIONAL RECORDS	
199	Q120M	2	0262-0263	Q120M	
				BLANK	14455/ 108773
				01:12 MONTH	20395/ 132769
				99 UNKNOWN (NOT STATED)	551/ 3519
				NOTE: THIS FIELD IS Q118M ON THE TRADE-VOCATIONAL RECORDS	
200	Q121	1	0264	Q121 HOW IMPORTANT WAS IT FOR YOU TO ACQUIRE THE SKILLS NEEDED IN A PARTICULAR OCCUPATION?	
				BLANK	7824/ 40298
				1 NOT AT ALL	1400/ 11378
				2	2753/ 21315
				3	7059/ 50983
				4 TO A GREAT EXTENT	16126/ 119580
				9 UNKNOWN (NOT STATED)	239/ 1508
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
201	Q122	1	0265	Q122 TO WHAT EXTENT DO YOU FEEL YOUR PROGRAM PROVIDED YOU WITH THE SKILLS NEEDED IN A PARTICULAR OCCUPATION?	
				BLANK	7824/ 40298
				1 NOT AT ALL	1738/ 17680
				2	5792/ 50508
				3	12104/ 86675
				4 TO A GREAT EXTENT	7697/ 48373
				9 UNKNOWN (NOT STATED)	246/ 1527
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTO/WEIGHTED
202	Q123	1	0266	Q123 HOW IMPORTANT WAS IT FOR YOU TO ACQUIRE AN IN-DEPTH KNOWLEDGE OF AN ACAD. DISCIPLINE?	
				BLANK	7824/ 40298
				1 NOT AT ALL	879/ 6730
				2	2816/ 20109
				3	8081/ 59662
				4 TO A GREAT EXTENT	15559/ 116773
				9 UNKNOWN (NOT STATED)	242/ 1489
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
203	Q124	1	0267	Q124 TO WHAT EXTENT DO YOU FEEL YOUR PROGRAM PROVIDED YOU WITH AN IN-DEPTH KNOWLEDGE OF AN ACADEMIC DISCIPLINE?	
				BLANK	7824/ 40298
				1 NOT AT ALL	865/ 7982
				2	4593/ 39986
				3	13593/ 100010
				4 TO A GREAT EXTENT	8284/ 55259
				9 UNKNOWN (NOT STATED)	242/ 1526
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
204	Q125	1	0268	Q125 WHEN YOU DECIDED TO ENROLL HOW IMPORT. WAS IT FOR YOU TO IMPROVE YOURSELF GENERALLY?	
				BLANK	7824/ 40298
				1 NOT AT ALL	614/ 4089
				2	2163/ 14564
				3	7350/ 53045
				4 TO A GREAT EXTENT	17202/ 131557
				9 UNKNOWN (NOT STATED)	248/ 1509
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
205	Q126	1	0269	Q126 TO WHAT EXTENT DO YOU FEEL YOUR PROGRAM PROVIDED YOU WITH AN OPPORT. TO IMPROVE YOURSELF GENERALLY?	
				BLANK	7824/ 40298
				1 NOT AT ALL	611/ 5013
				2	3484/ 29699
				3	12685/ 97103
				4 TO A GREAT EXTENT	10536/ 71382
				9 UNKNOWN (NOT STATED)	261/ 1566
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
206	Q127	1	0270	Q127 WHEN YOU DECIDED TO ENROLL HOW IMPORTANT WAS IT FOR YOU TO IMPROVE YOUR CHANCES OF A GOOD INCOME?	
				BLANK	7824/ 40298
				1 NOT AT ALL	2106/ 15533
				2	4192/ 29326
				3	6948/ 51830
				4 TO A GREAT EXTENT	14088/ 106582
				9 UNKNOWN (NOT STATED)	243/ 1493
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNNTD/WEIGHTED
207	Q128	1	0271	Q128 TO WHAT EXTENT DO YOU FEEL YOUR PROGRAM PROVIDED YOU WITH IMPROVED CHANCES OF GOOD INCOME?	
				BLANK	7824/ 40298
				1 NOT AT ALL	3285/ 28246
				2	6120/ 49610
				3	9700/ 69469
				4 TO A GREAT EXTENT	8215/ 55840
				9 UNKNOWN (NOT STATED)	257/ 1599
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
208	Q129	1	0272	Q129 GIVEN YOUR EXPERIENCES SINCE COMPLETING THE PROGRAM IN 1986, WOULD YOU HAVE SELECTED THE SAME EDUCATION PROGRAM, A DIFFERENT PROGRAM OR NOT TAKEN ANY POSTSECONDARY PROGRAM?	
				1 SAME	24328/ 166210
				2 NONE	501/ 3051
				3 DON'T KNOW	665/ 4595
				4 DIFFERENT	9675/ 69711
				9 UNKNOWN (NOT STATED)	232/ 1495
				NOTE: THIS FIELD IS Q119 ON THE TRADE-VOCATIONAL RECORDS	
209	Q130	1	0273	Q130 WOULD YOU HAVE SELECTED THE SAME FIELD OF STUDY OR SPECIALIZATION?	
				BLANK	25494/ 173855
				1 YES	3627/ 24913
				2 NO	5578/ 41322
				3 DON'T KNOW	461/ 3377
				9 UNKNOWN (NOT STATED)	241/ 1594
				NOTE: THIS FIELD IS Q120 ON THE TRADE-VOCATIONAL RECORDS	
210	Q131	1	0274	Q131 WHAT FIELD OF STUDY OR SPECIALIZATION WOULD YOU HAVE CHOSEN?	
				BLANK	29582/ 202145
				1 TEXT PRESENT	5476/ 40717
				9 UNKNOWN (NOT STATED)	343/ 2200
				NOTE: RESPONSES HAVE BEEN CODED ACCORDING TO USIS OR CCSIS CODES. THE CODES ARE IN "Q131CD1" POSITIONS 642-646 FOR THE FIRST FIELD OF STUDY MENTIONED, AND "Q131CD2" POSITIONS 648-652 FOR THE SECOND FIELD OF STUDY. NOTE THAT THE CODES ARE IDENTIFIED AS USIS OR CCSIS ACCORDING TO THE RESPONSES TO Q132 (Q122 OF THE TRADE VOCATIONAL QUESTIONNAIRE). THESE IDENTIFICATIONS ARE IN "Q131CBK1" POSITION 647 FOR "Q131CD1" AND IN "Q131CBK2" POSITION 653 FOR "Q131CD2".	
				THIS FIELD IS Q121 ON THE TRADE-VOCATIONAL RECORDS.	
211	Q122TV	1	0275	Q122 WOULD YOU HAVE TAKEN A DIFFERENT VOCATIONAL OR TECHNICAL PROGRAM, OR TAKEN A PROGRAM IN A DIFFERENT TYPE OF SCHOOL?	
				BLANK	33205/ 233340
				1 DIFFERENT TRADE-VOCATIONAL PROGRAM	870/ 4405
				2 SAME PROGRAM BUT IN A DIFFERENT COLLEGE/SCHOOL	200/ 1046
				3 COLLEGE PROGRAM	412/ 2375
				4 UNIVERSITY PROGRAM	287/ 1435
				5 DON'T KNOW, NO OPINION	139/ 674
				6 OTHER (SPECIFY)	56/ 292
				9 UNKNOWN (NOT STATED)	232/ 1495
				NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
212	Q122TXTV	1	0276	Q122TXTV OTHER (SPECIFY) BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	35114/ 243278 58/ 289 232/ 1495
NOTE: THIS FIELD IS FILLER ON THE UNIVERSITY-COLLEGE RECORDS					
213	Q132	1	0277	Q132 WHAT KIND OF PROGRAM WOULD YOU HAVE TAKEN? BLANK 1 UNIVERSITY 2 COLLEGE 3 TRADE-VOCATIONAL 4 DON'T KNOW 5 OTHER (SPECIFY) 9 UNKNOWN (NOT STATED)	27546/ 184566 5590/ 42380 1471/ 13037 372/ 2305 152/ 1083 83/ 415 187/ 1275
NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS					
214	Q132TXT	1	0278	Q132TXT OTHER (SPECIFY) BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	35131/ 243371 83/ 415 187/ 1275
NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS					
215	Q133	1	0279	Q133 WHAT LEVEL OF DEGREE OR DIPLOMA WOULD YOU HAVE TAKEN? BLANK 1 UNIVER. CERT. OR DIPL. BELOW B.A. LEVEL 2 BACHELOR'S DEGREE, GENERAL OR HONOURS 3 CERTIFICATE OR DIPLOMA ABOVE B.A. LEVEL 4 MASTER'S DEGREE 5 FIRST PROFESSIONAL DEGREE 6 DOCTORATE 7 DON'T KNOW 8 OTHER (SPECIFY) 9 UNKNOWN (NOT STATED)	29624/ 201406 184/ 1681 3494/ 28669 137/ 1286 1092/ 6509 293/ 1913 234/ 1068 104/ 785 45/ 442 194/ 1300
NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS					
216	Q133TXT	1	0280	Q133TXT OTHER (SPECIFY) BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	35174/ 243332 47/ 479 180/ 1251
NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS					
217	Q134	1	0281	Q134 HOW IMPORTANT IS IT THAT ANY JOB YOU GET BE RELATED TO YOUR FIELD OF STUDY OR SPECIALIZATION? BLANK 1 VERY IMPORTANT? 2 IMPORTANT? 3 NOT IMPORTANT? 4 NOT AT ALL IMPORTANT? 5 DON'T KNOW, NO OPINION 9 UNKNOWN (NOT STATED)	7824/ 40298 13759/ 102862 10151/ 73582 2499/ 19655 779/ 6117 203/ 1412 186/ 1135
NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS					

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
218	Q135	1	0282	Q135 SINCE COMPLETING YOUR PROGRAM IN 1986, HAVE YOU TAKEN ANY EDUCATION OR TRAINING PROGRAMS LEADING TO ANY DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES?	
				1 YES	12899/ 108976
				2 NO	22278/ 134588
				9 UNKNOWN (NOT STATED)	224/ 1497
				NOTE: THIS FIELD IS Q123 ON THE TRADE-VOCATIONAL RECORDS	
219	Q136A1	1	0283	Q136A1 WHAT TYPES OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE?	
				BLANK	33481/ 232948
				1 TRADE-VOCATIONAL DIPLOMA OR CERTIFICATE	1096/ 6452
				9 UNKNOWN (NOT STATED)	824/ 5662
				NOTE: THIS FIELD IS Q124A1 ON THE TRADE-VOCATIONAL RECORDS	
220	Q136A2	1	0284	Q136A2 WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION?	
				BLANK	33481/ 232948
				1 TEXT PRESENT	1092/ 6436
				9 UNKNOWN (NOT STATED)	828/ 5678
				NOTE: RESPONSES HAVE BEEN CODED ACCORDING TO CCSIS CODES. SEE "Q136ACD1" POSITIONS 654-658 FOR THE FIRST FIELD OF STUDY, AND "Q136ACD2" POSITIONS 659-663 FOR ANY SECOND FIELD OF STUDY.	
				--THIS FIELD IS Q124A2 ON THE TRADE-VOCATIONAL RECORDS.	
221	Q136A3Y	2	0285-0286	Q136A3Y IN WHAT YEAR DID YOU EXPECT TO COMPLETE THE REQUIREMENTS?	
				BLANK	33608/ 233626
				86:98 YEAR	969/ 5773
				99 UNKNOWN (NOT STATED)	824/ 5662
				NOTE: THIS FIELD IS Q124A3Y ON THE TRADE-VOCATIONAL RECORDS	
222	Q136A3M	2	0287-0288	Q136A3M IN WHAT MONTH DID YOU EXPECT TO COMPLETE THE REQUIREMENTS?	
				BLANK	33608/ 233626
				01:12 MONTH	952/ 5684
				99 UNKNOWN (NOT STATED)	841/ 5751
				NOTE: THIS FIELD IS Q124A3M ON THE TRADE-VOCATIONAL RECORDS	
223	Q136A4	1	0289	Q136A4	
				BLANK	34450/ 238721
				1 DON'T KNOW	127/ 679
				9 UNKNOWN (NOT STATED)	824/ 5662
				NOTE: THIS FIELD IS Q124A4 ON THE TRADE-VOCATIONAL RECORDS	
224	Q136B1	1	0290	Q136B1 WHAT TYPES OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE?	
				BLANK	32247/ 222828
				1 COLL/CEGEP/NURSING SCHOOL DIPLOMA OR CERT.	2330/ 16571
				9 UNKNOWN (NOT STATED)	824/ 5662
				NOTE: THIS FIELD IS Q124B1 ON THE TRADE-VOCATIONAL RECORDS	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
225	Q136B2	1	0291	Q136B2 WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION?	
				BLANK	
				1 TEXT PRESENT	32247/ 222020
				9 UNKNOWN (NOT STATED)	2324/ 16520 830/ 5705
				NOTE: RESPONSES HAVE BEEN CODED ACCORDING TO CCSIS CODES. SEE "Q136BCD1" POSITIONS 664-668 FOR THE FIRST FIELD OF STUDY, AND "Q136BCD2" POSITIONS 669-673 FOR ANY SECOND FIELD OF STUDY.	
				THIS FIELD IS Q124B2 ON THE TRADE-VOCATIONAL RECORDS.	
226	Q136B3Y	2	0292-0293	Q136B3Y IN WHAT YEAR DID YOU EXPECT TO COMPLETE THE REQUIREMENTS?	
				BLANK	
				86:98 YEAR	32594/ 225025
				99 UNKNOWN (NOT STATED)	1983/ 14375 824/ 5662
				NOTE: THIS FIELD IS Q124B3Y ON THE TRADE-VOCATIONAL RECORDS	
227	Q136B3M	2	0294-0295		
				BLANK	
				01:12 MONTH	32594/ 225025
				99 UNKNOWN (NOT STATED)	1984/ 14135 851/ 5902
				NOTE: THIS FIELD IS Q124B3M ON THE TRADE-VOCATIONAL RECORDS	
228	Q136B4	1	0296	Q136B4	
				BLANK	
				1 DON'T KNOW	34250/ 237203
				9 UNKNOWN (NOT STATED)	347/ 2196 824/ 5662
				NOTE: THIS FIELD IS Q124B4 ON THE TRADE-VOCATIONAL RECORDS	
229	Q136C1	1	0297	Q136C1 WHAT TYPES OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE?	
				BLANK	
				1 UNIV. DIPLOMA OR CERT. BELOW B.A. LEVEL	33491/ 227998
				9 UNKNOWN (NOT STATED)	1086/ 11402 824/ 5662
				NOTE: THIS FIELD IS Q124C1 ON THE TRADE-VOCATIONAL RECORDS	
230	Q136C2	1	0298	Q136C2 WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION?	
				BLANK	
				1 TEXT PRESENT	33491/ 227998
				9 UNKNOWN (NOT STATED)	1070/ 11311 832/ 5753
				NOTE: RESPONSES HAVE BEEN CODED ACCORDING TO USIS CODES. SEE "Q136CCD1" POSITIONS 674-678 FOR THE FIRST FIELD OF STUDY, AND "Q136CCD2" POSITIONS 679-683 FOR ANY SECOND FIELD OF STUDY.	
				THIS FIELD IS Q124C2 ON THE TRADE-VOCATIONAL RECORDS.	
231	Q136C3Y	2	0299-0300	Q136C3Y IN WHAT YEAR DID YOU EXPECT TO COMPLETE THE REQUIREMENTS?	
				BLANK	
				86:98 YEAR	33747/ 230571
				99 UNKNOWN (NOT STATED)	830/ 8020 824/ 5662
				NOTE: THIS FIELD IS Q124C3Y ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
232	Q136C3M	2	0301-0302	<p>BLANK</p> <p>01:12 MONTH</p> <p>99 UNKNOWN (NOT STATED)</p> <p>NOTE: THIS FIELD IS Q124C3M ON THE TRADE-VOCATIONAL RECORDS</p>	<p>33747/ 230571</p> <p>815/ 8673</p> <p>839/ 5817</p>
233	Q136C4	1	0303	<p>Q136C4</p> <p>BLANK</p> <p>1 DON'T KNOW</p> <p>9 UNKNOWN (NOT STATED)</p> <p>NOTE: THIS FIELD IS Q124C4 ON THE TRADE-VOCATIONAL RECORDS</p>	<p>34321/ 236826</p> <p>256/ 2573</p> <p>824/ 5662</p>
234	Q136D1	1	0304	<p>Q136D1 WHAT TYPES OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE?</p> <p>BLANK</p> <p>1 BACHELOR DEGREE</p> <p>9 UNKNOWN (NOT STATED)</p> <p>NOTE: THIS FIELD IS Q124D1 ON THE TRADE-VOCATIONAL RECORDS</p>	<p>31976/ 205164</p> <p>2601/ 34235</p> <p>824/ 5662</p>
235	Q136D2	1	0305	<p>Q136D2 WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION?</p> <p>BLANK</p> <p>1 TEXT PRESENT</p> <p>9 UNKNOWN (NOT STATED)</p> <p>NOTE: RESPONSES HAVE BEEN CODED ACCORDING TO USIS CODES. SEE "Q136DCD1" POSITIONS 684-688 FOR THE FIRST FIELD OF STUDY, AND "Q136DCD2" POSITIONS 689-693 FOR ANY SECOND FIELD OF STUDY.</p> <p>THIS FIELD IS Q124D2 ON THE TRADE-VOCATIONAL RECORDS.</p>	<p>31976/ 205164</p> <p>2594/ 34144</p> <p>831/ 5753</p>
236	Q136D3Y	2	0306-0307	<p>Q136D3Y IN WHAT YEAR DID YOU EXPECT TO COMPLETE THE REQUIREMENTS?</p> <p>BLANK</p> <p>86:98 YEAR</p> <p>99 UNKNOWN (NOT STATED)</p> <p>NOTE: THIS FIELD IS Q124D3Y ON THE TRADE-VOCATIONAL RECORDS</p>	<p>32436/ 209004</p> <p>2141/ 30395</p> <p>824/ 5662</p>
237	Q136D3M	2	0308-0309	<p>BLANK</p> <p>01:12 MONTH</p> <p>99 UNKNOWN (NOT STATED)</p> <p>NOTE: THIS FIELD IS Q124D3M ON THE TRADE-VOCATIONAL RECORDS</p>	<p>32436/ 209004</p> <p>2097/ 29628</p> <p>868/ 6429</p>
238	Q136D4	1	0310	<p>Q136D4</p> <p>BLANK</p> <p>1 DON'T KNOW</p> <p>9 UNKNOWN (NOT STATED)</p> <p>NOTE: THIS FIELD IS Q124D4 ON THE TRADE-VOCATIONAL RECORDS</p>	<p>34117/ 235559</p> <p>460/ 3840</p> <p>824/ 5662</p>

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
239	Q136E1	1	0311	Q136E1 WHAT TYPES OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE? BLANK 1 UNIV. DIPLOMA OR CERT. ABOVE B.A. LEVEL 9 UNKNOWN (NOT STATED)	33991/ 233820 586/ 5879 824/ 5662
NOTE: THIS FIELD IS Q124E1 ON THE TRADE-VOCATIONAL RECORDS					
240	Q136E2	1	0312	Q136E2 WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	33991/ 233820 586/ 5879 824/ 5662
NOTE: RESPONSES HAVE BEEN CODED ACCORDING TO USIS CODES. SEE "Q136ECD1" POSITIONS 694-698 FOR THE FIRST FIELD OF STUDY, AND "Q136ECD2" POSITIONS 699-703 FOR ANY SECOND FIELD OF STUDY. THIS FIELD IS Q124E2 ON THE TRADE-VOCATIONAL RECORDS.					
241	Q136E3Y	2	0313-0314	Q136E3Y IN WHAT YEAR DID YOU EXPECT TO COMPLETE THE REQUIREMENTS? BLANK 86:98 YEAR 99 UNKNOWN (NOT STATED)	34111/ 234929 466/ 4470 824/ 5662
NOTE: THIS FIELD IS Q124E3Y ON THE TRADE-VOCATIONAL RECORDS					
242	Q136E3M	2	0315-0316	BLANK 01:12 MONTH 99 UNKNOWN (NOT STATED)	34111/ 234929 464/ 4370 836/ 5763
NOTE: THIS FIELD IS Q124E3M ON THE TRADE-VOCATIONAL RECORDS					
243	Q136E4	1	0317	Q136E4 BLANK 1 DON'T KNOW 9 UNKNOWN (NOT STATED)	34457/ 238290 120/ 1109 824/ 5662
NOTE: THIS FIELD IS Q124E4 ON THE TRADE-VOCATIONAL RECORDS					
244	Q136F1	1	0318	Q136F1 WHAT TYPES OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE? BLANK 1 MASTERS DEGREE 9 UNKNOWN (NOT STATED)	33246/ 227082 1331/ 12318 824/ 5662
NOTE: THIS FIELD IS Q124F1 ON THE TRADE-VOCATIONAL RECORDS					
245	Q136F2	1	0319	Q136F2 WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED)	33246/ 227082 1328/ 12200 827/ 5700
NOTE: RESPONSES HAVE BEEN CODED ACCORDING TO USIS CODES. SEE "Q136FCD1" POSITIONS 704-708 FOR THE FIRST FIELD OF STUDY, AND "Q136FCD2" POSITIONS 709-713 FOR ANY SECOND FIELD OF STUDY. THIS FIELD IS Q124F2 ON THE TRADE-VOCATIONAL RECORDS.					

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
246	Q136F3Y	2	0320-0321	Q136F3Y IN WHAT YEAR DID YOU EXPECT TO COMPLETE THE REQUIREMENTS?	
				BLANK	33424/ 228669
				86:98 YEAR	1153/ 10731
				99 UNKNOWN (NOT STATED)	824/ 5662
				NOTE: THIS FIELD IS Q124F3Y ON THE TRADE-VOCATIONAL RECORDS	
247	Q136F3M	2	0322-0323		
				BLANK	33424/ 228669
				01:12 MONTH	1136/ 10558
				99 UNKNOWN (NOT STATED)	841/ 5834
				NOTE: THIS FIELD IS Q124F3M ON THE TRADE-VOCATIONAL RECORDS	
248	Q136F4	1	0324	Q136F4	
				BLANK	34399/ 237812
				1 DON'T KNOW	178/ 1587
				9 UNKNOWN (NOT STATED)	824/ 5662
				NOTE: THIS FIELD IS Q124F4 ON THE TRADE-VOCATIONAL RECORDS	
249	Q136G1	1	0325	Q136G1 WHAT TYPES OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES HERE THESE?	
				BLANK	34113/ 235947
				1 FIRST PROFESSIONAL DEGREE	444/ 3453
				9 UNKNOWN (NOT STATED)	824/ 5662
				NOTE: THIS FIELD IS Q124G1 ON THE TRADE-VOCATIONAL RECORDS	
250	Q136G2	1	0326	Q136G2 WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION?	
				BLANK	34113/ 235947
				1 TEXT PRESENT	460/ 3432
				9 UNKNOWN (NOT STATED)	828/ 5683
				NOTE: RESPONSES HAVE BEEN CODED ACCORDING TO USIS CODES. SEE "Q136GCD1" POSITIONS 714-718 FOR THE FIRST FIELD OF STUDY, AND "Q136GCD2" POSITIONS 719-723 FOR ANY SECOND FIELD OF STUDY.	
				THIS FIELD IS Q124G2 ON THE TRADE-VOCATIONAL RECORDS.	
251	Q136G3Y	2	0327-0328	Q136G3Y IN WHAT YEAR DID YOU EXPECT TO COMPLETE THE REQUIREMENTS?	
				BLANK	34124/ 236017
				86:98 YEAR	453/ 3382
				99 UNKNOWN (NOT STATED)	824/ 5662
				NOTE: THIS FIELD IS Q124G3Y ON THE TRADE-VOCATIONAL RECORDS	
252	Q136G3M	2	0329-0330		
				BLANK	34124/ 236017
				01:12 MONTH	450/ 3328
				99 UNKNOWN (NOT STATED)	827/ 5716
				NOTE: THIS FIELD IS Q124G3M ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	42
					UNMTD/WEIGHTED	
253	Q136G4	1	0331	Q136G4		
				BLANK		
				1 DON'T KNOW	34566/	239329
				9 UNKNOWN (NOT STATED)	11/	71
					824/	5662
				NOTE: THIS FIELD IS Q124G4 ON THE TRADE-VOCATIONAL RECORDS		
254	Q136H1	1	0332	Q136H1 WHAT TYPES OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE?		
				BLANK		
				1 EARNED DOCTORATE	33780/	236576
				9 UNKNOWN (NOT STATED)	797/	2823
					824/	5662
				NOTE: THIS FIELD IS Q124H1 ON THE TRADE-VOCATIONAL RECORDS		
255	Q136H2	1	0333	Q136H2 WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION?		
				BLANK		
				1 TEXT PRESENT	33780/	236576
				9 UNKNOWN (NOT STATED)	795/	2820
					824/	5666
				NOTE: RESPONSES HAVE BEEN CODED ACCORDING TO USIS CODES. "Q136HCD1" SEE POSITIONS 724-728 FOR THE FIRST FIELD OF STUDY, AND "Q136HCD2" POSITIONS 729-733 FOR ANY SECOND FIELD OF STUDY.		
				THIS FIELD IS Q124H2 ON THE TRADE-VOCATIONAL RECORDS.		
256	Q136H3Y	2	0334-0335	Q136H3Y IN WHAT YEAR DID YOU EXPECT TO COMPLETE THE REQUIREMENTS?		
				BLANK		
				86:98 YEAR	33875/	236863
				99 UNKNOWN (NOT STATED)	702/	2537
					824/	5662
				NOTE: THIS FIELD IS Q124H3Y ON THE TRADE-VOCATIONAL RECORDS		
257	Q136H3M	2	0336-0337			
				BLANK		
				01:12 MONTH	33875/	236863
				99 UNKNOWN (NOT STATED)	673/	2386
					853/	5813
				NOTE: THIS FIELD IS Q124H3M ON THE TRADE-VOCATIONAL RECORDS		
258	Q136H4	1	0338	Q136H4		
				BLANK		
				1 DON'T KNOW	34482/	239113
				9 UNKNOWN (NOT STATED)	95/	287
					824/	5662
				NOTE: THIS FIELD IS Q124H4 ON THE TRADE-VOCATIONAL RECORDS		
259	Q136I1	1	0339	Q136I1 WHAT TYPES OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE?		
				BLANK		
				1 DIPL/CERT OR LICENCE AS IN ACCOUNT/BANK/INSUR.	33469/	231443
				9 UNKNOWN (NOT STATED)	1188/	7957
					824/	5662
				NOTE: THIS FIELD IS Q124I1 ON THE TRADE-VOCATIONAL RECORDS		

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
260	Q136I2	1	0340	Q136I2 WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION?	
				BLANK	33469/ 231443
				1 TEXT PRESENT	1100/ 7898
				9 UNKNOMN (NOT STATED)	832/ 5721
				NOTE: RESPONSES HAVE BEEN CODED ACCORDING TO CCSIS AND USIS CODES. SEE "Q136ICD1" POSITIONS 734-738 FOR THE FIRST FIELD OF STUDY, TOGETHER WITH "Q136IBK1" POSITION 744 THAT INDICATES THE CORRECT CODEBOOK. ANY SECOND FIELDS OF STUDY MENTIONED ARE CODED IN "Q136ICD2" POSITIONS 739-743, WITH THE APPROPRIATE CODEBOOK GIVEN IN "Q136IBK2" POSITION 745. THE CODEBOOK CHOSEN WAS THAT JUDGED MORE SUITABLE TO THE FIELD-OF-STUDY DESCRIPTION.	
				THIS FIELD IS Q124I2 ON THE TRADE-VOCATIONAL RECORDS.	
261	Q136I3Y	2	0341-0342	Q136I3Y IN WHAT YEAR DID YOU EXPECT TO COMPLETE THE REQUIREMENTS?	
				BLANK	33607/ 232333
				86:98 YEAR	970/ 7066
				99 UNKNOMN (NOT STATED)	824/ 5662
				NOTE: THIS FIELD IS Q124I3Y ON THE TRADE-VOCATIONAL RECORDS	
262	Q136I3M	2	0343-0344		
				BLANK	33607/ 232333
				01:12 MONTH	951/ 6900
				99 UNKNOMN (NOT STATED)	843/ 5828
				NOTE: THIS FIELD IS Q124I3M ON THE TRADE-VOCATIONAL RECORDS	
263	Q136I4	1	0345	Q136I4	
				BLANK	34439/ 238509
				1 DON'T KNOM	138/ 890
				9 UNKNOMN (NOT STATED)	824/ 5662
				NOTE: THIS FIELD IS Q124I4 ON THE TRADE-VOCATIONAL RECORDS	
264	Q136J1	1	0346	Q136J1 WHAT TYPES OF DEGREES, .DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE?	
				BLANK	33308/ 232178
				1 OTHER (SPECIFY)	1269/ 7222
				9 UNKNOMN (NOT STATED)	824/ 5662
				NOTE: THIS FIELD IS Q124J1 ON THE TRADE-VOCATIONAL RECORDS	
265	Q136J1TX	1	0347	Q136J1TX OTHER (SPECIFY)	
				BLANK	33308/ 232178
				1 TEXT PRESENT	1250/ 7093
				9 UNKNOMN (NOT STATED)	843/ 5791
				NOTE: THIS FIELD IS Q124J1TX ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
266	Q136J2	1	0348	Q136J2 WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION?	
				BLANK	
				1 TEXT PRESENT	33308/ 232178
				9 UNKNOWN (NOT STATED)	1104/ 6178 989/ 6706
				NOTE: RESPONSES HAVE BEEN CODED ACCORDING TO CCSIS AND USIS CODES. SEE "Q136JCD1" POSITIONS 746-750 FOR THE FIRST FIELD OF STUDY, TOGETHER WITH "Q136JBK1" POSITION 756 THAT INDICATES THE CORRECT CODEBOOK. ANY SECOND FIELDS OF STUDY MENTIONED ARE CODED IN "Q136JCD2" POSITIONS 751-755 WITH THE APPROPRIATE CODEBOOK GIVEN IN "Q136JBK2" POSITION 757. THE CODEBOOK CHOSEN WAS THAT JUDGED MORE SUITABLE ACCORDING TO THE "OTHER (SPECIFY)" RESPONSE TO Q136A AND THE FIELD-OF-STUDY DESCRIPTION.	
				THIS FIELD IS Q124J2 ON THE TRADE-VOCATIONAL RECORDS.	
267	Q136J3Y	2	0349-0350	Q136J3Y IN WHAT YEAR DID YOU EXPECT TO COMPLETE THE REQUIREMENTS?	
				BLANK	
				86:98 YEAR	33489/ 233228
				99 UNKNOWN (NOT STATED)	1088/ 6171 824/ 5662
				NOTE: THIS FIELD IS Q124J3Y ON THE TRADE-VOCATIONAL RECORDS	
268	Q136J3M	2	0351-0352	Q136J3M IN WHAT MONTH DID YOU EXPECT TO COMPLETE THE REQUIREMENTS?	
				BLANK	
				01:12 MONTH	33489/ 233228
				99 UNKNOWN (NOT STATED)	1073/ 6100 839/ 5733
				NOTE: THIS FIELD IS Q124J3M ON THE TRADE-VOCATIONAL RECORDS	
269	Q136J4	1	0353	Q136J4	
				BLANK	
				1 DON'T KNOW	34396/ 238349
				9 UNKNOWN (NOT STATED)	181/ 1051 824/ 5662
				NOTE: THIS FIELD IS Q124J4 ON THE TRADE-VOCATIONAL RECORDS	
270	Q137	1	0354	Q137 DID YOU TAKE ANY OF THESE PROGRAMS AS A FULL-TIME STUDENT?	
				BLANK	
				1 YES	24141/ 144212
				2 NO	5756/ 57581
				9 UNKNOWN (NOT STATED)	5263/ 41743 241/ 1524
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
271	Q138	1	0355	Q138 DID YOU EVER BORROW MONEY TO FINANCE ANY OF YOUR EDUCATION THROUGH THE STUDENT LOAN PROGRAM?	
				BLANK	
				1 YES	13503/ 97469
				2 NO	10286/ 64873
				9 UNKNOWN (NOT STATED)	11270/ 80494 342/ 2225
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
272	Q139	3	0356-0358	Q139 HOW MUCH DID YOU BORROW IN TOTAL THROUGH THE STUDENT LOAN PROGRAM?	
				BLANK	24773/ 177964
				001:998 (\$100-899,800)	10089/ 63636
				999 UNKNOWN (NOT STATED)	539/ 3462
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
273	Q140	3	0359-0361	Q140 HOW MUCH MONEY FROM THE STUDENT LOAN PROGRAM DID YOU OWE WHEN YOU GRADUATED IN 1986?	
				BLANK	24773/ 177964
				000:998 (\$0-899,800)	10015/ 63430
				999 UNKNOWN (NOT STATED)	613/ 3668
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
274	Q141	3	0362-0364	Q141 HOW MUCH FROM THE STUDENT LOAN PROGRAM DO YOU OWE NOW?	
				BLANK	24773/ 177964
				000:998 (\$0-899,800)	9730/ 62456
				999 UNKNOWN (NOT STATED)	898/ 4641
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
275	Q142	1	0365	Q142 DID YOU EVER BORROW MONEY TO FINANCE ANY OF YOUR EDUCATION FROM OTHER SOURCES SUCH AS RELATIVES OR DIRECTLY FROM A BANK?	
				BLANK	13503/ 97469
				1 YES	3552/ 22499
				2 NO	17918/ 122447
				9 UNKNOWN (NOT STATED)	428/ 2645
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
276	Q143	3	0366-0368	Q143 HOW MUCH DID YOU BORROW IN TOTAL FROM THESE OTHER SOURCES?	
				BLANK	31421/ 219917
				001:998 (\$100-899,800)	3410/ 21666
				999 UNKNOWN (NOT STATED)	570/ 3479
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
277	Q144	3	0369-0371	Q144 HOW MUCH DID YOU OWE THESE OTHER SOURCES WHEN YOU GRADUATED IN 1986?	
				BLANK	31421/ 219917
				000:998 (\$0-899,800)	3361/ 21503
				999 UNKNOWN (NOT STATED)	619/ 3642
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
278	Q145	3	0372-0374	Q145 HOW MUCH DO YOU NOW OWE TO THESE OTHER SOURCES?	
				BLANK	31421/ 219917
				000:998 (\$0-899,800)	3265/ 21151
				999 UNKNOWN (NOT STATED)	715/ 3994
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	46
					UNMTD/WEIGHTED	
279	Q146	1	0375	Q146 INTERVIEWER CHECK-ITEM		
				BLANK	13503/	97469
				1 IF Q141 OR Q145 GREATER THAN ZERO	6985/	45030
				2 OTHERWISE	14632/	100878
				9 UNKNOWN (NOT STATED)	281/	1664
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS		
280	Q147A	1	0376	Q147A HAVE YOU HAD ANY DIFFICULTIES IN REPAYING THE MONEY YOU OWE?		
				BLANK	28135/	198348
				1 YES	1529/	10124
				2 NO	5215/	33149
				9 UNKNOWN (NOT STATED)	522/	3441
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS		
281	Q147B1	1	0377	Q147B1 WHAT KINDS OF DIFFICULTIES HAVE YOU HAD?		
				BLANK	33350/	231497
				1 UNEMPLOYED, COULDN'T GET ANY WORK	525/	3102
				2 THIS REASON NOT OFFERED	983/	6936
				9 UNKNOWN (NOT STATED)	543/	3526
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS		
282	Q147B2	1	0378	Q147B2 WHAT KINDS OF DIFFICULTIES HAVE YOU HAD?		
				BLANK	33350/	231497
				1 COULD ONLY GET PART-TIME WORK	196/	1328
				2 THIS REASON NOT OFFERED	1312/	8710
				9 UNKNOWN (NOT STATED)	543/	3526
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS		
283	Q147B3	1	0379	Q147B3 WHAT KINDS OF DIFFICULTIES HAVE YOU HAD?		
				BLANK	33350/	231497
				1 DON'T EARN ENOUGH, INCOME TOO SMALL	717/	5260
				2 THIS REASON NOT OFFERED	791/	4778
				9 UNKNOWN (NOT STATED)	543/	3526
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS		
284	Q147B4	1	0380	Q147B4 WHAT KINDS OF DIFFICULTIES HAVE YOU HAD?		
				BLANK	33350/	231497
				1 HIGH DEBT LOAD, ONE TOO MUCH TO OTHERS	265/	1635
				2 THIS REASON NOT OFFERED	1243/	8403
				9 UNKNOWN (NOT STATED)	543/	3526
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS		
285	Q147B5	1	0381	Q147B5 WHAT KINDS OF DIFFICULTIES HAVE YOU HAD?		
				BLANK	33350/	231497
				1 OTHER REASONS (SPECIFY)	194/	1251
				2 THIS REASON NOT OFFERED	1314/	8787
				9 UNKNOWN (NOT STATED)	543/	3526
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS		
286	Q147TXT	1	0382	Q147TXT OTHER REASONS (SPECIFY)		
				BLANK	34664/	240284
				1 TEXT PRESENT	192/	1209
				9 UNKNOWN (NOT STATED)	545/	3568
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS		

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE				PAGE 47	
FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
287	Q148	1	0383	Q148 INTERVIENER CHECK-ITEM	
				BLANK	7747/ 39888
				1 IF LINE A ON LABEL READS "MASTER"/"DOCTORATE"	5463/ 14234
				2 OTHERWISE	21928/ 189395
				9 UNKNOMN (NOT STATED)	263/ 1545
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
288	Q149A	1	0384	Q149A DURING YOUR MASTER'S/DOCTORATE PROGRAM DID YOU RECEIVE A GRANT OR BURSARY FROM THE NATURAL SCIENCE & ENGINEERING RESEARCH COUNCIL, SOMETIMES CALLED "N-SERC"?	
				BLANK	29675/ 229283
				1 YES	520/ 987
				2 NO	4494/ 12144
				9 UNKNOMN (NOT STATED)	712/ 2647
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
289	Q149B	1	0385	Q149B ...THE SOCIAL SCIENCES & HUMANITIES RESEARCH COUNCIL, SOMETIMES CALLED "SHERC"?	
				BLANK	29675/ 229283
				1 YES	202/ 425
				2 NO	4796/ 12660
				9 UNKNOMN (NOT STATED)	728/ 2694
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
290	Q149C	1	0386	Q149C ....THE QUEBEC RESEARCH TRAINING FUND?	
				BLANK	29675/ 229283
				1 YES	174/ 457
				2 NO	4812/ 12605
				9 UNKNOMN (NOT STATED)	748/ 2717
				NOTE: THE "QUEBEC RESEARCH TRAINING FUND" HAS NO OFFICIAL ENGLISH NAME. THE NAME GIVEN IS THE TRANSLATION OF "LES FONDS POUR LA FORMATION DE CHERCHEURS ET L'AIDE A LA RECHERCHE"	
				THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS.	
291	Q149D	1	0387	Q149D ....SOME OTHER FUND OR AGENCY?	
				BLANK	29675/ 229283
				1 YES	2013/ 4590
				2 NO	3179/ 8926
				9 UNKNOMN (NOT STATED)	534/ 2263
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
292	Q149TXT	1	0388	Q149TXT OTHER FUND OR AGENCY (SPECIFY)	
				BLANK	32854/ 238208
				1 TEXT PRESENT	2008/ 4561
				9 UNKNOMN (NOT STATED)	547/ 2292
				NOTE: THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS	
293	Q150	1	0389	Q150 DURING THE NEXT 12 MONTHS, DO YOU PLAN TO TAKE ANY COURSES OR A PROGRAM THAT COULD LEAD TO A DEGREE, DIPLOMA OR CERTIFICATE?	
				1 YES	16678/ 131238
				2 NO	18264/ 111047
				9 UNKNOMN (NOT STATED)	459/ 2775
				NOTE: THIS FIELD IS Q125 ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
294	Q151	1	0390	Q151 SINCE YOU COMPLETED THE PROGRAM IN 1986 HAVE YOU EVER REGISTERED TO BECOME AN APPRENTICE? 1 YES 2 NO 9 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q126 ON THE TRADE-VOCATIONAL RECORDS	 1643/ 8594 33536/ 235009 222/ 1458
295	Q152	1	0391	Q152 HAS THIS A FORMAL REGISTRATION WITH A PROVINCIAL APPRENTICESHIP AUTHORITY? BLANK 1 YES 2 NO 9 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q127 ON THE TRADE-VOCATIONAL RECORDS	 33536/ 235009 1298/ 6534 343/ 2055 224/ 1464
296	Q153	1	0392	Q153 WHAT TRADE WAS THIS? BLANK 1 TEXT PRESENT 9 UNKNOWN (NOT STATED) NOTE: THE TEXT HAS BEEN CODED ACCORDING TO THE CCSIS SYSTEM, WITH THE CODES GIVEN IN "Q153CODE" POSITIONS 758-762. THIS FIELD IS Q128 ON THE TRADE-VOCATIONAL RECORDS.	 33879/ 237063 1282/ 6467 240/ 1531
297	Q154Y	2	0393-0394	Q154Y IN WHAT MONTH AND YEAR WERE YOU BORN? BLANK 00:75 YEAR 99 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q129Y ON THE TRADE-VOCATIONAL RECORDS	 16/ 68 35337/ 244819 48/ 174
298	Q154M	2	0395-0396	Q154M BLANK 01:12 MONTH 99 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q129M ON THE TRADE-VOCATIONAL RECORDS	 16/ 68 35322/ 244698 63/ 296
299	Q155	1	0397	Q155 WHAT IS YOUR MARITAL STATUS? 1 NOW MARRIED OR LIVING COMMON-LAW? 2 SINGLE, THAT IS, NEVER MARRIED 3 A WIDOW OR WIDOWER 4 SEPARATED OR DIVORCED 9 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q130 ON THE TRADE-VOCATIONAL RECORDS	 14155/ 86598 19365/ 146602 109/ 791 1802/ 9290 270/ 1781
300	Q156A1	1	0398	Q156A1 WHAT LANGUAGE DID YOU FIRST SPEAK IN CHILDHOOD? 1 ENGLISH 2 NOT ENGLISH 9 UNKNOWN (NOT STATED) NOTE: THIS FIELD IS Q131A1 ON THE TRADE-VOCATIONAL RECORDS	 24342/ 142062 10795/ 101219 264/ 1780

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
301	Q156B1	1	0399	Q156B1 DO YOU STILL UNDERSTAND ENGLISH?	
				BLANK	10795/ 101219
				1 YES	24330/ 142008
				2 NO	8/ 35
				9 UNKNOMN (NOT STATED)	268/ 1800
				NOTE: THIS FIELD IS Q131B1 ON THE TRADE-VOCATIONAL RECORDS	
302	Q156A2	1	0400	Q156A2 WHAT LANGUAGE DID YOU FIRST SPEAK IN CHILDHOOD?	
				1 FRENCH	7525/ 78756
				2 NOT FRENCH	27612/ 164525
				9 UNKNOMN (NOT STATED)	264/ 1780
				NOTE: THIS FIELD IS Q131A2 ON THE TRADE-VOCATIONAL RECORDS	
303	Q156B2	1	0401	Q156B2 DO YOU STILL UNDERSTAND FRENCH?	
				BLANK	27612/ 164525
				1 YES	7463/ 78337
				2 NO	53/ 385
				9 UNKNOMN (NOT STATED)	273/ 1815
				NOTE: THIS FIELD IS Q131B2 ON THE TRADE-VOCATIONAL RECORDS	
304	Q156A3	1	0402	Q156A3 WHAT LANGUAGE DID YOU FIRST SPEAK IN CHILDHOOD?	
				1 OTHER LANGUAGE	3575/ 24815
				2 NOT ANOTHER LANGUAGE	31562/ 218466
				9 UNKNOMN (NOT STATED)	264/ 1780
				NOTE: THIS FIELD IS Q131A3 ON THE TRADE-VOCATIONAL RECORDS	
305	Q156B3	1	0403	Q156B3 DO YOU STILL UNDERSTAND OTHER?	
				BLANK	31562/ 218466
				1 YES	3404/ 23762
				2 NO	162/ 1005
				9 UNKNOMN (NOT STATED)	273/ 1828
				NOTE: THIS FIELD IS Q131B3 ON THE TRADE-VOCATIONAL RECORDS	
306	Q157A	1	0404	Q157A WHAT LANGUAGE DO YOU SPEAK MOST OFTEN AT HOME?	
				1 ENGLISH	27002/ 159837
				2 NOT ENGLISH	8093/ 83207
				9 UNKNOMN (NOT STATED)	306/ 2017
				NOTE: THIS FIELD IS Q132A ON THE TRADE-VOCATIONAL RECORDS	
307	Q157B	1	0405	Q157B WHAT LANGUAGE DO YOU SPEAK MOST OFTEN AT HOME?	
				1 FRENCH	7057/ 76123
				2 NOT FRENCH	28038/ 166921
				9 UNKNOMN (NOT STATED)	306/ 2017
				NOTE: THIS FIELD IS Q132B ON THE TRADE-VOCATIONAL RECORDS	
308	Q157C	1	0406	Q157C WHAT LANGUAGE DO YOU SPEAK MOST OFTEN AT HOME?	
				1 OTHER LANGUAGE	1486/ 11257
				2 NOT OTHER LANGUAGE	33609/ 231787
				9 UNKNOMN (NOT STATED)	306/ 2017
				NOTE: THIS FIELD IS Q132C ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
309	Q158	1	0407	Q158 INTERVIEWER CHECK-ITEM 1 IF LINE D ON LABEL READS "BILINGUAL" 2 OTHERWISE 9 UNKNOWN (NOT STATED)	2848/ 18207 32328/ 225388 225/ 1467
<p>NOTE: "BILINGUAL" WAS ENTERED ON LINE D FOR INSTITUTIONS JUDGED TO PROVIDE ENOUGH TEACHING IN BOTH OFFICIAL LANGUAGES THAT THE LANGUAGE THAT THE RESPONDENT MIGHT HAVE TAKEN MOST OF THE COURSES IN WOULD NOT BE CERTAIN. THE BILINGUAL INSTITUTIONS ARE IDENTIFIED BY A CODE "3" IN "INST_LANG" POSITION 494. THE INSTITUTIONS, WITH THEIR IDENTIFICATION CODES IN POSITIONS 472-477, WERE: NEM BRUNSWICK COMMUNITY COLLEGES (103206) COLLÈGE DE LA GASPÉSIE (204214) MARIANOPOLIS COLLEGE (204264) NOTRE DAME SECRETARIAL SCHOOL (204269) LAURENTIAN UNIVERSITY ALL CAMPUSES - (315106)-(315109) UNIVERSITÉ D'OTTAWA (315112) UNIVERSITÉ ST. PAUL (315113) ALGONQUIN COLLEGE (315201) CAMBRIAN COLLEGE (315202) CANADORE COLLEGE (315203) NORTHERN COLLEGE (315216) UNIVERSITY OF MANITOBA (416101)</p>					
<p>THIS FIELD IS Q133 ON THE TRADE-VOCATIONAL RECORDS.</p>					
310	Q159	1	0408	Q159 WHILE STUDYING FOR THE PROGRAM, IN WHAT LANGUAGE DID YOU TAKE MOST OF YOUR COURSES? BLANK 1 ENGLISH 2 FRENCH 3 ENGLISH & FRENCH ABOUT EQUALLY 4 ANOTHER LANGUAGE 9 UNKNOWN (NOT STATED)	32328/ 225388 2212/ 13542 447/ 3269 83/ 596 3/ 12 328/ 2255
<p>NOTE: THIS FIELD IS Q134 ON THE TRADE-VOCATIONAL RECORDS</p>					
311	Q160A	1	0409	Q160A DO YOU HAVE ANY DEPENDENT CHILDREN? 1 YES 2 NO 9 UNKNOWN (NOT STATED)	8378/ 47743 26711/ 195131 312/ 2188
<p>NOTE: THIS FIELD IS Q135A ON THE TRADE-VOCATIONAL RECORDS</p>					
312	Q160B1	2	0410-0411	Q160B1 PLEASE TELL ME THEIR AGES? 1ST CHILD BLANK 00:98 YEARS 99 UNKNOWN (NOT STATED)	26743/ 195314 8263/ 47144 395/ 2604
<p>NOTE: "CHILD" DERIVES THE NUMBER OF DEPENDENT CHILDREN FROM THE AGE-MENTIONS.</p>					
<p>THIS FIELD IS Q135B1 ON THE TRADE-VOCATIONAL RECORDS.</p>					
313	Q160B2	2	0412-0413	Q160B2 AGE OF SECOND CHILD BLANK 00:98 YEARS 99 UNKNOWN (NOT STATED)	30152/ 215301 4854/ 27156 395/ 2604
<p>NOTE: THIS FIELD IS Q135B2 ON THE TRADE-VOCATIONAL RECORDS</p>					

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
314	Q160B3	2	0414-0415	Q160B3 AGE OF THIRD CHILD	
				BLANK	33493/ 234183
				00:98 YEARS	1513/ 8275
				99 UNKNOWN (NOT STATED)	395/ 2604
				NOTE: THIS FIELD IS Q135B3 ON THE TRADE-VOCATIONAL RECORDS	
315	Q160B4	2	0416-0417	Q160B4 AGE OF FOURTH CHILD	
				BLANK	34629/ 240485
				00:98 YEARS	377/ 1973
				99 UNKNOWN (NOT STATED)	395/ 2604
				NOTE: THIS FIELD IS Q135B4 ON THE TRADE-VOCATIONAL RECORDS	
316	Q160B5	2	0418-0419	Q160B5 AGE OF FIFTH CHILD	
				BLANK	34912/ 241988
				00:98 YEARS	94/ 470
				99 UNKNOWN (NOT STATED)	395/ 2604
				NOTE: THIS FIELD IS Q135B5 ON THE TRADE-VOCATIONAL RECORDS	
317	Q160B6	2	0420-0421	Q160B6 AGE OF SIXTH CHILD	
				BLANK	34981/ 242301
				00:98 YEARS	25/ 157
				99 UNKNOWN (NOT STATED)	395/ 2604
				NOTE: THIS FIELD IS Q135B6 ON THE TRADE-VOCATIONAL RECORDS	
318	Q160B7	2	0422-0423	Q160B7 AGE OF SEVENTH CHILD	
				BLANK	34996/ 242392
				00:98 YEARS	10/ 66
				99 UNKNOWN (NOT STATED)	395/ 2604
				NOTE: THIS FIELD IS Q135B7 ON THE TRADE-VOCATIONAL RECORDS	
319	Q160B8	2	0424-0425	Q160B8 AGE OF EIGHTH CHILD	
				BLANK	35000/ 242427
				00:98 YEARS	6/ 31
				99 UNKNOWN (NOT STATED)	395/ 2604
				NOTE: THIS FIELD IS Q135B8 ON THE TRADE-VOCATIONAL RECORDS	
320	Q160B9	2	0426-0427	Q160B9 AGE OF NINTH CHILD	
				BLANK	35004/ 242447
				00:98 YEARS	2/ 11
				99 UNKNOWN (NOT STATED)	395/ 2604
				NOTE: THIS FIELD IS Q135B9 ON THE TRADE-VOCATIONAL RECORDS	
321	Q160B10	2	0428-0429	Q160B10 AGE OF TENTH CHILD	
				BLANK	35005/ 242450
				00:98 YEARS	1/ 8
				99 UNKNOWN (NOT STATED)	395/ 2604
				NOTE: THIS FIELD IS Q135B10 ON THE TRADE-VOCATIONAL RECORDS	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
322	Q161A	1	0430	Q161A WHAT'S YOUR TOTAL PERSONAL INCOME FROM ALL SOURCES BEFORE TAXES & DEDUCTIONS FOR THE LAST 12 MONTHS?	
				1 LESS THAN \$30,000	26891/ 193642
				2 \$30,000 OR MORE	6878/ 39863
				3 NO INCOME	242/ 2137
				4 DON'T KNOW	1165/ 8153
				9 UNKNOWN (NOT STATED)	225/ 1467
				NOTE: THIS FIELD IS Q136A ON THE TRADE-VOCATIONAL RECORDS	
323	Q161B	1	0431	Q161B	
				BLANK	1407/ 10290
				1 LESS THAN \$20,000	17603/ 131587
				2 \$20,000 - \$29,999	9245/ 61496
				3 \$30,000 - \$39,999	4001/ 24887
				4 \$40,000 OR MORE	2825/ 14676
				9 UNKNOWN (NOT STATED)	326/ 2126
				NOTE: THIS FIELD IS Q136B ON THE TRADE-VOCATIONAL RECORDS	
324	Q161C	1	0432	Q161C	
				BLANK	1407/ 10290
				1 LESS THAN \$15,000	11322/ 90178
				2 \$15,000 - \$19,999	6257/ 41295
				3 \$20,000 - \$24,999	5158/ 34503
				4 \$25,000 - \$29,999	4037/ 26720
				5 \$30,000 - \$34,999	2425/ 15915
				6 \$35,000 - \$39,999	1558/ 8875
				7 \$40,000 - \$44,999	1066/ 5907
				8 \$45,000 OR MORE	1744/ 8674
				9 UNKNOWN (NOT STATED)	427/ 2705
				NOTE: FOR RESPONDENTS WHO REPORTED INCOME, THE INCOME-CLASS CAN BE READ FROM RESPONSE TO THIS FIELD (WITHOUT NEED FOR POSITIONS 430 OR 431).	
				THIS FIELD IS Q136C ON THE TRADE-VOCATIONAL RECORDS.	
325	Q162A	2	0433-0434	Q162A WHAT IS THE HIGHEST LEVEL OF EDUCATION COMPLETED BY YOUR FATHER?	
				01 NO FORMAL SCHOOLING	521/ 3459
				02 ELEMENTARY SCHOOL	6352/ 45014
				03 SOME SECONDARY	6793/ 42673
				04 COMPLETED SECONDARY SCHOOL	7595/ 52393
				05 TRADE OR VOCATIONAL DIPLOMA OR CERTIFICATE	1496/ 9897
				06 SOME COLLEGE, CEGEP, TECH. OR NURSING SCHOOL	549/ 3760
				07 COMPLETED COLL/CEGEP/TECH. OR NURSING SCHOOL	1134/ 9122
				08 SOME UNIVERSITY	725/ 5654
				09 TEACHERS COLLEGE	186/ 1523
				10 UNIVERSITY CERT. OR DIP. BELOW B.A. LEVEL	481/ 3045
				11 BACHELOR'S DEGREE	2968/ 22263
				12 UNIVERSITY CERT. OR DIP. ABOVE B.A. LEVEL	157/ 1141
				13 MASTER'S DEGREE	983/ 7183
				14 FIRST PROFESSIONAL DEGREE	765/ 5461
				15 EARNED DOCTORATE	621/ 4662
				16 DON'T KNOW	3235/ 20554
				17 OTHER (SPECIFY)	695/ 5791
				99 UNKNOWN (NOT STATED)	225/ 1467
				NOTE: THIS FIELD IS Q137A ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
326	Q162B	2	0435-0436	Q162B WHAT IS THE HIGHEST LEVEL OF EDUCATION COMPLETED BY YOUR MOTHER OR GUARDIAN?	
				01 NO FORMAL SCHOOLING	463/ 3102
				02 ELEMENTARY SCHOOL	4967/ 37821
				03 SOME SECONDARY	7126/ 45420
				04 COMPLETED SECONDARY SCHOOL	10223/ 70135
				05 TRADE OR VOCATIONAL DIPLOMA OR CERTIFICATE	844/ 6192
				06 SOME COLLEGE, CEGEP, TECH. OR NURSING SCHOOL	973/ 6502
				07 COMPLETED COLL/CEGEP/TECH. OR NURSING SCHOOL	2410/ 16879
				08 SOME UNIVERSITY	568/ 3645
				09 TEACHERS COLLEGE	1072/ 8360
				10 UNIVERSITY CERT. OR DIP. BELOW B.A. LEVEL	290/ 2276
				11 BACHELOR'S DEGREE	2270/ 16477
				12 UNIVERSITY CERT. OR DIP. ABOVE B.A. LEVEL	75/ 501
				13 MASTER'S DEGREE	438/ 3310
				14 FIRST PROFESSIONAL DEGREE	75/ 461
				15 EARNED DOCTORATE	83/ 639
				16 DON'T KNOW	2854/ 18060
				17 OTHER (SPECIFY)	445/ 3813
				99 UNKNOMN (NOT STATED)	225/ 1467
				NOTE: THIS FIELD IS Q137B ON THE TRADE-VOCATIONAL RECORDS	
327	Q162ATXT	1	0437	Q162ATXT FATHER OTHER (SPECIFY)	
				BLANK	34481/ 237804
				1 TEXT PRESENT	677/ 5673
				9 UNKNOMN (NOT STATED)	243/ 1584
				NOTE: THIS FIELD IS Q137ATXT ON THE TRADE-VOCATIONAL RECORDS	
328	Q162BTXT	1	0438	Q162BTXT MOTHER OTHER (SPECIFY)	
				BLANK	34731/ 239782
				1 TEXT PRESENT	419/ 3694
				9 UNKNOMN (NOT STATED)	251/ 1585
				NOTE: THIS FIELD IS Q137BTXT ON THE TRADE-VOCATIONAL RECORDS	
329	Q163A	1	0439	Q163A DO YOU CONSIDER YOURSELF INUIT, METIS OR NORTH AMERICAN INDIAN?	
				1 NO NONE OF THEM	34318/ 238430
				2 INUIT	250/ 1534
				3 NORTH AMERICAN INDIAN	325/ 2047
				4 METIS	213/ 1013
				9 UNKNOMN (NOT STATED)	295/ 2038
				NOTE: THIS FIELD IS Q138A ON THE TRADE-VOCATIONAL RECORDS	
330	Q163B	1	0440	Q163B ARE YOU A STATUS OR A NON-STATUS INDIAN?	
				BLANK	34798/ 241081
				1 STATUS	236/ 1393
				2 NON-STATUS	85/ 625
				9 UNKNOMN (NOT STATED)	282/ 1962
				NOTE: THIS FIELD IS Q138B ON THE TRADE-VOCATIONAL RECORDS	
331	Q164A	1	0441	Q164A ARE YOU LIMITED IN THE KIND OR AMOUNT OF ACTIVITY YOU CAN DO BECAUSE OF A LONG-TERM PHYSICAL CONDITION, MENTAL CONDITION OR HEALTH PROBLEM AT HOME?	
				1 YES	484/ 2985
				2 NO	34500/ 239256
				9 UNKNOMN (NOT STATED)	417/ 2820
				NOTE: THIS FIELD IS Q139A ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
332	Q164B	1	0442	Q164B ....AT SCHOOL OR WORK? 1 YES 2 NO 9 UNKNOWN (NOT STATED)	668/ 4034 34389/ 238550 344/ 2477
				NOTE: THIS FIELD IS Q139B ON THE TRADE-VOCATIONAL RECORDS	
333	Q164C	1	0443	Q164C ....IN OTHER ACTIVITIES, SUCH AS TRANSPORTATION OR LEISURE-TIME ACTIVITIES? 1 YES 2 NO 9 UNKNOWN (NOT STATED)	719/ 4662 34338/ 237921 344/ 2479
				NOTE: THIS FIELD IS Q139C ON THE TRADE-VOCATIONAL RECORDS	
334	Q165	1	0444	Q165 INTERVIEWER CHECK-ITEM 1 IF ANY YES CHECKED IN Q164 2 OTHERWISE 9 UNKNOWN (NOT STATED)	917/ 5798 34259/ 237797 225/ 1467
				NOTE: THIS FIELD IS Q140 ON THE TRADE-VOCATIONAL RECORDS CODE 1 - ANY YES IN Q139	
335	Q166A1	1	0445	Q166A1 ARE YOU HANDICAPPED OR DISABLED WITH REGARD TO MOBILITY, AGILITY? BLANK 1 YES 2 NO 9 UNKNOWN (NOT STATED)	34259/ 237797 566/ 3439 296/ 1878 280/ 1947
				NOTE: THIS FIELD IS Q141A1 ON THE TRADE-VOCATIONAL RECORDS	
336	Q166B1	2	0446-0447	Q166B1 HOW MANY YRS HAVE YOU BEEN HANDICAPPED OR DISABLED IN THIS MAY? BLANK 01:98 YEARS 99 UNKNOWN (NOT STATED)	34555/ 239675 551/ 3331 295/ 2056
				NOTE: THIS FIELD IS Q141B1 ON THE TRADE-VOCATIONAL RECORDS	
337	Q166A2	1	0448	Q166A2 ARE YOU HANDICAPPED OR DISABLED WITH REGARD TO SIGHT, SEEING? BLANK 1 YES 2 NO 9 UNKNOWN (NOT STATED)	34259/ 237797 86/ 547 671/ 4150 385/ 2567
				NOTE: THIS FIELD IS Q141A2 ON THE TRADE-VOCATIONAL RECORDS	
338	Q166B2	2	0449-0450	Q166B2 HOW MANY YEARS HAVE YOU BEEN HANDICAPPED OR DISABLED IN THIS MAY? BLANK 01:98 YEARS 99 UNKNOWN (NOT STATED)	34930/ 241948 77/ 496 394/ 2618
				NOTE: THIS FIELD IS Q141B2 ON THE TRADE-VOCATIONAL RECORDS	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
339	Q166A3	1	0451	Q166A3 ARE YOU HANDICAPPED OR DISABLED WITH REGARD TO HEARING?	
				BLANK	34259/ 237797
				1 YES	55/ 310
				2 NO	688/ 4312
				9 UNKNOWN (NOT STATED)	399/ 2643
				NOTE: THIS FIELD IS Q141A3 ON THE TRADE-VOCATIONAL RECORDS	
340	Q166B3	2	0452-0453	Q166B3 HOW MANY YEARS HAVE YOU BEEN HANDICAPPED OR DISABLED IN THIS WAY?	
				BLANK	34947/ 242109
				01:98 YEARS	46/ 263
				99 UNKNOWN (NOT STATED)	408/ 2690
				NOTE: THIS FIELD IS Q141B3 ON THE TRADE-VOCATIONAL RECORDS	
341	Q166A4	1	0454	Q166A4 ARE YOU HANDICAPPED OR DISABLED WITH REGARD TO SPEECH, SPEAKING?	
				BLANK	34259/ 237797
				1 YES	25/ 160
				2 NO	715/ 4459
				9 UNKNOWN (NOT STATED)	402/ 2646
				NOTE: THIS FIELD IS Q141A4 ON THE TRADE-VOCATIONAL RECORDS	
342	Q166B4	2	0455-0456	Q166B4 HOW MANY YRS HAVE YOU BEEN HANDICAPPED OR DISABLED IN THIS WAY?	
				BLANK	34974/ 242256
				01:98 YEARS	18/ 120
				99 UNKNOWN (NOT STATED)	409/ 2685
				NOTE: THIS FIELD IS Q141B4 ON THE TRADE-VOCATIONAL RECORDS	
343	Q166A5	1	0457	Q166A5 ARE YOU HANDICAPPED OR DISABLED WITH REGARD TO LEARNING?	
				BLANK	34259/ 237797
				1 YES	29/ 221
				2 NO	713/ 4422
				9 UNKNOWN (NOT STATED)	400/ 2621
				NOTE: THIS FIELD IS Q141A5 ON THE TRADE-VOCATIONAL RECORDS	
344	Q166B5	2	0458-0459	Q166B5 HOW MANY YRS HAVE YOU BEEN HANDICAPPED OR DISABLED IN THIS WAY?	
				BLANK	34972/ 242219
				01:98 YEARS	22/ 182
				99 UNKNOWN (NOT STATED)	407/ 2660
				NOTE: THIS FIELD IS Q141B5 ON THE TRADE-VOCATIONAL RECORDS	
345	Q166A6	1	0460	Q166A6 ARE YOU HANDICAPPED OR DISABLED WITH REGARD TO EMOTIONS, MENTAL PROBLEMS?	
				BLANK	34259/ 237797
				1 YES	63/ 417
				2 NO	679/ 4202
				9 UNKNOWN (NOT STATED)	400/ 2645
				NOTE: THIS FIELD IS Q141A6 ON THE TRADE-VOCATIONAL RECORDS	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTO/WEIGHTED
346	Q166B6	2	0461-0462	Q166B6 HOW MANY YRS HAVE YOU BEEN HANDICAPPED OR DISABLED IN THIS WAY?	
				BLANK	34938/ 242000
				01:98 YEARS	53/ 362
				99 UNKNOWN (NOT STATED)	410/ 2700
				NOTE: THIS FIELD IS Q14186 ON THE TRADE-VOCATIONAL RECORDS	
347	Q167A	1	0463	Q167A DURING 1987, DID YOU TAKE PART IN ANY CANADA EMPLOYMENT & IMMIGRATION COMMISSION FINANCIAL ASSISTANCE PROGRAMS?	
				BLANK	25/ 134
				1 YES	1809/ 12511
				2 NO	33068/ 229223
				3 DON'T KNOW	169/ 923
				9 UNKNOWN (NOT STATED)	330/ 2269
				NOTE: THIS FIELD IS Q142A ON THE TRADE-VOCATIONAL RECORDS	
348	Q167B1	1	0464	Q167B1 WHICH OF THE CANADA EMPLOYMENT AND IMMIGRATION COMMISSION FINANCIAL ASSIST. PROGRAMS DID YOU TAKE PART IN?	
				BLANK	33392/ 231014
				1 TEXT PRESENT	1674/ 11757
				9 UNKNOWN (NOT STATED)	335/ 2290
				NOTE: THIS FIELD IS Q142B1 ON THE TRADE-VOCATIONAL RECORDS	
349	Q167B2	1	0465	Q167B2 ANY OTHERS?	
				BLANK	35023/ 242490
				1 TEXT PRESENT	43/ 281
				9 UNKNOWN (NOT STATED)	335/ 2290
				NOTE: THIS FIELD IS Q142B2 ON THE TRADE-VOCATIONAL RECORDS	
350	Q167B3	1	0466	Q167B3 ANY OTHERS?	
				BLANK	35062/ 242753
				1 TEXT PRESENT	4/ 18
				9 UNKNOWN (NOT STATED)	335/ 2290
				NOTE: THIS FIELD IS Q142B3 ON THE TRADE-VOCATIONAL RECORDS	
351	Q167B4	1	0467	Q167B4 ANY OTHERS?	
				BLANK	35066/ 242771
				1 TEXT PRESENT	0/ 0
				9 UNKNOWN (NOT STATED)	335/ 2290
				NOTE: THIS FIELD IS Q142B4 ON THE TRADE-VOCATIONAL RECORDS	
352	FILLER4	1	0468		

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
353	Q170	2	0469-0470	Q170 PROVINCE OR TERRITORY WHERE RESPONDENT WAS LOCATED WHEN INTERVIEWED.	
				01 NFLD.	1710/ 4995
				02 P.E.I.	516/ 931
				03 N.S.	1952/ 7675
				04 N.B.	1570/ 4802
				05 QUE.	6823/ 82023
				06 ONT.	9686/ 87537
				07 MAN.	2277/ 8149
				08 SASK.	1775/ 6424
				09 ALTA.	5077/ 18867
				10 BC.	3519/ 21115
				11 YUKON	92/ 255
				12 N.M.T.	95/ 350
				99 UNKNOWN (NOT STATED)	309/ 1937
				NOTE: RESPONDENTS FOUND TEMPORARILY OUTSIDE CANADA WERE CODED 99.	
				THIS FIELD IS Q145 ON THE TRADE-VOCATIONAL RECORDS.	
354	Q171	1	0471	Q171 LANGUAGE OF INTERVIEW:	
				1 ENGLISH	28541/ 168637
				2 FRENCH	6529/ 74287
				9 UNKNOWN (NOT STATED)	331/ 2137
				NOTE: THIS FIELD IS Q146 ON THE TRADE-VOCATIONAL RECORDS	
355	SAM_RO	2	0472-0473	REGIONAL OFFICE IN WHOSE TERRITORY THE INSTITUTION WAS LOCATED - FROM SAMPLE FILE	
				10 HALIFAX	4740/ 15556
				11 ST. JOHN'S	1861/ 5372
				20 MONTREAL	6712/ 82442
				30 TORONTO	6740/ 64765
				31 STURGEON FALLS	2213/ 21367
				40 EDMONTON	2989/ 11262
				41 WINNIPEG	2394/ 8417
				42 REGINA	1948/ 6979
				43 CALGARY	2351/ 7965
				50 VANCOUVER	3453/ 20937
				NOTE: THESE CODES ARE THE FIRST 2 DIGITS OF THE 6-DIGIT INSTITUTION IDENTIFIER	
356	SAM_PROV	1	0474	PROVINCE OF INSTITUTION - FROM SAMPLE FILE	
				T NORTHWEST TERRITORIES	54/ 171
				Y YUKON	72/ 121
				0 NEWFOUNDLAND	1861/ 5372
				1 PEI	698/ 987
				2 NOVA SCOTIA	2240/ 9133
				3 NEW BRUNSWICK	1802/ 5435
				4 QUEBEC	6712/ 82442
				5 ONTARIO	8953/ 86132
				6 MANITOBA	2394/ 8417
				7 SASKATCHEWAN	1948/ 6979
				8 ALBERTA	5286/ 19056
				9 BRITISH COLUMBIA	3381/ 20816
				NOTE: THIS CODE IS THE 3RD DIGIT OF THE 6-DIGIT INSTITUTION IDENTIFIER	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
357	INST_TYP	1	0475	TYPE OF INSTITUTION - FROM SAMPLE FILE	
				1 UNIVERSITY	16091/ 119966
				2 CAREER/TECHNICAL	11482/ 84817
				3 TRADE/VOCATIONAL	7560/ 38747
				4 TRADE/VOCATIONAL	264/ 1551
				NOTE: THIS CODE IS THE 4TH DIGIT OF THE 6-DIGIT INSTITUTION IDENTIFIER	
358	INSTID	2	0476-0477	INSTITUTION IDENTIFIER - FROM SAMPLE FILE	
				NOTE: THESE CODES ARE THE LAST 2 DIGITS OF THE 6-DIGIT INSTITUTION IDENTIFIER	
359	CERT_LVL	1	0478	LEVEL OF CERTIFICATION - FROM SAMPLE FILE	
				1 BACHELORS DEGREE	8647/ 83624
				2 UNDERGRADUATE CERTIFICATE OR DIPLOMA	1059/ 15501
				3 MASTERS DEGREE	4553/ 12996
				4 GRADUATE CERTIFICATE OR DIPLOMA	333/ 776
				5 DOCTORATE	929/ 1287
				6 FIRST PROFESSIONAL	570/ 5742
				7 COLL/DIPL/CERT. AND HOSP. SCHOOL OF NURSING	11486/ 84817
				8 TRADE DIPLOMA/CERTIFICATION	7824/ 40298
				NOTE: AS SUPPLIED BY INSTITUTIONS. USED FOR "LINE A" OF LABEL AS READ TO RESPONDENTS. QUEBEC GRADUATES WITH CODE 7 (COLLEGE DIPLOMA/CERT.) INCLUDE THOSE GRADUATING FROM CEGEP'S WITH A "DEC GÉNÉRAL" OR "DEC PROFESSIONNEL", THE "DEC GÉNÉRAL" IS DESIGNED FOR UNIVERSITY ADMISSION, ALTHOUGH NOT ALL THOSE WHO OBTAIN A "DEC GÉNÉRAL" DO GO ON TO UNIVERSITY. THE "DEC PROFESSIONNEL" IS DESIGNED AS A FINAL QUALIFICATION, EQUIVALENT TO A COLLEGE DIPLOMA OR CERTIFICATE FROM COLLEGES OR TECHNICAL INSTITUTES IN ALL OTHER PROVINCES. GRADUATES WITH A "DEC GÉNÉRAL" CAN BE IDENTIFIED BY THE CCSIS FIELD OF STUDY CODE "10000" (ARTS AND SCIENCES - GENERAL) IN "SAH_FOS" (POSITIONS 489-493). IT SHOULD BE NOTED THAT THE QUEBEC COLLEGE SAMPLE IN THE 1984 NATIONAL GRADUATES SURVEY EXCLUDED GRADUATES WITH A "DEC GÉNÉRAL" QUALIFICATION.	
360	CERT_RCD	1	0479	RECODED LEVEL OF CERTIFICATION - FROM SAMPLE FILE	
				1 CODES 1, 2, AND 6 OF CERT_LVL	10276/ 104886
				2 CODES 3, AND 4 OF CERT_LVL	4886/ 13772
				3 CODE 5 OF CERT_LVL	929/ 1287
				4 CODE 7 OF CERT_LVL	11486/ 84817
				5 CODE 8 OF CERT_LVL	7824/ 40298

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD ACRONYM LEN POSITION QUESTION AND VARIABLE DESCRIPTIONS UNMTO/WEIGHTED

FIELD ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTO/WEIGHTED
361	MJ_FOS	2 0480-0481	MAJOR FIELD OF STUDY - FROM SAMPLE FILE	
			01 00000, 1XXXX, 2XXXX, 54XXX, 83XXX, 84XXX, BLANK	4240/ 52292
			02 4XXXX, 7XXXX, EXCLUDING 75XXX	5422/ 33515
			03 52XXX	3500/ 22128
			04 5523X	4009/ 32198
			05 552XX EXCLUDING 5523X	3654/ 24149
			06 5511X, 553XX, EXCLUDING 55310	3058/ 13649
			07 55310, 51XXX, 551XX, EXCLUDING 5511X	3592/ 22097
			08 6XXXX	3339/ 18293
			09 81XXX, 31000	3863/ 23427
			10 82XXX, 53XXX, 00000	724/ 3314

NOTE: CODE 3, 4, 5 IN "INST_TYP".
 THE ABOVE CODES APPLY TO TRADE-VOCATIONAL RECORDS.
 THE CODES ARE USIS OR CCSIS BASED, DEPENDING ON
 "INST_TYP" (POSITION 475). THIS VARIABLE DEFINES
 SAMPLING STRATA. A USER WHO DOES NOT WISH TO
 ANALYZE RESULTS ACCORDING TO THE FIELD OF STUDY
 GROUPINGS WE USED FOR SAMPLING CAN MAKE UP
 HIS/HER OWN GROUPINGS OF FIELDS OF STUDY
 FROM "SAM_FOS" (POSITIONS 489-493, Q.V.) OR
 "SAM_FOS" MODIFIED BY "Q6CODE1" POSITIONS 577-581
 AND MAYBE ALSO "Q6CODE2" POSITIONS 582-586.
 FOR UNIVERSITIES (CODE 1 IN INST_TYP)
 THE CODES ARE:
 01 0XXXX/BLANK
 02 1XXXX
 03 2XXXX, 3XXXX
 04 412XX, 427XX, 433XX
 05 4XXXX EXCLUDING 412XX, 427XX, 433XX
 06 5XXXX
 07 6XXXX
 08 7XXXX
 09 8XXXX
 FOR COMMUNITY COLLEGES (CODE 2 IN
 INST_TYP) THE CODES ARE:
 01 00000, 1XXXX, 2XXXX, 3XXXX, BLANK
 02 4XXXX
 03 51XXX, 54XXX, 551XX, 554XX, 555XX
 04 52XXX, 53XXX,
 05 552XX, 553XX
 06 6XXXX
 07 7XXXX
 08 81XXX, 83XXX, 84XXX, 9XXXX
 09 82XXX

FIELD ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTO/WEIGHTED
362	SEX	1 0482	SEX - FROM SAMPLE FILE	
			1 MALE	18234/ 115747
			2 FEMALE	16976/ 128440
			9 UNKNOWN	191/ 874

NOTE: A FEM INSTITUTIONS DID NOT REPORT THE GRADUATE'S
 SEX. WHERE POSSIBLE, MISSING SEX WAS IMPUTED
 FROM GIVEN NAMES.

363 FILLERS 6 0483-0488

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	60
					UNWTD/WEIGHTED	
364	SAM_FOS	5	0489-0493	FIELD OF STUDY CODE - FROM SAMPLE FILE		
				BLANK	293/	1931
				00000:91000	35108/	243131
				NOTE: THIS IS THE 5 DIGIT USSIS/CCSIS CODE OF THE RESPONDENT'S MAJOR FIELD OF STUDY FOR STUDIES COMPLETED IN 1986. THE CODES WERE TRANSLATED INTO TEXT FOR "LINE B" OF THE LABEL, AS READ TO RESPONDENTS IN Q5 (Q4 OF THE TRADE-VOCATIONAL QUESTIONNAIRE). RESPONDENTS WERE INVITED, IN Q5, TO CONFIRM THAT THE LABEL DESCRIPTION WAS CORRECT. CORRECTIONS MADE BY THE RESPONDENT IN Q6 HAVE BEEN CODED AND ARE GIVEN IN "Q6CODE1" POSITIONS 577-581 AND "Q6CODE2" POSITIONS 582-586. FOR A MORE ACCURATE FIELD OF STUDY CODE (IN THE SENSE OF GIVING PRIORITY TO RESPONDENT CORRECTIONS) "Q6CODE1" AND "Q6CODE2" CODES SHOULD BE USED WHEN THEY ARE GIVEN (AND ARE NOT CODED AS "UNCODEABLE" OR "UNKNOWN"), OTHERWISE USE "SAM_FOS".		
365	INST_LNG	1	0494	LANGUAGE OF INSTITUTION - FROM SAMPLE FILE		
				1 ENGLISH	26399/	157168
				2 FRENCH	6143/	69646
				3 BILINGUAL	2859/	18247
366	VISA	1	0495	VISA STATUS - FROM SAMPLE FILE		
				BLANK	10858/	89505
				1 YES	230/	940
				2 NO	24313/	154617
367	FILLER6A	10	0496-0505			
368	RCD_TYP	1	0506	RECORD TYPE		
				T TRADE-VOCATIONAL	7824/	40298
				U UNIVERSITY COLLEGE	27577/	204763
369	FILLER6B	10	0507-0516			
370	MAYSTYR	2	0517-0518	Q92 OR Q97 OR Q100 OR Q120. WHEN DID YOU BEGIN THAT JOB/THE JOB YOU HAD IN THE WEEK OF MAY 1 TO 7?		
				BLANK	5307/	40123
				30:88 YEAR	29381/	200247
				99 UNKNOWN (NOT STATED)	713/	4691
				NOTE: THE YR OF START OF THE JOB HELD IN THE WEEK OF MAY 1 TO 7, 1988. A COMBINATION OF THE RESPONSES TO QUESTIONS 92, 97, 100 AND 120; A GIVEN RESPONDENT ANSWERED ONE ONLY OF THESE QUESTIONS.		
371	MAYSTHO	2	0519-0520	Q92 OR Q97 OR Q100 OR Q120. WHEN DID YOU BEGIN THAT JOB/THE JOB YOU HAD IN THE WEEK OF MAY 1 TO 7?		
				BLANK	5308/	40126
				01:12 MONTH	29311/	199737
				99 UNKNOWN (NOT STATED)	782/	5199
				NOTE: THE MONTH OF START OF THE JOB HELD IN THE WEEK MAY 1 TO 7, 1988. A COMBINATION OF THE RESPONSES TO QUESTIONS 92, 97, 100 AND 120; A GIVEN RESPONDENT ANSWERED ONE ONLY OF THESE QUESTIONS.		

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
372	MAYSTFLG	1	0521	THE SOURCE-QUESTION FOR "MAYSTYR" AND "MAYSTMO".	
				BLANK	5307/ 40123
				1 Q. 92	3268/ 26018
				2 Q. 97	5239/ 39802
				3 Q. 100	4295/ 26701
				4 Q. 120	17292/ 112417
373	MAY_6MO	1	0522		
				BLANK	35137/ 243256
				1 JOB OF MAY 1-7/88-1st F-TIME JOB SEEM THE SAME	36/ 250
				2 TWO JOBS APPEAR SAME BUT MAY JOB WAS P-TIME	228/ 1555
				NOTE: THIS VARIABLE HAS BEEN CREATED WHERE RESPONSES CONCERNING DATES OF START AND END OF JOBS, NAMES OF EMPLOYERS AND KINDS OF JOB ACTIVITIES ARE SUCH THAT IT IS NOT CLEAR WHETHER RESPONDENTS ARE REFERRING TO TWO DIFFERENT JOBS	
374	DVNE	2	0523-0524		
				BLANK - NOT APPLICABLE	18453/ 124431
				00:43 NO. MOS NOT EMPLOY END REF-STUDY 85/6-MAY/88	16806/ 119738
				99 UNKNOWN	142/ 892
				NOTE: THE FIRST OF A SERIES OF VARIABLES DERIVED FROM DATES OF START AND END OF JOBS AS WELL AS TOTALS OF NUMBERS OF MONTHS REPORTED AS EMPLOYED, UNEmployed, STUDYING OR LAID-OFF. POSITIONS 523-532. THESE VARIABLES HAVE BEEN DERIVED FROM THE RESPONSES TO Q53,56,58,60 AND 62 WITH EDITING TO CONTROL FOR CONSISTENCY OF DATES OF END OF 1986 STUDIES, START AND END DATES OF JOBS REPORTED, AND LABOUR FORCE STATUS IN JANUARY 1987 AND OCTOBER 1987. DVNE IS BASED PRIMARILY ON THE RESPONSES TO Q53.	
375	DVU	2	0525-0526		
				BLANK - NOT APPLICABLE	18453/ 124431
				00:43 NO. MOS UNEMPLOY END REF-STUDY 85/6-MAY/88	16726/ 119056
				99 UNKNOWN	222/ 1574
				NOTE: DVU IS BASED PRIMARILY ON Q56, ALLOWING FOR JOB-WAITING TIME REPORTED IN Q60.	
376	DVS	2	0527-0528		
				BLANK - NOT APPLICABLE	18478/ 124553
				00:43 # MO STUDY F-TIME END REF-STDY 85/6-MAY/88	16534/ 117497
				99 UNKNOWN	389/ 3011
				NOTE: DVS HAS CALCULATED AS DVNE MINUS DVU.	
377	DVL	2	0529-0530		
				BLANK - NOT APPLICABLE	18470/ 124513
				00:43 NO. MOS "LAID-OFF" END REF-STUDY 85/6-MAY/88	16483/ 115882
				99 UNKNOWN	448/ 4667
378	DVO	2	0531-0532		
				BLANK - NOT APPLICABLE	18453/ 124431
				00:43 NO MOS OUT LAB-FORCE REF-STUDY 85/6-MAY/88	16756/ 119235
				99 UNKNOWN	192/ 1396

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
379	DVSNE	2	0533-0534	<p>BLANK - NOT APPLICABLE</p> <p>00:43 NO MOS NOT EMPLOY END STUDY & 1ST F-TIME JOB 33206/ 231569 99 UNKNOWN 2118/ 13038 77/ 454</p> <p>NOTE: FIELDS IN POSITIONS 533-542 HAVE BEEN DERIVED FROM THE RESPONSES TO Q110, Q113, Q115, Q117 AND Q119 WITH EDITING TO CONTROL FOR CONSISTENCY OF DATES OF END OF 1986 STUDIES, START AND END DATES OF JOBS REPORTED, LABOUR FORCE STATUS IN JAN. AND OCT. 1987 AND AMOUNTS IN THE DERIVED VARIABLE DVNE TO DVO. AS WELL, CHECKS WERE MADE TO VERIFY THAT THE FIRST FULL-TIME JOB LASTING SIX MONTH OR MORE AFTER GRADUATION, REPORTED IN Q102-Q105 WAS A DIFFERENT JOB FROM A FULL-TIME JOB HELD IN MAY 1988. NOTE THAT BY DEFINITION THE JOB REFERRED TO IN VARIABLES DVSNE AND DVSO IS ONE THE RESPONDENT NO LONGER HELD AS A FULL-TIME JOB BY MAY 1988, ALTHOUGH COULD HAVE CONTINUED TO HOLD THE JOB AS A PART-TIME JOB. DVSNE IS PRIMARILY BASED ON RESPONSES TO Q110.</p>	
380	DVSU	2	0535-0536	<p>BLANK - NOT APPLICABLE</p> <p>00:43 NO MOS UNEMPLOY END STUDY & 1ST F-TIME JOB 33213/ 231602 99 UNKNOWN 2055/ 12630 133/ 829</p> <p>NOTE: DVSU IS PRIMARILY BASED ON Q113 ALLOWING FOR JOB WAITING TIME REPORTED IN Q177.</p>	
381	DVSS	2	0537-0538	<p>BLANK - NOT APPLICABLE</p> <p>00:43 NO MOS STUDY F-TIME & 1ST F-TIME JOB 33209/ 231592 99 UNKNOWN 2001/ 12176 191/ 1293</p> <p>NOTE: DVSS IS BASED MAINLY ON Q115 AND Q119.</p>	
382	DVSL	2	0539-0540	<p>BLANK - NOT APPLICABLE</p> <p>00:43 NO MOS "LAID-OFF" & 1ST F-TIME JOB OF 6MOS 33206/ 231569 99 UNKNOWN 1814/ 11076 381/ 2416</p> <p>NOTE: DVSL IS BASED MAINLY ON Q117</p>	
383	DVSO	2	0541-0542	<p>BLANK - NOT APPLICABLE</p> <p>00:43 NO MOS OUT LAB-FORCE & 1ST F-TIME JOB 6MOS 33206/ 231569 99 UNKNOWN 2094/ 12907 101/ 585</p> <p>NOTE: DVSO HAS CALCULATED AS DVSNE MINUS DVSU</p>	
384	FILLER7	1	0543		

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTO/WEIGHTED
385	RELNGS	1	0544	THE DEGREE OF RELATIONSHIP BETWEEN STUDIES AND THE MAY 1988 JOB (ACCORDING TO 1984 NGS DEFINITIONS)	
				0 NOT APPLICABLE	4382/ 32333
				1 DIRECTLY RELATED	17259/ 105681
				2 PARTLY RELATED	8173/ 57943
				3 NOT RELATED	5134/ 46136
				9 NOT DETERMINABLE	453/ 2968
				NOTE: "RELNGS" AND "RELFOG" GIVE THE DEGREE OF RELATIONSHIP BETWEEN STUDIES COMPLETED IN 1986 AND THE REQUIREMENTS OF THE MAY 1988 JOB AS PERCEIVED BY RESPONDENTS. THEY HAVE BEEN DEVELOPED FROM THE RESPONSES TO Q77, Q78 AND Q85. "RELNGS" USED THE ALGORITHM DEVELOPED FOR THE SAME VARIABLE IN THE 1984 NATIONAL GRADUATES SURVEY. "RELFOG" USED THE ALGORITHM DEVELOPED FOR THE SAME VARIABLE (CALLED "DV20") IN THE 1987 FOLLOW UP GRADUATES (FOG) SURVEY (IN WHICH RESPONDENTS TO THE 1984 NGS WERE REINTERVIEWED). THE FOG QUESTIONS ON WHICH THE VARIABLE WAS BASED WERE NOT EXACTLY THE SAME AS THE NGS QUESTIONS; HOWEVER THE QUESTIONS IN THE SURVEY OF 1986 GRADUATES PERMITTED THE DERIVATION OF BOTH VARIABLES.	
386	RELFOG	1	0545	THE DEGREE OF RELATIONSHIP BETWEEN STUDIES AND THE MAY 1988 JOB (ACCORDING TO THE DEFINITIONS USED IN THE 1987 "FOLLOW-UP OF GRADUATES" SURVEY)	
				1 NOT APPLICABLE	4382/ 32333
				2 DIRECTLY RELATED	16846/ 102954
				3 PARTLY RELATED	8467/ 59928
				4 NOT RELATED	5132/ 46129
				9 NOT DETERMINABLE	574/ 3718
				NOTE: SEE "RELNGS" FOR FURTHER DETAILS.	
387	EDBEFOR	2	0546-0547	THE HIGHEST EDUCATION LEVEL ATTAINED BEFORE ENROLLING IN THE PROGRAM GRADUATED FROM IN 1985/6.	
				BLANK NOT APPLICABLE	7824/ 40298
				00 NOT APPLICABLE	0/ 0
				01 BELOW COLLEGE DIPLOMA	17366/ 137998
				05 COLLEGE DIPLOMA OR CERTIFICATE	2405/ 30623
				07 UNDERGRADUATE DIPLOMA OR CERTIFICATE	264/ 2915
				08 BACHELOR'S OR FIRST PROFESSIONAL DEGREE	6080/ 27951
				10 GRADUATE DIPLOMA OR CERTIFICATE	192/ 823
				11 MASTER'S DEGREE	1007/ 2740
				12 DOCTORATE	52/ 219
				99 UNKNOWN (NOT STATED)	211/ 1495
				NOTE: A RECODING OF RESPONSES TO Q18A. SEE "HLOS1", TWO FIELDS BELOW FOR MORE DETAIL.	
				THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS.	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNNTD/WEIGHTED
391	HLOS2	2	0554-0555	THE HIGHEST LEVEL OF SCHOOLING OBTAINED BY MAY 1988 OR ANTICIPATED AT A FUTURE DATE.	
				01 TRADE-VOCATIONAL DIPLOMA OR CERTIFICATE	5149/ 26236
				02 MORE THAN ONE TRADE-VOCATIONAL DIPL./ CERT.	810/ 3865
				03 SOME COLLEGE STUDIES	315/ 1815
				04 SOME UNIVERSITY STUDIES	278/ 1266
				05 COLLEGE DIPLOMA OR CERTIFICATE	8613/ 49991
				06 MORE THAN ONE COLLEGE DIPLOMA OR CERT.	1639/ 11374
				07 UNDERGRADUATE DIPLOMA OR CERTIFICATE	1066/ 12152
				08 BACHELOR'S OR FIRST PROFESSIONAL DEGREE	7888/ 85311
				09 MORE THAN ONE B.A.'S OR 1ST PROF DEGREE	2035/ 18902
				10 GRADUATE DIPLOMA OR CERTIFICATE	753/ 6018
				11 MASTER'S DEGREE	5105/ 23843
				12 DOCTORATE	1750/ 4288
				NOTE: A COMBINATION OF CODES IN "HLOS1" AND "EDAFTER", WHICHEVER IS HIGHER.	
392	JOBED	2	0556-0557	THE EDUCATION REQUIREMENTS OF THE MAY 1988 JOB (RECODED)	
				00 NOT APPLICABLE	5867/ 41898
				01 BELOW TRADE-VOCATIONAL DIP./CERT.	2878/ 15091
				02 TRADE-VOCATIONAL DIP./CERT.	2253/ 11106
				03 SOME COLLEGE STUDIES	73/ 390
				04 SOME UNIVERSITY STUDIES	6542/ 54951
				05 COLLEGE DIPLOMA OR CERTIFICATE	6528/ 45657
				07 UNDERGRADUATE DIPLOMA OR CERTIFICATE	466/ 4336
				08 BACHELOR'S OR FIRST PROFESSIONAL DEGREE	6654/ 51530
				11 MASTER'S DEGREE OR GRADUATE DIPL./CERT.	1902/ 7314
				12 DOCTORATE	562/ 948
				99 UNKNOWN (NOT STATED)	1676/ 11839
				NOTE: FROM RESPONSES TO Q81. "JOBED" HAS SIMPLY A RECODING OF RESPONSES TO Q81 AS A STEP IN THE DERIVATION OF "JOBQL1" AND "JOBQL2".	
393	JOBQL1	1	0558	THE EDUCATION REQUIREMENTS OF THE MAY 1988 JOB COMPARED TO THE HIGHEST LEVEL OF EDUCATION OF THE GRADUATE AT THE DATE OF REFERENCE-GRADUATION IN 1985/6	
				0 NOT APPLICABLE	5867/ 41898
				1 GRAD. HAS MORE EDUCATION THAN REQUIRED IN JOB	13159/ 90816
				2 GRAD. HAS SAME EDUCATION AS REQUIRED IN JOB	13829/ 92663
				3 GRAD. HAS LESS EDUCATION THAN REQUIRED IN JOB	870/ 7844
				9 NOT DETERMINABLE	1676/ 11839
				NOTE: DERIVED FROM "JOBED" AND "HLOS1". "JOBQL1" COMPARED THE RESPONDENT'S "HLOS1" LEVEL OF EDUCATION BY 1986 WITH THE EDUCATION REQUIREMENTS OF THE MAY 1988 JOB AS GIVEN "JOBED".	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED	
396	MIG	1	0562	TYPE OF MIGRATION TO TAKE STUDIES GRADUATED FROM IN 1985/6		
				0 NOT DEFINABLE	190/	1196
				1 NON-MIGRANT	29813/	218247
				2 MIG. BEFORE GRAD RETURN PROV ORIGIN AFTER GRAD	77/	277
				3 MIG. BEFORE GRAD NOT RETURN TO PROV OF ORIGIN	1617/	8741
				4 MIG. AFTER GRAD NOT BEFORE	2420/	10906
				5 MIG BEFORE GRAD & AFTER NOT RETURN PROV ORIGIN	1284/	5695

NOTE: DERIVED FROM PROVINCE OF RESIDENCE BEFORE ENROLLING, PROVINCE OF INSTITUTION, AND PROVINCE WHERE THE RESPONDENT WAS AT TIME OF MAY 1988 INTERVIEW. "MIG" WAS DERIVED FROM "PRRES" AND THE RESPONSES TO Q170 TO ACCCOUNT FOR ALL THE COMBINATIONS OF:
 1-THE PROVINCE THE RESPONDENT MAINLY LIVED IN BEFORE STARTING THE STUDIES COMPLETED IN 1986;
 2-THE PROVINCE OF THE INSTITUTION THE RESPONDENT ATTENDED; AND
 3-THE PROVINCE THE RESPONDENT WAS IN JUNE 1988, AT THE TIME OF INTERVIEW.

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
397	LFSTAT1	1	0563	LABOUR FORCE STATUS IN THE LAST WEEK OF JANUARY 1987	
				1 EMPLOYED	27330/ 183520
				2 UNEMPLOYED	3608/ 21464
				3 OUT OF THE LABOUR FORCE	4040/ 36855
				9 NOT DETERMINED (UNKNOWN)	423/ 3223

NOTE: DERIVED FROM Q32-Q40.

THE CONCEPTS ARE AS CLOSE AS POSSIBLE TO LABOUR FORCE SURVEY (LFS) DEFINITIONS, TAKING INTO ACCOUNT THAT NOT ALL THE RELEVANT LFS QUESTIONS WERE INCLUDED IN Q32 TO Q40.

THE LFS DEFINITION OF "UNEMPLOYED" IS SLIGHTLY MORE REFINED THAN IS POSSIBLE FROM THE SURVEY OF 1986 GRADUATES. FOR THE LFS AN UNEMPLOYED PERSON (OTHER THAN THOSE ON TEMPORARY LAYOFF) MUST HAVE ACTIVELY SOUGHT WORK IN THE FOUR WEEKS ENDING WITH THE REFERENCE WEEK. (THOSE ON TEMPORARY LAYOFF NEED NOT HAVE SOUGHT WORK IN THE PAST FOUR WEEKS, PROVIDED THEY EXPECT TO RETURN TO THE JOB FROM WHICH THEY WERE LAID OFF). AN UNEMPLOYED PERSON MUST ALSO BE AVAILABLE FOR WORK, UNLESS ILL OR OCCUPIED WITH PERSONAL OR FAMILY RESPONSIBILITIES OR UNLESS ALREADY HAS A JOB. AS WELL, A PERSON WHO HAS A JOB TO START WITHIN FOUR WEEKS FROM THE REFERENCE WEEK AND IS AVAILABLE FOR WORK IS CONSIDERED UNEMPLOYED WHETHER OR NOT THEY HAVE SOUGHT WORK IN THE PAST FOUR WEEKS.

NOTE ALSO THAT A FULL-TIME STUDENT LOOKING FOR A PART-TIME JOB (AND AVAILABLE FOR WORK IN THE REFERENCE WEEK) IS CLASSED AS UNEMPLOYED WHEREAS A FULL-TIME STUDENT LOOKING FOR FULL-TIME WORK IS CLASSED AS OUT OF THE LABOUR FORCE. IF THE FULL-TIME STUDENT HAPPENS TO HAVE A JOB, FULL-TIME OR PART-TIME, THEY ARE CLASSED AS EMPLOYED. FOR THE SURVEY OF 1986 GRADUATE, THE LFS QUESTIONS WERE SHORTENED BY NOT ASKING ABOUT JOB SEARCH ACTIVITIES, SINCE WE FELT THAT WE COULD ASSUME THAT THOSE LOOKING FOR A JOB WERE ACTIVELY LOOKING. SIMILARLY, WE DID NOT ASK ABOUT AVAILABILITY FOR WORK, ASSUMING THAT THOSE LOOKING FOR WORK WERE AVAILABLE, AND WERE NOT ILL, OCCUPIED WITH PERSONAL OR FAMILY MATTERS OR DID NOT ALREADY HAVE A JOB. AS WELL, WE DID NOT ASK WHEN A FUTURE-START JOB WOULD START, SINCE ANALYSIS OF LFS DATA INDICATES THAT ALMOST ALL FUTURE-START JOBS REPORTED IN RESPONSES TO SIMILAR QUESTIONS IN THE LFS ARE DUE TO START WITHIN FOUR WEEKS FROM THE REFERENCE WEEK.

FOR MORE DETAILS ON THE LFS LABOUR FORCE STATUS DEFINITIONS, SEE PAGES D3 AND D4 OF ANY RECENT ISSUE OF "THE LABOUR FORCE" (STATISTICS CANADA CAT. #71-001).

398	LFSTAT2	1	0564	LABOUR FORCE STATUS IN THE LAST WEEK OF OCTOBER 1987	
				1 EMPLOYED	29217/ 195775
				2 UNEMPLOYED	2423/ 15396
				3 OUT OF THE LABOUR FORCE	3468/ 31622
				9 NOT DETERMINED (UNKNOWN)	293/ 2268

NOTE: DERIVED FROM Q41-Q49.

SEE "LFSTAT1" FOR DETAILS OF DIFFERENCES BETWEEN THE LABOUR FORCE SURVEY LABOUR FORCE STATUS QUESTIONING AND THE QUESTIONS OF THE SURVEY OF 1986 GRADUATES.

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/HEIGHTED
399	LFSTAT3	1	0565	LABOUR FORCE STATUS IN THE WEEK OF MAY 1-7, 1988	
				1 EMPLOYED	29677/ 202482
				2 UNEMPLOYED	3633/ 26495
				3 OUT OF THE LABOUR FORCE	1867/ 14696
				9 NOT DETERMINED (UNKNOWN)	224/ 1388
				NOTE: DERIVED FROM Q63-Q69. SEE 'LFSTAT1' FOR DETAILS OF DIFFERENCES BETWEEN THE LABOUR FORCE SURVEY LABOUR FORCE STATUS QUESTIONING AND THE QUESTIONS OF THE SURVEY OF 1986 GRADUATES. QUESTIONS ON STUDENT STATUS FOR THIS WEEK WERE OMITTED. WE HAVE ASSUMED THAT THOSE LOOKING FOR WORK ("YES" IN Q69A) AND THOSE WITH A FUTURE-START JOB ("YES" IN Q68A) WERE AVAILABLE FOR WORK AND WERE NOT FULL-TIME STUDENTS LOOKING FOR FULL-TIME WORK. FOR THE LFS, THE LATTER GROUP IS CLASSIFIED AS OUT OF THE LABOUR FORCE.	
400	CHILD	2	0566-0567	NUMBER OF DEPENDENT CHILDREN	
				00:10	34974/ 242275
				99 (NOT STATED, UNKNOWN)	427/ 2787
				NOTE: DERIVED FROM Q160B	
401	GRADAGE	2	0568-0569	RESPONDENT AGE (IN YEARS) AT GRADUATION IN 1985/6	
				15:90	34580/ 239093
				99 UNKNOWN	821/ 5969
				NOTE: DERIVED FROM Q8 AND Q154	
402	AGEMAY88	2	0570-0571	RESPONDENT AGE (IN YEARS) IN MAY 1988	
				15:85	35337/ 244819
				99 UNKNOWN	64/ 242
				NOTE: DERIVED FROM Q154	
403	COOPFLG	1	0572	Q10 WAS IT A CO-OP PROGRAM? MODIFIED IN EDITS	
				BLANK (NO CHANGE MADE TO RESPONSE TO Q10)	34665/ 240009
				1 NO CO-OP PROG NOT INSTIT 85/6 FIELD OF STUDY	736/ 5052
				NOTE: CORRECTION MADE FROM LIST OF CO-OP PROGRAMS AVAILABLE IN 1985/6, PUBLISHED IN THE DIRECTORY AND YEARBOOK OF THE CANADIAN ASSOCIATION FOR CO-OPERATIVE EDUCATION. THIS FIELD IS FILLER IN THE TRADE-VOCATIONAL FILE.	
404	FSA	3	0573-0575	FORWARD SORTATION AREA - FIRST THREE CHARACTERS OF THE POSTCODE OF THE RESPONDENT'S HOME ADDRESS IN MAY 1988	
				NOTE: THE VALUES ARE:ANA (ALPHA-NO-ALPHA COMB. OF 1ST THREE CHARACTERS) AND BLANK. POSTCODE AS SUPPLIED BY RESPONDENTS, UNEDITED	
405	FILLER8	1	0576		

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD ACRONYM LEN POSITION QUESTION AND VARIABLE DESCRIPTIONS UNMTO/WEIGHTED

406 Q6CODE1 5 0577-0581 Q6 WHAT WAS YOUR MAJOR FIELD OF STUDY OR SPECIALIZATION FOR YOUR PROGRAM IN 1986? (WHEN LABEL LINE B INCORRECT) (FIRST FIELD OF STUDY MENTIONED)

	BLANK (NOT APPLICABLE)	25080/	172362
00000:91000	VALID USIS/CCSIS CODES	9442/	70435
92000	CCSIS "UNKNOWN"	16/	70
99999	USIS/CCSIS "UNKNOWN"	263/	2195

NOTE: UNIVERSITY STUDENT INFORMATION SYSTEM (USIS) "SPEMAJ" CODES WERE USED FOR UNIVERSITY GRADUATES (CODE "1" IN THE VARIABLE "INST_TYP" POSITION 475) AND COMMUNITY COLLEGE STUDENT INFORMATION SYSTEM (CCSIS) CODES FOR COLLEGE AND TRADE-VOCATIONAL GRADUATES (CODES "2" TO "5" IN THE VARIABLE "INST_TYP") FOR Q6CODE1 AND Q6CODE2. INSTITUTION-PROVIDED FIELD OF STUDY DATA WERE CODED ACCORDING TO THE UNIVERSITY STUDENT INFORMATION SYSTEM (USIS) OR COMMUNITY COLLEGE STUDENT INFORMATION SYSTEM (CCSIS) "SPEMAJ" CODING SYSTEM DEVELOPED BY THE EDUCATION, CULTURE AND TOURISM DIVISION OF STATISTICS CANADA. THESE CODES ARE GIVEN IN "SAM_FOS" POSITIONS 489-493. THE CODES WERE THEN TRANSLATED INTO STANDARDIZED TEXT FOR "LINE B" OF THE LABEL, AND IN Q5 AND Q6 THE RESPONDENTS WERE INVITED TO CORRECT THE TEXT DESCRIPTION. THE FIRST (OR ONLY) FIELD OF STUDY MENTIONED IN Q6 HAS BEEN USIS OR CCSIS CODED IN "Q6CODE1", AND ANY SECOND FIELD OF STUDY IS IN "Q6CODE2". IF THE VARIABLE IS EMPTY, USE "SAM_FOS".

THIS FIELD IS DERIVED FROM Q5 ON THE TRADE-VOCATIONAL RECORDS.

407 Q6CODE2 5 0582-0586 Q6 WHAT WAS YOUR MAJOR FIELD OF STUDY OR SPECIALIZATION FOR YOUR PROGRAM IN 1986? (WHEN LABEL LINE B INCORRECT) (SECOND FIELD OF STUDY MENTIONED)

	BLANK (NOT APPLICABLE)	35015/	241484
00000:84900	VALID USIS/CCSIS CODES	241/	2381
99999	USIS/CCSIS "UNKNOWN"	146/	1197

NOTE: UNIVERSITY STUDENT INFORMATION SYSTEM (USIS) "SPEMAJ" CODES WERE USED FOR UNIVERSITY GRADUATES (CODE "1" IN THE VARIABLE "INST_TYP") AND COMMUNITY COLLEGE STUDENT INFORMATION SYSTEM (CCSIS) CODES FOR COLLEGE AND TRADE-VOCATIONAL GRADUATES (CODES "2" TO "5" IN THE VARIABLE "INST_TYP"). SEE "Q6CODE1" FOR FURTHER DETAILS.

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
408	Q7BCODE1	5	0587-0591	Q7B WHAT WAS YOUR OTHER MAJOR FIELD OF STUDY OR SPECIALIZATION? (FIRST FIELD OF STUDY MENTIONED)	
				BLANK (NOT APPLICABLE)	31374/ 215986
				00000:04900 VALID USIS/CCSIS CODES	3803/ 27407
				99999 USIS/CCSIS "UNKNOWN"	224/ 1669
				NOTE: UNIVERSITY STUDENT INFORMATION SYSTEM (USIS) "SPEMAJ" CODES WERE USED FOR UNIVERSITY GRADUATES (CODE "1" IN THE VARIABLE "INST_TYP", POSITION 475) AND COMMUNITY COLLEGE STUDENT INFORMATION SYSTEM (CCSIS) CODES FOR COLLEGE AND TRADE-VOCATIONAL GRADUATES (CODES "2" TO "5" IN THE VARIABLE "INST_TYP").	
				THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS.	
409	Q7BCODE2	5	0592-0596	Q7B WHAT WAS YOUR OTHER MAJOR FIELD OF STUDY OR SPECIALIZATION? (SECOND FIELD OF STUDY MENTIONED)	
				BLANK (NOT APPLICABLE)	35081/ 242630
				00000:84900 VALID USIS/CCSIS CODES	193/ 1382
				99999 USIS/CCSIS "UNKNOWN"	127/ 1049
				NOTE: UNIVERSITY STUDENT INFORMATION SYSTEM (USIS) "SPEMAJ" CODES WERE USED FOR UNIVERSITY GRADUATES (CODE "1" IN THE VARIABLE INST_TYP) AND COMMUNITY COLLEGE STUDENT INFORMATION SYSTEM (CCSIS) CODES FOR COLLEGE GRADUATES (CODE "2" IN THE VARIABLE INST_TYP) A FEW RECORDS HAVE CODE 88888, MEANING "NO SECOND FIELD OF STUDY MENTIONED". THIS CODE IS NOT IN THE USIS OR CCSIS CODE LISTS. IT SHOULD BE INTERPRETED AS IF THE RESPONSE WERE BLANK.	
				THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS.	
410	Q18BCD1	5	0597-0601	Q18B WHAT WAS YOUR MAJOR FIELD OF STUDY OR SPECIALIZATION? (FIRST FIELD OF STUDY MENTIONED)	
				BLANK (NOT APPLICABLE)	20448/ 150585
				00000:84900 VALID USIS/CCSIS CODES	14552/ 91933
				92000 CCSIS "UNKNOWN"	70/ 676
				99999 USIS/CCSIS "UNKNOWN"	331/ 1867
				NOTE: UNIVERSITY STUDENT INFORMATION SYSTEM (USIS) "SPEMAJ" CODES WERE USED FOR UNIVERSITY-LEVEL QUALIFICATIONS (CODES 08 THROUGH 14 OF Q182) AND COMMUNITY COLLEGE STUDENT INFORMATION SYSTEM (CCSIS) CODES FOR COLLEGE AND TRADE-VOCATIONAL LEVEL QUALIFICATIONS (CODES 04 TO 07 OF Q18A). EITHER USIS OR CCSIS CODES WERE USED FOR THE RESPONSES TO CODE 15, WHICHEVER FIT BEST WITH THE DESCRIPTIVE TEXT FOR THE QUALIFICATION. SEE NEXT FIELD.	
				THIS FIELD IS DERIVED FROM Q16B ON THE TRADE-VOCATIONAL RECORDS.	
411	Q18BCBK1	1	0602	CODEBOOK USED IN FIRST CODES FROM Q18B	
				BLANK (NOT APPLICABLE)	20589/ 151541
				C CCSIS CODES	4611/ 40881
				U USIS CODES	10201/ 52640

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FIELD ACRONYM LEN POSITION QUESTION AND VARIABLE DESCRIPTIONS UNMTD/WEIGHTED

412	Q18BCD2	5	0603-0607	Q18B WHAT WAS YOUR MAJOR FIELD OF STUDY OR SPECIALIZATION? (SECOND FIELD OF STUDY MENTIONED)	
				BLANK (NOT APPLICABLE)	26473/ 193844
				00000:84900 VALID USIS/CCSIS CODES	908/ 5655
				99999 USIS/CCSIS "UNKNOWN"	8020/ 45562

NOTE: UNIVERSITY STUDENT INFORMATION SYSTEM (USIS) "SPEMAJ" CODES WERE USED FOR UNIVERSITY-LEVEL QUALIFICATIONS (CODES 08 THROUGH 14 OF Q18A) AND COMMUNITY COLLEGE STUDENT INFORMATION SYSTEM (CCSIS) CODES FOR COLLEGE AND TRADE-VOCATIONAL LEVEL QUALIFICATIONS (CODES 04 TO 07 OF Q18A) EITHER USIS OR CCSIS CODES WERE USED FOR THE RESPONSES TO CODE 15, WHICHEVER FIT BEST WITH THE DESCRIPTIVE TEXT FOR THE QUALIFICATION. SEE NEXT FIELD. A FEW RECORDS HAVE CODE 88888, MEANING "NO SECOND FIELD OF STUDY MENTIONED". THIS CODE IS NOT IN THE USIS OR CCSIS CODE LISTS. IT SHOULD BE INTERPRETED AS IF THE RESPONSE WERE BLANK.

THIS FIELD IS DERIVED FROM Q16B ON THE TRADE-VOCATIONAL RECORDS.

413	Q18BCBK2	1	0608	CODEBOOK USED IN SECOND CODES FROM Q18B.	
				BLANK (NOT APPLICABLE)	32758/ 230146
				C CCSIS CODES	1295/ 8151
				U USIS CODES	1348/ 6764

414	Q2324SIC	3	0609-0611	Q23 FOR WHOM DID YOU WORK? Q24 WHAT KIND OF BUSINESS WAS THIS?	
				BLANK - NOT APPLICABLE	23578/ 173253
				000 NOT STATED AND UNCODABLE	41/ 304
				011:023 A-AGRICULTURAL & RELATED	222/ 1082
				031:033 B-FISHING & TRAPPING	20/ 86
				041:051 C-LOGGING & FORESTRY	91/ 411
				061:092 D-MINING, QUARRYING & OIL WELL	286/ 1218
				101:399 E-MANUFACTURING	1477/ 9675
				401:449 F-CONSTRUCTION	618/ 3153
				451:479 G-TRANSPORTATION & STORAGE	268/ 1587
				481:499 H-COMMUNICATION & OTH UTILITY	295/ 1895
				501:599 I-WHOLESALE TRADE	375/ 2092
				601:692 J-RETAIL TRADE	1292/ 7568
				701:749 K-FINANCE & INSURANCE	314/ 2271
				751:761 L-REAL ESTATE OP. & INS. AGENT	107/ 833
				771:779 M-BUSINESS SERVICES	612/ 3676
				811:841 N-GOVERNMENT SERVICES	1100/ 6368
				851:859 O-EDUCATION SERVICE	2042/ 11540
				861:869 P-HEALTH & SOCIAL SERVICE	1401/ 9489
				911:922 Q-ACCOMM., FOOD & BEV. SERV.	749/ 5083
				961:999 R OTHER SERVICE	513/ 2478

NOTE: STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES ARE GIVEN FOR THE COMBINED RESPONSES TO Q23 AND Q24.

THIS FIELD IS DERIVED FROM Q21 AND Q22 ON THE TRADE-VOCATIONAL RECORDS.

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD ACRONYM LEN POSITION QUESTION AND VARIABLE DESCRIPTIONS UNWTD/WEIGHTED

415 Q2526SOC 4 0612-0615 Q25 WHAT KIND OF WORK DID YOU DO?
Q26 WHAT WERE YOUR MOST IMPORTANT DUTIES?

QUESTION AND VARIABLE DESCRIPTIONS	UNWTD	WEIGHTED
BLANK - NOT APPLICABLE	23584/	173324
0000 NOT STATED & UNCODABLE	49/	235
1111:1179 11-MANAGER,ADMIN. & RELATED	1394/	8871
2111:2189 21-NAT. SCI,ENGINEER & MATH	849/	4136
2311:2399 23-SOC. SCIENCE & REL. FIELD	495/	2505
2511:2519 25-RELIGION	26/	162
2711:2799 27-TEACHING & RELATED	1628/	9806
3111:3169 31-MEDICINE & HEALTH	935/	6474
3311:3379 33-ART,LITERARY,REC. & REL.	218/	1680
4110:4199 41-CLERICAL & RELATED	1634/	11736
5130:5199 51-SALES	677/	4148
6111:6199 61-SERVICE	1114/	7256
7113:7199 71-FARM,HORTICUL,ANIMAL HUSB	243/	1129
7311:7319 73-FISHING,TRAPPING,RELATED	17/	73
7510:7519 75-FORESTRY & LOGGING	85/	398
7710:7719 77-MIN.,QUARRY,INCL OIL,GAS	98/	466
8110:8299 81-PROCESSING	358/	1920
8310:8399 83-MACHINING & RELATED	203/	1058
8510:8599 85-PROD FAB.,ASSEMBL & REPAIR	661/	3795
8710:8799 87-CONSTRUCTION TRADES	562/	2683
9110:9199 91-TRANSPORT EQUIP. OPERAT.	272/	1477
9310:9319 93-MATERIAL HAND. & RELATED	200/	1132
9510:9599 95-OTHER CRAFTS & EQUIP. OP.	97/	587
9910:9919 99-OCC. NOT ELSEWHERE CLASS.	2/	8

NOTE: STANDARD OCCUPATIONAL CLASSIFICATION (SOC) CODES ARE GIVEN FOR THE COMBINED RESPONSES TO Q25 AND Q26.

THIS FIELD IS DERIVED FROM Q23 AND Q24 ON THE TRADE-VOCATIONAL RECORDS.

416 Q7273SIC 3 0616-0618 Q72 FOR WHOM DID YOU WORK?
Q73 WHAT KIND OF BUSINESS WAS THIS?

QUESTION AND VARIABLE DESCRIPTIONS	UNWTD	WEIGHTED
BLANK - NOT APPLICABLE	4667/	34076
000 NOT STATED AND UNCODABLE	80/	410
011:023 A-AGRICULTURAL & RELATED	508/	2321
031:033 B-FISHING & TRAPPING	93/	374
041:051 C-LOGGING & FORESTRY	172/	919
061:092 D-MINING, QUARRYING & OIL WELL	485/	2165
101:399 E-MANUFACTURING	3571/	25698
401:449 F-CONSTRUCTION...	1221/	7356
461:479 G-TRANSPORTATION & STORAGE	596/	3893
481:499 H-COMMUNICATION & OTH UTILITY	1011/	7008
501:599 I-WHOLESALE TRADE	1101/	7309
601:692 J-RETAIL TRADE	2029/	15419
701:749 K-FINANCE & INSURANCE	1007/	9460
751:761 L-REAL ESTATE OP. & INS. AGENT	333/	2640
771:779 M-BUSINESS SERVICES	2964/	21913
811:841 N-GOVERNMENT SERVICES	3159/	19443
851:859 O-EDUCATION SERVICE	4968/	32618
861:869 P-HEALTH & SOCIAL SERVICE	5365/	35121
911:922 Q-ACCOMM., FOOD & BEV. SERV.	799/	6743
961:999 R OTHER SERVICE	1272/	10176

NOTE: STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES ARE GIVEN FOR THE COMBINED RESPONSES TO Q72 AND Q73.

THIS FIELD IS DERIVED FROM Q71 AND Q72 ON THE TRADE-VOCATIONAL RECORDS.

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FIELD ACRONYM LEN POSITION QUESTION AND VARIABLE DESCRIPTIONS UNMTD/WEIGHTED

417 Q7475SOC 4 0619-0622 Q74 WHAT KIND OF WORK DID YOU DO?
Q75 WHAT WERE YOUR MOST IMPORTANT DUTIES?

BLANK - NOT APPLICABLE		4674/	34191
0000 NOT STATED & UNCODABLE		86/	497
1111:1179	11-MANAGER, ADMIN. & RELATED	4211/	31379
2111:2189	21-NAT. SCI, ENGINEER & MATH	3897/	22671
2311:2399	23-SOC. SCIENCE & REL. FIELD	1766/	12459
2511:2519	25-RELIGION	101/	674
2711:2799	27-TEACHING & RELATED	4033/	28346
3111:3169	31-MEDICINE & HEALTH	4008/	25097
3311:3379	33-ART, LITERARY, REC. & REL.	652/	6397
4110:4199	41-CLERICAL & RELATED	3648/	29845
5130:5199	51-SALES	1325/	11897
6111:6199	61-SERVICE	1753/	12900
7113:7199	71-FARM, HORTICUL, ANIMAL HUSB	449/	2341
7311:7319	73-FISHING, TRAPPING, RELATED	71/	286
7510:7519	75-FORESTRY & LOGGING	149/	730
7710:7719	77-MIN. QUARRY, INCL OIL, GAS	79/	377
8110:8299	81-PROCESSING	495/	2805
8310:8399	83-MACHINING & RELATED	448/	2455
8510:8599	85-PROD FAB., ASSEML & REPAIR	1758/	8988
8710:8799	87-CONSTRUCTION TRADES	1005/	5676
9110:9199	91-TRANSPORT EQUIP. OPERAT.	329/	1944
9310:9319	93-MATERIAL HAND. & RELATED	180/	1428
9510:9599	95-OTHER CRAFTS & EQUIP. OP.	281/	1641
9910:9919	99-OCC. NOT ELSEWHERE CLASS.	3/	36

NOTE: STANDARD OCCUPATIONAL CLASSIFICATION (SOC) CODES ARE GIVEN FOR THE COMBINED RESPONSES TO Q74 AND Q75.

THIS FIELD IS DERIVED FROM Q73 AND Q74 ON THE TRADE-VOCATIONAL RECORDS.

418 Q82BCD1 5 0623-0627 Q82B WHAT FIELD(S) OF STUDY? (FIRST MENTION)

BLANK (NOT APPLICABLE)		22086/	158045
00000:91000	VALID USIS/CCSIS CODES	12928/	84640
92000	CCSIS "UNKNOWN"	79/	397
99999	NOT STATED	308/	1979

NOTE: UNIVERSITY STUDENT INFORMATION SYSTEM (USIS) "SPEMAJ" CODES WERE USED FOR UNIVERSITY-LEVEL QUALIFICATIONS (CODES 12 THROUGH 20 OF Q81) AND COMMUNITY COLLEGE STUDENT INFORMATION SYSTEM (CCSIS) CODES FOR COLLEGE AND TRADE-VOCATIONAL LEVEL QUALIFICATIONS (CODES 07 TO 11 OF Q81).

EITHER USIS OR CCSIS CODES WERE USED FOR THE RESPONSES TO CODE 21, WHICHEVER FIT BEST WITH THE DESCRIPTIVE TEXT FOR THE QUALIFICATION. SEE NEXT FIELD.

THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS.

419 Q82CBK1 1 0628 CODEBOOK USED IN CODES FROM Q82B (FIRST MENTION)

BLANK (NOT APPLICABLE)		22265/	159365
C	CCSIS CODES	5468/	35092
U	USIS CODES	7668/	50604

NOTE: USIS OR CCSIS CODES FOR THE FIRST FIELD OF STUDY MENTIONED IN Q82B.

THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS.

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD ACRONYM LEN POSITION QUESTION AND VARIABLE DESCRIPTIONS UNMTD/WEIGHTED

420 Q82BC02 5 0629-0633 Q82B WHAT FIELD(S) OF STUDY? (SECOND MENTION)

BLANK (NOT APPLICABLE)	34376/	238719
00000:84900 VALID USIS/CCSIS CODES	775/	4704
99999 USIS/CCSIS "UNKNOWN"	250/	1639

NOTE: UNIVERSITY STUDENT INFORMATION SYSTEM (USIS) "SPEMAJ" CODES WERE USED FOR UNIVERSITY-LEVEL QUALIFICATIONS (CODES 12 THROUGH 20 OF Q81) AND COMMUNITY COLLEGE STUDENT INFORMATION SYSTEM (CCSIS) CODES FOR COLLEGE AND TRADE-VOCATIONAL LEVEL QUALIFICATIONS (CODES 07 TO 11 OF Q81). EITHER USIS OR CCSIS CODES WERE USED FOR THE RESPONSES TO CODE 21, WHICHEVER FIT BEST WITH THE DESCRIPTIVE TEXT FOR THE QUALIFICATION. SEE NEXT FIELD. A FEM RECORDS HAVE CODE 88888, MEANING "NO SECOND FIELD OF STUDY MENTIONED". THIS CODE IS NOT IN THE USIS OR CCSIS CODE LISTS. IT SHOULD BE INTERPRETED AS IF THE RESPONSE WERE BLANK.

THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS.

421 Q82BCBK2 1 0634 CODEBOOK USED IN CODES FROM Q82B (SECOND MENTION)

BLANK (NOT APPLICABLE)	34628/	240362
C CCSIS CODES	273/	1687
U USIS CODES	500/	3013

NOTE: USIS OR CCSIS CODES FOR THE SECOND FIELD OF STUDY MENTIONED IN Q82B.

THIS FIELD IS FILLER ON THE TRADE-VOCATIONAL RECORDS.

422 Q102103 3 0635-0637 Q102 FOR WHOM DID YOU WORK?
Q103 WHAT KIND OF BUSINESS WAS THIS?

BLANK - NOT APPLICABLE	29363/	207832
000 NOT STATED AND UNCODABLE	29/	115
011:023 A-AGRICULTURAL & RELATED	135/	546
031:033 B-FISHING & TRAPPING	12/	68
041:051 C-LOGGING & FORESTRY	50/	190
061:092 D-MINING, QUARRYING & OIL WELL	82/	404
101:399 E-MANUFACTURING	619/	4132
401:449 F-CONSTRUCTION	390/	1985
451:479 G-TRANSPORTATION & STORAGE	110/	713
481:499 H-COMMUNICATION & OTH UTILITY	121/	734
501:599 I-WHOLESALE TRADE	232/	1503
601:692 J-RETAIL TRADE	583/	3644
701:749 K-FINANCE & INSURANCE	149/	1128
751:761 L-REAL ESTATE OP. & INS. AGENT	61/	527
771:779 M-BUSINESS SERVICES	590/	4103
811:841 N-GOVERNMENT SERVICES	615/	3440
851:859 O-EDUCATION SERVICE	797/	4329
861:869 P-HEALTH & SOCIAL SERVICE	869/	5264
911:922 Q-ACCOMM., FOOD & BEV. SERV.	289/	2245
961:999 R OTHER SERVICE	305/	2159

NOTE: STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES ARE GIVEN FOR THE COMBINED RESPONSES TO Q102 AND Q103.

THIS FIELD IS DERIVED FROM Q100 AND Q101 ON THE TRADE-VOCATIONAL RECORDS.

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD ACRONYM LEN POSITION QUESTION AND VARIABLE DESCRIPTIONS UNMTO/WEIGHTED

423	Q104105	4	0638-0641	Q104 WHAT KIND OF WORK DID YOU DO? Q105 WHAT WERE YOUR MOST IMPORTANT DUTIES?		
				BLANK - NOT APPLICABLE	29377/	207878
				0000 NOT STATED & UNCODABLE	19/	79
				1111:1179 11-MANAGER,ADMIN. & RELATED	729/	5003
				2111:2189 21-NAT. SCI,ENGINEER & MATH	654/	3587
				2311:2399 23-SOC. SCIENCE & REL. FIELD	315/	2269
				2511:2519 25-RELIGION	9/	57
				2711:2799 27-TEACHING & RELATED	646/	3618
				3111:3169 31-MEDICINE / HEALTH	605/	3336
				3311:3379 33-ART,LITERARY,REC. & REL.	164/	1482
				4110:4199 41-CLERICAL & RELATED	832/	5908
				5130:5199 51-SALES	319/	2317
				6111:6199 61-SERVICE	452/	3018
				7113:7199 71-FARM,HORTICUL,ANIMAL HUSB	127/	524
				7311:7319 73-FISHING,TRAPPING,RELATED	8/	29
				7510:7519 75-FORESTRY & LOGGING	43/	169
				7710:7719 77-MIN.,QUARRY,INCL OIL,GAS	18/	67
				8110:8299 81-PROCESSING	127/	665
				8310:8399 83-MACHINING & RELATED	107/	574
				8510:8599 85-PROD FAB.,ASSEHL & REPAIR	371/	1888
				8710:8799 87-CONSTRUCTION TRADES	312/	1536
				9110:9199 91-TRANSPORT EQUIP. OPERAT.	75/	434
				9310:9319 93-MATERIAL HAND. & RELATED	44/	310
				9510:9599 95-OTHER CRAFTS & EQUIP. OP.	47/	308
				9910:9919 99-OCC. NOT ELSEWHERE CLASS.	1/	4

NOTE: STANDARD OCCUPATIONAL CLASSIFICATION (SOC) CODES ARE GIVEN FOR THE COMBINED RESPONSES TO Q104 AND Q105.

THIS FIELD IS DERIVED FROM Q102 AND Q103 ON THE TRADE-VOCATIONAL RECORDS.

424	Q131CD1	5	0642-0646	Q131 WHAT FIELD OF STUDY OR SPECIALIZATION WOULD YOU HAVE CHOSEN? (FIRST MENTION)		
				BLANK (NOT APPLICABLE)	29848/	203757
				00000:91000 VALID USIS/CCSIS CODES	5179/	38716
				92000 CCSIS "UNKNOWN"	80/	512
				99999 USIS/CCSIS "UNKNOWN"	294/	2076

NOTE: THE CODEBOOK USED DEPENDED ON THE RESPONSES TO Q132. FOR CODE 1, USIS CODES WERE USED. AND FOR CODES 2 AND 3, CCSIS CODES. FOR CODES 4 AND 5 THE CODEBOOK JUDGED MOST APPROPRIATE WAS USED. SEE NEXT FIELD.

THIS FIELD IS DERIVED FROM Q121 ON THE TRADE-VOCATIONAL RECORDS.

425	Q131CBK1	1	0647	CODEBOOK USED IN CODES FROM Q131 (FIRST MENTION)		
				BLANK (NOT APPLICABLE AND UNKNOWN)	30053/	205146
				C CCSIS CODES	2047/	14733
				U USIS CODES	3301/	25183

NOTE: USIS OR CCSIS CODES USED TO CODE THE FIRST FIELD OF STUDY MENTIONED, ACCORDING TO RESPONSE TO Q132.

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
426	Q131CD2	5	0648-0652	Q131 WHAT FIELD OF STUDY OR SPECIALIZATION WOULD YOU HAVE CHOSEN? (SECOND MENTION)	
				BLANK NOT APPLICABLE	30848/ 209003
				00000:84900 VALID USIS/CCSIS CODES	314/ 2075
				99999 USIS/CCSIS "UNKNOWN"	4239/ 33984
				NOTE: A FEW RECORDS HAVE CODE 88888, MEANING "NO SECOND FIELD OF STUDY MENTIONED". THIS CODE IS NOT IN THE USIS OR CCSIS CODE LISTS. IT SHOULD BE INTERPRETED AS IF THE RESPONSE WERE BLANK.	
427	Q131CBK2	1	0653	CODEBOOK USED IN CODES FROM Q131 (SECOND MENTION)	
				BLANK (NOT APPLICABLE OR UNKNOWN)	35061/ 242837
				C CCSIS CODES	131/ 851
				U USIS CODES	209/ 1374
				NOTE: USIS OR CCSIS CODES USED TO CODE THE SECOND FIELD OF STUDY MENTIONED, ACCORDING TO RESPONSE TO Q132	
428	Q136ACD1	5	0654-0658	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE A FIRST MENTION)	
				BLANK (NOT APPLICABLE)	33781/ 235173
				10000:84900 VALID CCSIS "SPEHAJ" CODES	1057/ 6240
				92000 CCSIS "UNKNOWN"	35/ 196
				99999 CCSIS "UNKNOWN"	528/ 3453
				NOTE: UNIVERSITY STUDENT INFORMATION SYSTEM (USIS) "SPEHAJ" CODES WERE USED FOR UNIVERSITY-LEVEL QUALIFICATIONS (CODES 03 THROUGH 08 OF Q136A, WHICH CORRESPOND TO THE VARIABLES Q136C2 THROUGH Q136H2) AND COMMUNITY COLLEGE STUDENT INFORMATION SYSTEM (CCSIS) CODES FOR COLLEGE AND TRADE-VOCATIONAL LEVEL QUALIFICATIONS (CODES 01 AND 02 OF Q136A, WHICH CORRESPOND TO THE VARIABLES Q136A2 AND Q136B2). EITHER USIS OR CCSIS CODES WERE USED FOR THE RESPONSES TO CODES 09 (Q136I2) AND 10 (Q136J2), WHICHEVER WAS JUDGED TO BE MORE SUITABLE FOR THE QUALIFICATION.	
				SEE Q136ICD1, Q136ICD2, Q136IBK1, Q136IBK2, Q136JCD1, Q136JCD2, Q136JBK1 AND Q136JBK2.	
				THIS FIELD IS DERIVED FROM Q124 ON THE TRADE-VOCATIONAL RECORDS.	
429	Q136ACD2	5	0659-0663	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE A SECOND MENTION)	
				BLANK (NOT APPLICABLE)	34789/ 241011
				10000:84900 VALID CCSIS "SPEHAJ" CODES	48/ 308
				99999 CCSIS "UNKNOWN"	564/ 3749
				NOTE: ALTHOUGH THE QUESTION ASKED FOR A SINGLE FIELD OF STUDY, TWO WERE MENTIONED IN A FEW CASES. THE "-CD2" CODES ARE FOR SUCH SECOND MENTIONS.	
				Q136ACD2 THROUGH Q136JCD2. SEVERAL RECORDS HAVE CODE 88888, MEANING "NO SECOND FIELD OF STUDY MENTIONED". THIS CODE IS NOT IN THE USIS OR CCSIS CODES LISTS. IT SHOULD BE INTERPRETED AS IF THE RESPONSE WERE BLANK.	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
430	Q136BCD1	5	0664-0668	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE B FIRST MENTION)	
				BLANK (NOT APPLICABLE)	32550/ 225085
				10000:91000 VALID CCSIS "SPEHAJ" CODES	2278/ 16269
				92000 CCSIS "UNKNOMN"	46/ 259
				99999 CCSIS "UNKNOMN"	527/ 3448
				NOTE: SEE NOTE TO Q136ACD1	
431	Q136BCD2	5	0669-0673	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE B SECOND MENTION)	
				BLANK (NOT APPLICABLE)	34715/ 240413
				10000:84900 VALID CCSIS "SPEHAJ" CODES	120/ 878
				99999 CCSIS "UNKNOMN"	566/ 3771
				NOTE: SEE NOTE TO Q136ACD2	
432	Q136CCD1	5	0674-0678	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE C FIRST MENTION)	
				BLANK (NOT APPLICABLE)	33791/ 230223
				00000:83099 VALID USIS "SPEHAJ" CODES	1048/ 11023
				99999 USIS "UNKNOMN"	562/ 3815
				NOTE: SEE NOTE TO Q136ACD1	
433	Q136CCD2	5	0679-0683	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE C SECOND MENTION)	
				BLANK (NOT APPLICABLE)	34789/ 240897
				00000:83099 VALID USIS "SPEHAJ" CODES	42/ 331
				99999 USIS "UNKNOMN"	570/ 3833
				NOTE: SEE NOTE TO Q136ACD2	
434	Q136DCD1	5	0684-0688	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE D FIRST MENTION)	
				BLANK (NOT APPLICABLE)	32277/ 207395
				00000:83099 VALID USIS "SPEHAJ" CODES	2571/ 33886
				99999 USIS "UNKNOMN"	553/ 3780
				NOTE: SEE NOTE TO Q136ACD1	
435	Q136DCD2	5	0689-0693	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE D SECOND MENTION)	
				BLANK (NOT APPLICABLE)	34728/ 240266
				00000:83099 VALID USIS "SPEHAJ" CODES	108/ 978
				99999 USIS "UNKNOMN"	565/ 3817
				NOTE: SEE NOTE TO Q136ACD2	
436	Q136ECD1	5	0694-0698	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE E FIRST MENTION)	
				BLANK (NOT APPLICABLE)	34291/ 236045
				00000:83099 VALID USIS "SPEHAJ" CODES	571/ 5456
				99999 USIS "UNKNOMN"	539/ 3560
				NOTE: SEE NOTE TO Q136ACD1	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTO/WEIGHTED
437	Q136ECD2	5	0699-0703	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE E SECOND MENTION)	
				BLANK (NOT APPLICABLE)	34820/ 241092
				00000:83099 VALID USIS "SPEMAJ"CODES	21/ 236
				99999 USIS "UNKNOWN"	560/ 3733
				NOTE: SEE NOTE TO Q136ACD2	
438	Q136FCD1	5	0704-0708	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE F FIRST MENTION)	
				BLANK (NOT APPLICABLE)	33549/ 229323
				00000:83099 VALID USIS "SPEMAJ"CODES	1315/ 12207
				99999 USIS "UNKNOWN"	537/ 3532
				NOTE: SEE NOTE TO Q136ACD1	
439	Q136FCD2	5	0709-0713	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE F SECOND MENTION)	
				BLANK (NOT APPLICABLE)	34780/ 240755
				00000:83099 VALID USIS "SPEMAJ"CODES	59/ 547
				99999 USIS "UNKNOWN"	562/ 3760
				NOTE: SEE NOTE TO Q136ACD2	
440	Q136GCD1	5	0714-0718	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE G FIRST MENTION)	
				BLANK (NOT APPLICABLE)	34414/ 238179
				00000:83099 VALID USIS "SPEMAJ"CODES	456/ 3396
				99999 USIS "UNKNOWN"	531/ 3487
				NOTE: SEE NOTE TO Q136ACD1	
441	Q136GCD2	5	0719-0723	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE G SECOND MENTION)	
				BLANK (NOT APPLICABLE)	34833/ 241288
				00000:83099 VALID USIS "SPEMAJ"CODES	5/ 27
				99999 USIS "UNKNOWN"	563/ 3747
				NOTE: SEE NOTE TO Q136ACD2	
442	Q136HCD1	5	0724-0728	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE H FIRST MENTION)	
				BLANK (NOT APPLICABLE)	34080/ 238801
				00000:83099 VALID USIS "SPEMAJ"CODES	786/ 2796
				99999 USIS "UNKNOWN"	535/ 3464
				NOTE: SEE NOTE TO Q136ACD1	
443	Q136HCD2	5	0729-0733	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE H SECOND MENTION)	
				BLANK (NOT APPLICABLE)	34810/ 241255
				00000:83099 VALID USIS "SPEMAJ"CODES	29/ 69
				99999 USIS "UNKNOWN"	562/ 3737
				NOTE: SEE NOTE TO Q136ACD2	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	80
					UNMTD/WEIGHTED	
444	Q136ICD1	5	0734-0738	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE I FIRST MENTION)		
				BLANK (NOT APPLICABLE)	33770/	233672
				00000:84900 VALID USIS/CCSIS CODES	1045/	7483
				92000 CCSIS "UNKNOWN"	11/	44
				92999 CCSIS "UNKNOWN"	0/	0
				99999 USIS/CCSIS "UNKNOWN"	575/	3802
				NOTE: EITHER USIS OR CCSIS CODES WERE USED FOR THE RESPONSES TO CODES 09 AND 10 (LINES "I" AND "J"), WHICHEVER WAS JUDGED TO BE MORE SUITABLE FOR THE QUALIFICATION. SEE TWO FIELDS DOWN.		
				THIS FIELD IS DERIVED FROM Q124 ON THE TRADE-VOCATIONAL RECORDS.		
445	Q136ICD2	5	0739-0743	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE I SECOND MENTION)		
				BLANK (NOT APPLICABLE)	34815/	241179
				00000:84900 VALID USIS/CCSIS CODES	18/	90
				99999 USIS/CCSIS "UNKNOWN"	568/	3793
446	Q136IBK1	1	0744	CODEBOOK USED IN CODES FROM Q136ICD1 ("PROFESSIONAL ASSOCIATION"), FIRST MENTION		
				BLANK (NOT APPLICABLE)	34301/	237163
				C CCSIS CODES	256/	1802
				U USIS CODES	844/	6096
447	Q136IBK2	1	0745	CODEBOOK USED IN CODES FROM Q136ICD2 ("PROFESSIONAL ASSOCIATION"), SECOND MENTION		
				BLANK (NOT APPLICABLE)	35333/	244619
				C CCSIS CODES	28/	128
				U USIS CODES	40/	314
448	Q136JCD1	5	0746-0750	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE J FIRST MENTION)		
				BLANK (NOT APPLICABLE)	33652/	234643
				00000:84900 VALID USIS/CCSIS CODES	1075/	5976
				92000 CCSIS "UNKNOWN"	23/	154
				99999 USIS/CCSIS "UNKNOWN"	651/	4288
				NOTE: EITHER USIS OR CCSIS CODES WERE USED FOR THE RESPONSES TO CODES 09 AND 10 (LINES "I" AND "J"), WHICHEVER WAS JUDGED TO BE MORE SUITABLE FOR THE QUALIFICATION. SEE TWO FIELDS DOWN.		
				THIS FIELD IS DERIVED FROM Q124 ON THE TRADE-VOCATIONAL RECORDS.		
449	Q136JCD2	5	0751-0755	Q136B WHAT WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION? (LINE J SECOND MENTION)		
				BLANK (NOT APPLICABLE)	34644/	240104
				00000:84900 VALID USIS/CCSIS CODES	68/	322
				99999 USIS/CCSIS "UNKNOWN"	689/	4635
450	Q136JBK1	1	0756	CODEBOOK USED IN CODES FROM Q136JCD1 ("OTHER"), FIRST MENTION		
				BLANK (NOT APPLICABLE)	34300/	238894
				C CCSIS CODES	898/	4821
				U USIS CODES	203/	1347

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	81
					UNMTD/WEIGHTED	
451	Q136JBK2	1	0757	CODEBOOK USED IN CODES FROM Q136JCD2 ("OTHER"). SECOND MENTION		
				BLANK (NOT APPLICABLE)	35333/	244739
				C CCSIS CODES	58/	284
				U USIS CODES	10/	38
452	Q153CODE	5	0758-0762	Q153 WHAT TRADE WAS THIS?		
				BLANK (NOT APPLICABLE)	34049/	238162
				10000:84900 VALID CCSIS "SPEMAJ" CODES	1260/	6386
				92000 CCSIS "UNKNOMN"	21/	79
				92999 CCSIS "UNKNOMN"	0/	0
				99999 CCSIS "UNKNOMN"	71/	435
				NOTE: THIS FIELD IS DERIVED FROM Q128 ON THE TRADE-VOCATIONAL RECORDS.		
				??		
				? DATA FOR THE FOR THE FOLLOW-UP OF 1986 GRADUATES		
				? COMMENCES HERE		
				??		
453	DVRO	2	0763-0764	DERIVED REGIONAL OFFICE FOR FOLLOW_UP SURVEY		
				11 ST. JOHN'S	1726/	5047
				12 HALIFAX	4148/	13850
				13 MONTREAL	6876/	82810
				14 STURGEON FALLS	2359/	20165
				15 TORONTO	7317/	67302
				16 WINNIPEG	3268/	11836
				17 EDMONTON	6016/	22227
				18 VANCOUVER	3691/	21825
				SECTION A: LAST WEEK		
454	QA1	1	0765	QA1 - LAST WEEK, DID YOU WORK AT A JOB OR BUSINESS?		
				1 YES	29047/	198886
				2 NO	6354/	46176
455	QA2	1	0766	QA2 - LAST WEEK, DID YOU HAVE A JOB OR BUSINESS AT WHICH YOU DID NOT WORK?		
				BLANK (QUESTION NOT APPLICABLE)	29047/	198886
				1 YES	1633/	11041
				2 NO	4721/	35134
456	QA3	1	0767	QA3 - WERE YOU ABSENT FROM WORK BECAUSE OF A TEMPORARY LAYOFF?		
				BLANK (QUESTION NOT APPLICABLE)	33768/	234020
				1 YES	503/	2916
				2 NO	1130/	8125
457	QA4	1	0768	QA4 - LAST WEEK, DID YOU HAVE A JOB TO START AT A DEFINITE DATE IN THE FUTURE?		
				BLANK (QUESTION NOT APPLICABLE)	30680/	209927
				1 YES	546/	3815
				2 NO	4175/	31320

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE				PAGE	82
FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
458	QA5	1	0769	QA5 - WILL YOU USUALLY WORK 30 OR MORE HOURS PER WEEK?	
				BLANK (QUESTION NOT APPLICABLE)	34855/ 241247
				1 YES	504/ 3505
				2 NO	35/ 261
				3 DON'T KNOW	7/ 48
459	QA6	1	0770	QA6 - WHAT IS THE REASON YOU WILL USUALLY WORK LESS THAN 30 HOURS PER WEEK?	
				BLANK (QUESTION NOT APPLICABLE)	35366/ 244800
				1 FULL-TIME WORK IS UNDER 30 HOURS A WEEK	1/ 2
				2 DID NOT WANT FULL-TIME WORK	6/ 22
				3 OWN ILLNESS OR DISABILITY	1/ 4
				4 PERSONAL OR FAMILY RESPONSIBILITIES	7/ 55
				5 GOING TO SCHOOL	6/ 51
				6 COULD ONLY FIND PART-TIME WORK	13/ 95
				7 OTHER REASON (SPECIFY)	1/ 32
460	QA6FLG	1	0771	QA6FLG - SPECIFY OTHER REASON	
				BLANK (QUESTION NOT APPLICABLE)	35400/ 245029
				1 TEXT PRESENT	1/ 32
461	QA7	1	0772	QA7 - LAST WEEK, WERE YOU LOOKING FOR A JOB?	
				BLANK (QUESTION NOT APPLICABLE)	31226/ 213742
				1 YES	2075/ 14920
				2 NO	2100/ 16400
462	QA8	1	0773	QA8 - WERE YOU LOOKING FOR A FULL-TIME JOB?	
				BLANK (QUESTION NOT APPLICABLE)	33326/ 230141
				1 YES	1940/ 13913
				2 NO	132/ 993
				9 NOT STATED	3/ 14
463	QA9	1	0774	QA9 - WERE YOU LOOKING FOR A JOB AT WHICH YOU WOULD USUALLY WORK 30 OR MORE HOURS PER WEEK?	
				BLANK (QUESTION NOT APPLICABLE)	35266/ 244055
				1 YES	51/ 399
				2 NO	81/ 594
				9 NOT STATED	3/ 14
464	QA10	2	0775-0776	QA10 - WHAT WAS THE MAIN REASON YOU DID NOT LOOK FOR A JOB LAST WEEK?	
				BLANK (QUESTION NOT APPLICABLE)	33301/ 228662
				01 OWN ILLNESS OR DISABILITY	165/ 1011
				02 PERSONAL OR FAMILY RESPONSIBILITIES	621/ 4605
				03 GOING TO SCHOOL	968/ 8148
				04 NO LONGER INTERESTED IN FINDING A JOB	88/ 736
				05 WAITING FOR RECALL (TO FORMER JOB)	35/ 147
				06 HAS ALREADY FOUND A NEW JOB	12/ 149
				07 WAITING FOR REPLIES FROM EMPLOYER	16/ 186
				08 COULD NOT FIND THE KIND OF JOB WANTED	22/ 149
				09 DISCOURAGED WITH LOOKING	24/ 181
				10 NO REASON GIVEN	20/ 149
				11 OTHER REASON (SPECIFY)	121/ 876
				99 NOT STATED	8/ 62
				NOTE: 02 PERSONAL OR FAMILY RESPONSIBILITIES INCLUDES MATERNITY LEAVE/PREGNANCY & MOVED/RELOCATED	
465	QA10FLG	1	0777	QA10FLG - SPECIFY OTHER REASON	
				BLANK (QUESTION NOT APPLICABLE)	35272/ 244123
				1 TEXT PRESENT	121/ 876
				9 NOT STATED	8/ 62

FOLLOW-UP OF 1986 GRADUATES SECTION 12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	03
					UNMTD/WEIGHTED	
466	QA11	1	0778	QA11 - SINCE JANUARY 1988, DID YOU EVER HAVE A FULL-TIME JOB WHICH LASTED SIX MONTHS OR MORE? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO	31226/ 2435/ 1740/	213742 17229 14095
467	QA12	1	0779	QA12 - SINCE JANUARY 1988, DID YOU EVER HAVE A JOB AT WHICH YOU USUALLY WORKED 30 OR MORE HOURS PER WEEK AND WHICH LASTED SIX MONTHS OR MORE? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO	33661/ 95/ 1645/	230966 508 13587
SECTION B: JOB HELD IN MAY 1988						
468	QB1	1	0780	QB1 - INTERVIEWER CHECK ITEM BLANK (QUESTION NOT APPLICABLE) 1 EMPLOYER LISTED 2 OTHERWISE	4721/ 27522/ 3158/	35134 186866 23061
469	QB2	1	0781	QB2 - LAST WEEK, DID YOU HAVE A JOB WITH... (READ INFO ITEM 1.)...? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO	7879/ 15380/ 12142/	58195 99654 87212
470	QB3	1	0782	QB3 - HAVE YOU HELD A JOB WITH THAT EMPLOYER CONTINUOUSLY SINCE MAY 1988? INCLUDE TIME OFF FOR ILLNESS, (MATERNITY LEAVE), VACATIONS, LABOUR DISPUTES OR TEMPORARY LAYOFFS. BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO	20021/ 14810/ 570/	145407 96113 3541
471	QB4	1	0783	QB4 - DID YOU HAVE MORE THAN ONE JOB OR BUSINESS LAST WEEK? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	19531/ 1486/ 14359/ 25/	131248 11365 102268 100
472	QB5	1	0784	QB5 - DID YOU HAVE MORE THAN ONE JOB OR BUSINESS LAST WEEK? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO	20591/ 1245/ 13565/	148948 7863 88250
473	QB6	1	0785	QB6 - LAST WEEK, WAS YOUR MAIN JOB WITH... (READ INFO ITEM 1.)... BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO	34156/ 1055/ 190/	237198 6537 1326
474	QB7	1	0786	QB7 - INTERVIEWER CHECK ITEM BLANK (QUESTION NOT APPLICABLE) 1 OCCUPATION LISTED 2 OTHERWISE	20781/ 14611/ 9/	150274 94745 43

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
475	QB8SOC	4	0767-0790	STANDARD OCCUPATION CODE FOR QB8 & QB9	
				BLANK NOT APPLICABLE	35392/ 245019
				0000 NOT STATED	0/ 0
				1111:1179 11-MANAGER,ADMIN. & RELATED	4/ 13
				2111:2189 21-NAT. SCI,ENGINEER & MATH	0/ 0
				2311:2399 23-SOC. SCIENCE & REL. FIELO	1/ 4
				2511:2519 25-RELIGION	0/ 0
				2711:2799 27-TEACHING & RELATED	0/ 0
				3111:3169 31-MEDICINE & HEALTH	0/ 0
				3311:3379 33-ART,LITERARY,REC. & REL.	0/ 0
				4110:4199 41-CLERICAL & RELATED	1/ 9
				5130:5199 51-SALES	0/ 0
				6111:6199 61-SERVICE	1/ 5
				7113:7199 71-FARM,HORTICUL,ANIMAL HUSB	0/ 0
				7311:7319 73-FISHING,TRAPPING,RELATED	0/ 0
				7510:7519 75-FORESTRY & LOGGING	0/ 0
				7710:7719 77-MIN.,QUARRY,INCL OIL,GAS	0/ 0
				8110:8299 81-PROCESSING	2/ 13
				8310:8399 83-MACHINING & RELATED	0/ 0
				8510:8599 85-PROD FAB.,ASSEML & REPAIR	0/ 0
				8710:8799 87-CONSTRUCTION TRADES	0/ 0
				9110:9199 91-TRANSPORT EQUIP. OPERAT.	0/ 0
				9310:9319 93-MATERIAL HAND. & RELATED	0/ 0
				9510:9599 95-OTHER CRAFTS & EQUIP. OP.	0/ 0
476	QB10	1	0791	QB10 - IN MAY 1988, DID YOU DO THE SAME KIND OF WORK AND ACTIVITIES OR DUTIES?	
				BLANK (QUESTION NOT APPLICABLE)	35392/ 245019
				1 YES	8/ 33
				2 NO	1/ 9
477	QB11	1	0792	QB11 - IN MAY 1988 YOU WERE WORKING AS A...(READ INFO ITEM 2)...SINCE THEN, HAVE YOU CHANGED THE KIND OF WORK ACTIVITIES OR DUTIES YOU WERE DOING?	
				BLANK (QUESTION NOT APPLICABLE)	20790/ 150317
				1 YES	3803/ 25589
				2 NO	10754/ 68838
				3 INFO ITEM 2 INCORRECT	53/ 316
				9 NOT STATED	1/ 1
478	QB12	1	0793	QB12 - LAST WEEK, WERE YOU A PAID WORKER OR SELF-EMPLOYED?	
				BLANK (QUESTION NOT APPLICABLE)	24638/ 176189
				1 PAID WORKER	9938/ 63673
				2 SELF-EMPLOYED	811/ 5139
				3 OTHER	10/ 46
				9 NOT STATED	4/ 14
479	QB13	1	0794	QB13 - IS THIS A PERMANENT POSITION OR A TEMPORARY POSITION?	
				BLANK (QUESTION NOT APPLICABLE)	25449/ 181328
				1 PERMANENT	9483/ 60394
				2 TEMPORARY	461/ 3302
				9 NOT STATED	8/ 37

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	85
					UNMTD/WEIGHTED	
480	QB14SOC	4	0795-0798	STANDARD OCCUPATION CODE FOR QB14 & QB15		
				BLANK NOT APPLICABLE	31544/	219155
				0000 NOT STATED	41/	209
				1111:1179 11-MANAGER,ADMIN. & RELATED	1240/	9000
				2111:2189 21-NAT. SCI.ENGINEER & MATH	986/	2837
				2311:2399 23-SOC. SCIENCE & REL. FIELD	171/	1078
				2511:2519 25-RELIGION	5/	37
				2711:2799 27-TEACHING & RELATED	406/	2749
				3111:3169 31-MEDICINE & HEALTH	242/	1656
				3311:3379 33-ART,LITERARY,REC. & REL.	60/	496
				4110:4199 41-CLERICAL & RELATED	956/	3324
				5130:5199 51-SALES	143/	1067
				6111:6199 61-SERVICE	106/	746
				7113:7199 71-FARM,HORTICUL,ANIMAL HUSB	17/	75
				7311:7319 73-FISHING,TRAPPING,RELATED	6/	26
				7510:7519 75-FORESTRY & LOGGING	16/	66
				7710:7719 77-MIN.,QUARRY,INCL OIL,GAS	10/	35
				8110:8299 81-PROCESSING	49/	263
				8310:8399 83-MACHINING & RELATED	30/	195
				8510:8599 85-PROD FAB.,ASSEML & REPAIR	181/	1023
				8710:8799 87-CONSTRUCTION TRADES	91/	420
				9110:9199 91-TRANSPORT EQUIP. OPERAT.	39/	242
				9310:9319 93-MATERIAL HAND. & RELATED	18/	117
				9510:9599 95-OTHER CRAFTS & EQUIP. OP.	44/	245
481	QB16YR	2	0799-0800	QB16YR - WHEN DID YOU START WORKING AT THIS NEW JOB? (YEAR)		
				BLANK (QUESTION NOT APPLICABLE)	31543/	219146
				00 NOT STATED	54/	299
				88:91	3804/	25616
482	QB16MO	2	0801-0802	QB16MO - WHEN DID YOU START WORKING AT THIS NEW JOB? (MONTH)		
				BLANK (QUESTION NOT APPLICABLE)	31543/	219146
				00 NOT STATED	87/	452
				01:12	3771/	25464
483	QB17	1	0803	QB17 - WAS THE EDUCATIONAL PROGRAM YOU COMPLETED IN 1986 INTENDED TO PREPARE YOU FOR THIS JOB?		
				BLANK (QUESTION NOT APPLICABLE)	31543/	219146
				1 YES	2555/	16650
				2 NO	1276/	9084
				3 DON'T KNOW	17/	154
				9 NOT STATED	10/	28
484	QB18	1	0804	QB18 - LAST WEEK, WERE YOU A PAID WORKER OR SELF-EMPLOYED?		
				BLANK (QUESTION NOT APPLICABLE)	31543/	219146
				1 PAID WORKER	3777/	25370
				2 SELF-EMPLOYED	78/	535
				3 OTHER	1/	9
				9 NOT STATED	2/	3
485	QB19	1	0805	QB19 - IS THIS A PERMANENT POSITION OR A TEMPORARY POSITION?		
				BLANK (QUESTION NOT APPLICABLE)	31621/	219680
				1 PERMANENT	3848/	23972
				2 TEMPORARY	227/	1399
				9 NOT STATED	5/	10

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE				PAGE 86		
FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED	
486	QB20	2	0806-0807	QB20 - WHEN YOU WERE SELECTED FOR THAT JOB, WHAT LEVEL OF EDUCATION WAS NEEDED TO GET THE JOB?		
				BLANK (QUESTION NOT APPLICABLE)	31621/	219680
				01 DON'T KNOW	136/	1045
				02 NO QUALIFICATIONS SPECIFIED	340/	2468
				03 SOME HIGH SCHOOL	67/	490
				04 HIGH SCHOOL DIPLOMA/CERTIFICATE	429/	2884
				05 SOME POSTSECONDARY EDUCATION	100/	680
				06 SOME TRADE-VOCATIONAL	30/	134
				07 TRADE OR VOCATION CERTIFICATE/DIPLOMA	256/	1046
				08 SOME COLLEGE OR SIMILAR INSTITUTION	85/	542
				09 COLLEGE OR SIMILAR INST. DIPLOMA/CERTIFICATE	637/	4460
				10 SOME UNIVERSITY	27/	249
				11 U. DIPLOMA/CERTIFICATE BELOW BACHELOR	55/	493
				12 U. DEGREE, LEVEL NOT SPECIFIED	62/	483
				13 BACHELOR'S DEGREE	985/	7945
				14 U. DIPLOMA/CERTIFICATE LEVEL NOT SPECIFIED	16/	67
				15 U. DIPLOMA/CERTIFICATE ABOVE BACH. UNDER MAST.	30/	178
				16 MASTER'S DEGREE	335/	1210
				17 U. FIRST PROFESSIONAL DEGREE	41/	391
				18 DOCTORATE DEGREE (E.G. PH.D.)	71/	144
				19 OTHER (SPECIFY)	69/	440
				99 NOT STATED	9/	30
				NOTE: FIRST PROFESSIONAL DEGREES: DEGREE IN MEDICINE, DENTISTRY, VETERINARY MEDICINE, LAM. OPTOMETRY, THEOLOGY OR 1 YEAR B.ED. AFTER BACHELOR'S DEGREE		
487	QB20FLG	1	0808	QB20FLG - SPECIFY OTHER EDUCATION LEVEL		
				BLANK (QUESTION NOT APPLICABLE)	35323/	244590
				1 TEXT PRESENT	56/	352
				9 NOT STATED	22/	118
488	QB21	1	0809	QB21 - DID THE EMPLOYER SPECIFY THAT IT MUST BE IN A SPECIFIC FIELD OR FIELDS OF STUDY?		
				BLANK (QUESTION NOT APPLICABLE)	32593/	226567
				1 YES	2001/	12774
				2 NO	805/	5717
				9 NOT STATED	2/	3
489	QB21LEV1	1	0810	TYPE OF INSTITUTION DERIVED FROM QB20 (LEVEL OF EDUCATION) DETERMINES TYPE OF EDUCATION CODES TO APPLY TO QB21TXT1		
				BLANK NOT APPLICABLE	33534/	233093
				1 TRADE-VOCATIONAL (CSIS CODES)	202/	823
				2 COLLEGE (CSIS CODES)	528/	3600
				3 UNIVERSITY (USIS CODES)	1137/	7546
490	QB21ECD1	5	0811-0815	QB21 FIRST FIELD OF STUDY CODE ASSIGNED		
				BLANK NOT APPLICABLE	33398/	232284
				00000:84900 (USIS/CSIS CODES)	1841/	11855
				99997 CODER COULD NOT DETERMINE	26/	113
				99998 UNSUITABLE/UNDETERMINABLE	98/	609
				99999 NOT STATED	38/	199
491	QB21LEV2	1	0816	TYPE OF INSTITUTION DERIVED FROM QB20 (LEVEL OF EDUCATION) DETERMINES TYPE OF EDUCATION CODES TO APPLY TO QB21TXT2		
				BLANK NOT APPLICABLE	35141/	243475
				1 TRADE-VOCATIONAL (CSIS CODES)	20/	84
				2 COLLEGE (CSIS CODES)	54/	333
				3 UNIVERSITY (USIS CODES)	186/	1169

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	87
					UNNTD/WEIGHTED	
492	QB21ECD2	5	0817-0821	QB21 SECOND FIELD OF STUDY CODE ASSIGNED		
				BLANK NOT APPLICABLE	35086/	243153
				00000:84900 (USIS/CSIS CODES)	254/	1561
				99997 CODER COULD NOT DETERMINE	0/	26
				99998 UNSUITABLE/UNDETERMINABLE	17/	123
				99999 NOT STATED	38/	199
493	QB22	1	0822	QB22 - DID THE EMPLOYER SPECIFY THAT RELATED WORK EXPERIENCE WAS ESSENTIAL FOR THAT JOB?		
				BLANK (QUESTION NOT APPLICABLE)	31621/	219680
				1 YES	2402/	15048
				2 NO	1326/	9247
				3 DON'T KNOW	38/	222
				9 NOT STATED	14/	65
494	QB23	1	0823	QB23 - HAS THE LEVEL OF EDUCATION REQUIRED TO GET THIS JOB CHANGED SINCE YOU STARTED IT?		
				BLANK (QUESTION NOT APPLICABLE)	20781/	150274
				1 YES	1368/	9090
				2 NO	12861/	83115
				3 DON'T KNOW	390/	2579
				9 NOT STATED	1/	3
495	QB24	2	0824-0825	QB24 - WHAT LEVEL OF EDUCATION IS REQUIRED FOR THIS JOB NOW?		
				BLANK (QUESTION NOT APPLICABLE)	34032/	235968
				01 DON'T KNOW	49/	310
				02 NO QUALIFICATIONS SPECIFIED	13/	107
				03 SOME HIGH SCHOOL	13/	93
				04 HIGH SCHOOL DIPLOMA/CERTIFICATE	82/	449
				05 SOME POSTSECONDARY EDUCATION	31/	198
				06 SOME TRADE-VOCATIONAL	30/	191
				07 TRADE OR VOCATION CERTIFICATE/DIPLOMA	89/	388
				08 SOME COLLEGE OR SIMILAR INSTITUTION	46/	298
				09 COLLEGE OR SIMILAR INST. DIPLOMA/CERTIFICATE	199/	1445
				10 SOME UNIVERSITY	19/	140
				11 U. DIPLOMA/CERTIFICATE BELOW BACHELOR	38/	347
				12 U. DEGREE, LEVEL NOT SPECIFIED	29/	128
				13 BACHELOR'S DEGREE	352/	2996
				14 U. DIPLOMA/CERTIFICATE LEVEL NOT SPECIFIED	20/	169
				15 U. DIPLOMA/CERTIFICATE ABOVE BACH. UNDER MST.	39/	274
				16 MASTER'S DEGREE	136/	602
				17 U. FIRST PROFESSIONAL DEGREE	4/	18
				18 DOCTORATE DEGREE (E.G. PH.D.)	44/	86
				19 OTHER (SPECIFY)	124/	771
				99 NOT STATED	12/	82
				NOTE: FIRST PROFESSIONAL DEGREES: DEGREE IN MEDICINE, DENTISTRY, VETERINARY MEDICINE, LAW, OPTOMETRY, THEOLOGY OR 1 YEAR B.ED. AFTER BACHELOR'S DEGREE		
496	QB24FLG	1	0826	QB24FLG - SPECIFY OTHER EDUCATION LEVEL		
				BLANK (QUESTION NOT APPLICABLE)	35265/	244208
				1 TEXT PRESENT	124/	771
				9 NOT STATED	12/	82
497	QB25	1	0827	QB25 - IN THIS JOB, DID YOU USE ANY OF THE SKILLS ACQUIRED FROM THE EDUCATIONAL PROGRAM YOU COMPLETED IN 1986?		
				BLANK (QUESTION NOT APPLICABLE)	20781/	150274
				1 YES	13058/	82300
				2 NO	1541/	12370
				9 NOT STATED	21/	118

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
498	QB26	1	0828	QB26 - CONSIDERING ALL ASPECTS OF THE JOB YOU HAD LAST WEEK, HOW SATISFIED WERE YOU WITH THE JOB? WOULD YOU SAY THAT YOU WERE ...? BLANK (QUESTION NOT APPLICABLE) 1 VERY SATISFIED 2 SATISFIED 3 DISSATISFIED 4 VERY DISSATISFIED 5 DON'T KNOW, NO OPINION 9 NOT STATED	20781/ 150274 6705/ 41799 7159/ 47802 583/ 4053 135/ 902 24/ 132 14/ 101
499	QB27	1	0829	QB27 - CONSIDERING THE DUTIES AND RESPONSIBILITIES OF THAT JOB, HOW SATISFIED WERE YOU WITH THE MONEY YOU MADE? WOULD YOU SAY THAT YOU WERE ...? BLANK (QUESTION NOT APPLICABLE) 1 VERY SATISFIED 2 SATISFIED 3 DISSATISFIED 4 VERY DISSATISFIED 5 DON'T KNOW, NO OPINION 9 NOT STATED	20781/ 150274 3010/ 19135 8979/ 57993 2196/ 14784 392/ 2620 31/ 188 12/ 66
500	QB28	3	0830-0832	QB28 - WORKING YOUR USUAL HOURS, APPROXIMATELY WHAT WOULD BE YOUR GROSS ANNUAL EARNINGS AT THAT JOB? BLANK (QUESTION NOT APPLICABLE) 001:996 997 DON'T KNOW 998 REFUSED 999 NOT STATED	20781/ 150274 13507/ 87155 369/ 2266 716/ 5161 28/ 206
501	QB29	2	0833-0834	QB29 - HOW MANY HOURS A WEEK DID YOU USUALLY WORK AT THAT JOB? BLANK (QUESTION NOT APPLICABLE) 00 NOT STATED 01:99	20781/ 150274 16/ 84 14604/ 94704
502	QB30	1	0835	QB30 - WHAT IS THE REASON YOU USUALLY WORKED LESS THAN 30 HOURS PER WEEK? BLANK (QUESTION NOT APPLICABLE) 1 FULL-TIME IS LESS THAN 30 HOURS A WEEK 2 DID NOT WANT FULL-TIME WORK 3 OWN ILLNESS OR DISABILITY 4 PERSONAL OR FAMILY RESPONSIBILITIES 5 GOING TO SCHOOL 6 COULD ONLY FIND PART-TIME WORK 7 OTHER REASON (SPECIFY) 9 NOT STATED	34439/ 237930 162/ 1332 265/ 1950 13/ 103 159/ 1020 104/ 873 155/ 1228 71/ 391 33/ 234
				NOTE: 4 PERSONAL OR FAMILY RESPONSIBILITIES INCLUDES MATERNITY LEAVE/PREGNANCY	
503	QB30FLG	1	0836	QB30FLG - SPECIFY OTHER REASON BLANK (QUESTION NOT APPLICABLE) 1 TEXT PRESENT 9 NOT STATED	35297/ 244436 70/ 387 34/ 238
504	QB31	1	0837	QB31 - LAST WEEK, DID YOU HAVE A JOB TO START AT A DEFINITE DATE IN THE FUTURE? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	34866/ 241213 53/ 289 411/ 3031 71/ 528

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	89
					UNMTD/WEIGHTED	
505	QB32	1	0838	QB32 - WILL YOU USUALLY WORK 30 OR MORE HOURS PER WEEK AT THAT JOB?		
				BLANK (QUESTION NOT APPLICABLE)	35277/	244244
				1 YES	22/	106
				2 NO	28/	100
				3 DON'T KNOW	3/	17
				9 NOT STATED	71/	528
506	QB33	1	0839	QB33 - WHAT IS THE REASON YOU USUALLY WORKED LESS THAN 30 HOURS PER WEEK?		
				BLANK (QUESTION NOT APPLICABLE)	35302/	244367
				1 FULL-TIME IS LESS THAN 30 HOURS A WEEK	1/	9
				2 DID NOT WANT FULL-TIME WORK	0/	0
				3 OWN ILLNESS OR DISABILITY	1/	8
				4 PERSONAL OR FAMILY RESPONSIBILITIES	12/	60
				5 GOING TO SCHOOL	4/	19
				6 COULD ONLY FIND PART-TIME WORK	9/	57
				7 OTHER REASON (SPECIFY)	1/	23
				9 NOT STATED	71/	528
507	QB33FLG	1	0840	QB33FLG - SPECIFY OTHER REASON		
				BLANK (QUESTION NOT APPLICABLE)	35329/	244510
				1 TEXT PRESENT	1/	23
				9 NOT STATED	71/	528
508	QB34	1	0841	QB34 - LAST WEEK, WERE YOU LOOKING FOR A FULL-TIME JOB OR A JOB AT WHICH YOU WOULD USUALLY WORK 30 OR MORE HOURS PER WEEK?		
				BLANK (QUESTION NOT APPLICABLE)	34892/	241340
				1 YES	93/	749
				2 NO	340/	2427
				9 NOT STATED	76/	546
509	QB35	1	0842	QB35 - IN THE JOB YOU HELD LAST WEEK, DID YOU EVER WORK FULL-TIME FOR A PERIOD OF SIX MONTHS OR MORE SINCE JANUARY 1988? BY THIS WE MEAN DOING THE SAME KIND OF WORK FOR THE SAME EMPLOYER.		
				BLANK (QUESTION NOT APPLICABLE)	34601/	239263
				1 YES	321/	2162
				2 NO	445/	3397
				9 NOT STATED	34/	239
510	QB36	1	0843	QB36 - SINCE JANUARY 1988, DID YOU EVER WORK AT THAT JOB FOR 30 HOURS OR MORE PER WEEK FOR A PERIOD OF SIX MONTHS OR MORE?		
				BLANK (QUESTION NOT APPLICABLE)	34922/	241425
				1 YES	43/	389
				2 NO	402/	3008
				9 NOT STATED	34/	239
511	QB37	1	0844	QB37 - SINCE JANUARY 1988, DID YOU EVER HAVE A FULL-TIME JOB WHICH LASTED SIX MONTHS OR MORE?		
				BLANK (QUESTION NOT APPLICABLE)	34965/	241814
				1 YES	25/	223
				2 NO	377/	2785
				9 NOT STATED	34/	239

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	90
					UNMTD/WEIGHTED	
512	QB38	1	0845	QB38 - SINCE JANUARY 1988, DID YOU EVER HAVE A JOB AT WHICH YOU USUALLY WORKED 30 OR MORE HOURS PER WEEK AND WHICH LASTED SIX MONTHS OR MORE?		
				BLANK (QUESTION NOT APPLICABLE)	34990/	242037
				1 YES	3/	14
				2 NO	373/	2771
				9 NOT STATED	35/	240
513	QB40SIC	3	0846-0848	STANDARD INDUSTRIAL CODE FOR QB39 & QB40		
				BLANK NOT APPLICABLE	35338/	244585
				000 NOT STATED	35/	240
				011:023 A-AGRICULTURAL & RELATED	0/	0
				031:033 B-FISHING & TRAPPING	0/	0
				041:051 C-LOGGING & FORESTRY	0/	0
				061:092 D-MINING, QUARRYING & OIL WELL	0/	0
				101:399 E-MANUFACTURING	1/	5
				401:449 F-CONSTRUCTION	0/	0
				451:479 G-TRANSPORTATION & STORAGE	0/	0
				481:499 H-COMMUNICATION & OTH UTILITY	0/	0
				501:599 I-WHOLESALE TRADE	1/	5
				601:692 J-RETAIL TRADE	2/	9
				701:749 K-FINANCE & INSURANCE	0/	0
				751:761 L-REAL ESTATE OP. & INS. AGENT	1/	6
				771:779 M-BUSINESS SERVICES	3/	47
				811:841 N-GOVERNMENT SERVICES	2/	39
				851:859 O-EDUCATION SERVICE	5/	42
				861:869 P-HEALTH & SOCIAL SERVICE	9/	52
				911:922 Q-ACCOMH., FOOD & BEV. SERV.	2/	17
				961:999 R OTHER SERVICE	2/	17
514	QB41SOC	4	0849-0852	STANDARD OCCUPATION CODE FOR QB41 & QB42		
				BLANK NOT APPLICABLE	35338/	244585
				0000 NOT STATED	35/	240
				1111:1179 11-MANAGER, ADMIN. & RELATED	0/	0
				2111:2189 21-NAT. SCI, ENGINEER & MATH	1/	5
				2311:2399 23-SOC. SCIENCE & REL. FIELD	3/	48
				2511:2519 25-RELIGION	1/	7
				2711:2799 27-TEACHING & RELATED	6/	47
				3111:3169 31-MEDICINE & HEALTH	7/	37
				3311:3379 33-ART, LITERARY, REL. & REL.	0/	0
				4110:4199 41-CLERICAL & RELATED	5/	39
				5130:5199 51-SALES	3/	41
				6111:6199 61-SERVICE	1/	7
				7113:7199 71-FARM, HORTICUL, ANIMAL HUSB	0/	0
				7311:7319 73-FISHING, TRAPPING, RELATED	0/	0
				7510:7519 75-FORESTRY & LOGGING	0/	0
				7710:7719 77-MIN., QUARRY, INCL OIL, GAS	0/	0
				8110:8299 81-PROCESSING	0/	0
				8310:8399 83-MACHINING & RELATED	0/	0
				8510:8599 85-PROD FAB., ASSEHL & REPAIR	1/	5
				8710:8799 87-CONSTRUCTION TRADES	0/	0
				9110:9199 91-TRANSPORT EQUIP. OPERAT.	0/	0
				9310:9319 93-MATERIAL HAND. & RELATED	0/	0
				9510:9599 95-OTHER CRAFTS & EQUIP. OP.	0/	0
515	QB43YR	2	0853-0854	QB43YR - WHEN DID YOU BEGIN THAT JOB? (YEAR)		
				BLANK (QUESTION NOT APPLICABLE)	35338/	244585
				00 NOT STATED	37/	248
				60:91	26/	229
516	QB43MO	2	0855-0856	QB43MO - WHEN DID YOU BEGIN THAT JOB? (MONTH)		
				BLANK (QUESTION NOT APPLICABLE)	35338/	244585
				00 NOT STATED	37/	248
				01:12	26/	229

FOLLOW-UP OF 1986 GRADUATES SECTION RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	91
					UNMTD/WEIGHTED	
517	QB44YR	2	0857-0858	QB44YR - WHEN DID YOU START THAT JOB? (YEAR)		
				BLANK (QUESTION NOT APPLICABLE)	35338/	244585
				00 NOT STATED	35/	240
				88:91	28/	236
518	QB44MO	2	0859-0860	QB44MO - WHEN DID YOU END THAT JOB? (MONTH)		
				BLANK (QUESTION NOT APPLICABLE)	35338/	244585
				00 NOT STATED	35/	240
				01:12	28/	236
SECTION C: DESCRIPTION OF MAIN JOB						
519	QC1CHK	1	0861	QC1CHK - FOR WHOM DID (WILL) YOU WORK?		
				BLANK (SAME EMPLOYER CATEGORY NOT APPLICABLE)	35089/	242982
				1 SAME EMPLOYER AS IN INFO ITEM 1 (MAY88 EMPLOYER)	257/	1629
				9 NOT STATED	55/	450
520	QC2SIC	3	0862-0864	STANDARD INDUSTRIAL CODE FOR QC1 & QC2		
				BLANK NOT APPLICABLE	18795/	126107
				000 NOT STATED AND UNCODABLE	29/	189
				011:023 A-AGRICULTURAL & RELATED	211/	1104
				031:033 B-FISHING & TRAPPING	48/	170
				041:051 C-LOGGING & FORESTRY	106/	497
				061:092 D-MINING, QUARRYING & OIL WELL	258/	1163
				101:399 E-MANUFACTURING	1781/	13208
				401:449 F-CONSTRUCTION	690/	3683
				451:479 G-TRANSPORTATION & STORAGE	358/	2440
				481:499 H-COMMUNICATION & OTH UTILITY	562/	4164
				501:599 I-WHOLESALE TRADE	655/	4644
				601:692 J-RETAIL TRADE	992/	6813
				701:749 K-FINANCE & INSURANCE	582/	5691
				751:761 L-REAL ESTATE OP. & INS. AGENT	221/	1784
				771:779 M-BUSINESS SERVICES	1958/	14783
				811:841 N-GOVERNMENT SERVICES	1728/	12079
				851:859 O-EDUCATION SERVICE	2553/	18565
				861:869 P-HEALTH & SOCIAL SERVICE	2713/	18469
				911:922 Q-ACCOMM., FOOD & BEV. SERV.	416/	3440
				961:999 R OTHER SERVICE	747/	6068
521	QC3SOC	4	0865-0868	STANDARD OCCUPATION CODE FOR QC3 & QC4		
				BLANK NOT APPLICABLE	18795/	126107
				0000 NOT STATED AND UNCODABLE	27/	138
				1111:1179 11-MANAGER, ADMIN. & RELATED	2742/	22858
				2111:2189 21-NAT. SCI, ENGINEER & MATH	2146/	13358
				2311:2399 23-SOC. SCIENCE & REL. FIELD	1054/	8610
				2511:2519 25-RELIGION	41/	295
				2711:2799 27-TEACHING & RELATED	2104/	15913
				3111:3169 31-MEDICINE & HEALTH	1860/	12087
				3311:3379 33-ART, LITERARY, REC. & REL.	398/	3953
				4110:4199 41-CLERICAL & RELATED	1776/	14213
				5130:5199 51-SALES	890/	7586
				6111:6199 61-SERVICE	858/	5923
				7113:7199 71-FARM, HORTICUL, ANIMAL HUSB	176/	854
				7311:7319 73-FISHING, TRAPPING, RELATED	35/	124
				7510:7519 75-FORESTRY & LOGGING	59/	229
				7710:7719 77-MIN., QUARRY, INCL OIL, GAS	43/	156
				8110:8299 81-PROCESSING	221/	1161
				8310:8399 83-MACHINING & RELATED	219/	1265
				8510:8599 85-PROD FAB., ASSEMBL & REPAIR	977/	5083
				8710:8799 87-CONSTRUCTION TRADES	503/	2551
				9110:9199 91-TRANSPORT EQUIP. OPERAT.	234/	1323
				9310:9319 93-MATERIAL HAND. & RELATED	89/	528
				9510:9599 95-OTHER CRAFTS & EQUIP. OP.	154/	827

FOLLOW-UP OF 1986 GRADUATES SECTION 12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
522	QC5	3	0869-0871	QC5 - WORKING YOUR USUAL HOURS, APPROXIMATELY WHAT WOULD BE YOUR GROSS ANNUAL EARNINGS AT THAT JOB?	
				BLANK (QUESTION NOT APPLICABLE)	18795/ 126107
				000:996	14729/ 104844
				997 DON'T KNOW	1109/ 7920
				998 REFUSED	715/ 5826
				999 NOT STATED	53/ 364
523	QC6	1	0872	QC6 - WAS THE EDUCATIONAL PROGRAM YOU COMPLETED IN 1986 INTENDED TO PREPARE YOU FOR THIS JOB?	
				BLANK (QUESTION NOT APPLICABLE)	18795/ 126107
				1 YES	10462/ 68928
				2 NO	6096/ 49611
				3 DON'T KNOW	45/ 375
				9 NOT STATED	3/ 41
524	QC7	1	0873	QC7 - WERE YOU (WILL YOU BE) A PAID WORKER OR SELF-EMPLOYED?	
				BLANK (QUESTION NOT APPLICABLE)	18795/ 126107
				1 PAID WORKER	15178/ 108632
				2 SELF-EMPLOYED	1406/ 10179
				3 OTHER	22/ 144
				9 NOT STATED	0/ 0
525	QC8	1	0874	QC8 - IS THIS A PERMANENT POSITION OR A TEMPORARY POSITION?	
				BLANK (QUESTION NOT APPLICABLE)	20201/ 136286
				1 PERMANENT	12235/ 86593
				2 TEMPORARY	2959/ 22107
				9 NOT STATED	6/ 76
526	QC9	2	0875-0876	QC9 - WHEN YOU WERE SELECTED FOR THAT JOB, WHAT LEVEL OF EDUCATION WAS NEEDED TO GET THE JOB?	
				BLANK (QUESTION NOT APPLICABLE)	20201/ 136286
				01 DON'T KNOW	582/ 3982
				02 NO QUALIFICATIONS SPECIFIED	1918/ 14374
				03 SOME HIGH SCHOOL	317/ 2037
				04 HIGH SCHOOL DIPLOMA/CERTIFICATE	1587/ 10916
				05 SOME POSTSECONDARY EDUCATION	366/ 2073
				06 SOME TRADE-VOCATIONAL	181/ 823
				07 TRADE OR VOCATION CERTIFICATE/DIPLOMA	1199/ 5364
				08 SOME COLLEGE OR SIMILAR INSTITUTION	375/ 2481
				09 COLLEGE OR SIMILAR INST. DIPLOMA/CERTIFICATE	2579/ 19197
				10 SOME UNIVERSITY	110/ 819
				11 U. DIPLOMA/CERTIFICATE BELOW BACHELOR	171/ 1398
				12 U. DEGREE, LEVEL NOT SPECIFIED	176/ 1591
				13 BACHELOR'S DEGREE	3363/ 31306
				14 U. DIPLOMA/CERTIFICATE LEVEL NOT SPECIFIED	49/ 297
				15 U. DIPLOMA/CERTIFICATE ABOVE BACH. UNDER MAST.	105/ 849
				16 MASTER'S DEGREE	1053/ 5318
				17 U. FIRST PROFESSIONAL DEGREE	396/ 3155
				18 DOCTORATE DEGREE (E.G. PH.D.)	419/ 1085
				19 OTHER (SPECIFY)	246/ 1667
				99 NOT STATED	8/ 44
				NOTE: FIRST PROFESSIONAL DEGREES: DEGREE IN MEDICINE, DENTISTRY, VETERINARY MEDICINE, LAW, OPTOMETRY, THEOLOGY OR 1 YEAR B.ED. AFTER BACHELOR'S DEGREE	
527	QC9FLG	1	0877	QC9FLG - SPECIFY OTHER DEGREE LEVEL	
				BLANK (QUESTION NOT APPLICABLE)	35147/ 243350
				1 TEXT PRESENT	210/ 1392
				9 NOT STATED	44/ 319

FOLLOW-UP OF 1986 GRADUATES SECTION RELEASE FILE				PAGE	#1
FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
528	QC10	1	0878	QC10 - DID THE EMPLOYER SPECIFY THAT IT MUST BE IN A SPECIFIC FIELD OR FIELDS OF STUDY? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	24005/ 107500 7005/ 50217 2703/ 20800 08/ 380
529	QC10LEV1	1	0879	TYPE OF INSTITUTION DERIVED FROM QC9 (LEVEL OF EDUCATION) DETERMINES TYPE OF EDUCATION CODES TO APPLY TO QC10TXT1 BLANK NOT APPLICABLE 1 TRADE-VOCATIONAL (CSIS CODES) 2 COLLEGE (CSIS CODES) 3 UNIVERSITY (USIS CODES)	27870/ 191501 1000/ 0070 2150/ 15370 0377/ 33070
530	QC10ECD1	5	0880-0884	QC10 FIRST FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 00000:84900 (USIS/CSIS CODES) 99997 CODER COULD NOT DETERMINE 99998 UNSUITABLE/UNDETERMINABLE 99999 NOT STATED	27300/ 180000 7050/ 53037 77/ 083 371/ 2120 135/ 953
531	QC10LEV2	1	0885	TYPE OF INSTITUTION DERIVED FROM QC9 (LEVEL OF EDUCATION) DETERMINES TYPE OF EDUCATION CODES TO APPLY TO QC10TXT2 BLANK NOT APPLICABLE 1 TRADE-VOCATIONAL (CSIS CODES) 2 COLLEGE (CSIS CODES) 3 UNIVERSITY (USIS CODES)	34680/ 239722 00/ 320 141/ 1063 510/ 3956
532	QC10ECD2	5	0886-0890	QC10 SECOND FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 00000:84900 (USIS/CSIS CODES) 99997 CODER COULD NOT DETERMINE 99998 UNSUITABLE/UNDETERMINABLE 99999 NOT STATED	34509/ 238507 099/ 5153 22/ 180 30/ 223 135/ 953
533	QC11	1	0891	QC11 - DID THE EMPLOYER SPECIFY THAT RELATED WORK EXPERIENCE WAS ESSENTIAL FOR THAT JOB? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 3 DON'T KNOW 9 NOT STATED	20201/ 136280 9198/ 61875 5778/ 45443 210/ 1387 10/ 71
534	QC12	1	0892	QC12 - INTERVIEWER CHECK ITEM BLANK (QUESTION NOT APPLICABLE) 1 IF "YES" IN ITEM A4 2 OTHERWISE	18795/ 126107 500/ 3815 16060/ 115140
535	QC13	1	0893	QC13 - SINCE JANUARY 1988, DID YOU EVER HAVE A FULL-TIME JOB WHICH LASTED SIX MONTHS OR MORE? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	34855/ 241207 290/ 1709 200/ 2019 12/ 87

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
536	QC14	1	0896	QC14 - SINCE JANUARY 1988, DID YOU EVER HAVE A JOB AT WHICH YOU USUALLY WORKED 30 HOURS OR MORE PER WEEK AND WHICH LASTED SIX MONTHS OR MORE? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	35145/ 242955 10/ 40 234/ 1979 12/ 87
537	QC15	1	0895	QC15 - HAS THE LEVEL OF EDUCATION REQUIRED TO GET THIS JOB CHANGED SINCE YOU STARTED IT? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 3 DON'T KNOW 9 NOT STATED	19341/ 129922 1019/ 7256 14514/ 103711 495/ 3918 32/ 255
538	QC16	2	0896-0897	QC16 - WHAT LEVEL OF EDUCATION IS REQUIRED FOR THIS JOB NOW? BLANK (QUESTION NOT APPLICABLE) 01 DON'T KNOW 02 NO QUALIFICATIONS SPECIFIED 03 SOME HIGH SCHOOL 04 HIGH SCHOOL DIPLOMA/CERTIFICATE 05 SOME POSTSECONDARY EDUCATION 06 SOME TRADE-VOCATIONAL 07 TRADE OR VOCATION CERTIFICATE/DIPLOMA 08 SOME COLLEGE OR SIMILAR INSTITUTION 09 COLLEGE OR SIMILAR INST. DIPLOMA/CERTIFICATE 10 SOME UNIVERSITY 11 U. DIPLOMA/CERTIFICATE BELOW BACHELOR 12 U. DEGREE, LEVEL NOT SPECIFIED 13 BACHELOR'S DEGREE 14 U. DIPLOMA/CERTIFICATE LEVEL NOT SPECIFIED 15 U. DIPLOMA/CERTIFICATE ABOVE BACH. UNDER MST. 16 MASTER'S DEGREE 17 U. FIRST PROFESSIONAL DEGREE 18 DOCTORATE DEGREE (E.G. PH.D.) 19 OTHER (SPECIFY) 99 NOT STATED NOTE: FIRST PROFESSIONAL DEGREES: DEGREE IN MEDICINE, DENTISTRY, VETERINARY MEDICINE, LAW, OPTOMETRY, THEOLOGY OR 1 YEAR B.ED. AFTER BACHELOR'S DEGREE	34350/ 237551 44/ 274 6/ 32 6/ 32 56/ 264 26/ 118 32/ 187 87/ 419 33/ 290 168/ 1379 17/ 139 36/ 253 24/ 101 159/ 1454 13/ 114 20/ 186 100/ 682 8/ 51 35/ 134 141/ 1084 40/ 317
539	QC16FLG	1	0898	QC16FLG - SPECIFY OTHER EDUCATION LEVEL BLANK (QUESTION NOT APPLICABLE) 1 TEXT PRESENT 9 NOT STATED	35220/ 243660 141/ 1084 40/ 317
540	QC17	1	0899	QC17 - IN THIS JOB, DID YOU USE ANY OF THE SKILLS ACQUIRED FROM THE EDUCATIONAL PROGRAM YOU COMPLETED IN 1986? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	19341/ 129922 13096/ 89182 2911/ 25555 53/ 402

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED	
541	QC18	1	0900	QC18 - CONSIDERING ALL ASPECTS OF THE JOB YOU HAD LAST WEEK, HOW SATISFIED WERE YOU WITH THE JOB? WOULD YOU SAY THAT YOU WERE...?		
				BLANK (QUESTION NOT APPLICABLE)	19341/	129922
				1 VERY SATISFIED	7671/	53869
				2 SATISFIED	7311/	53169
				3 DISSATISFIED	780/	5669
				4 VERY DISSATISFIED	220/	1843
				5 DON'T KNOW, NO OPINION	35/	247
				9 NOT STATED	43/	342
542	QC19	1	0901	QC19 - CONSIDERING THE DUTIES & RESPONSIBILITIES OF THAT JOB, HOW SATISFIED WERE YOU WITH THE MONEY YOU MADE? WOULD YOU SAY THAT YOU WERE....		
				BLANK (QUESTION NOT APPLICABLE)	19341/	129922
				1 VERY SATISFIED?	3264/	23310
				2 SATISFIED?	9365/	66126
				3 DISSATISFIED?	2652/	19889
				4 VERY DISSATISFIED?	647/	4801
				5 DON'T KNOW, NO OPINION	90/	660
				9 NOT STATED	42/	354
543	QC20	2	0902-0903	QC20 - HOW MANY HOURS A WEEK DID YOU USUALLY WORK AT THAT JOB?		
				BLANK (QUESTION NOT APPLICABLE)	19341/	129922
				00 NOT STATED	52/	413
				01:99 HOURS USUALLY WORKED	16008/	114726
544	QC21	1	0904	QC21 - WHAT IS THE REASON YOU USUALLY WORKED LESS THAN 30 HOURS PER WEEK?		
				BLANK (QUESTION NOT APPLICABLE)	33434/	229705
				1 FULL-TIME WORK IS LESS THAN 30 HOURS A WEEK	268/	2238
				2 DID NOT WANT FULL-TIME WORK	329/	2220
				3 OWN ILLNESS OR DISABILITY	14/	74
				4 PERSONAL OR FAMILY RESPONSIBILITIES	190/	1498
				5 GOING TO SCHOOL	425/	3656
				6 COULD ONLY FIND PART-TIME WORK	462/	3666
				7 OTHER REASON (SPECIFY)	195/	1324
				9 NOT STATED	84/	681
545	QC21FLG	1	0905	QC21FLG - SPECIFY OTHER REASON.		
				BLANK (QUESTION NOT APPLICABLE)	35122/	243056
				1 TEXT PRESENT	189/	1207
				9 NOT STATED	90/	798
546	QC22	1	0906	QC22 - LAST WEEK, DID YOU HAVE A JOB TO START AT A DEFINITE DATE IN THE FUTURE?		
				BLANK (QUESTION NOT APPLICABLE)	34031/	234163
				1 YES	173/	1262
				2 NO	1086/	8738
				9 NOT STATED	111/	899
547	QC23	1	0907	QC23 - WILL YOU USUALLY WORK 30 OR MORE HOURS PER WEEK?		
				BLANK (QUESTION NOT APPLICABLE)	35117/	242901
				1 YES	118/	889
				2 NO	54/	401
				3 DON'T KNOW	1/	2
				9 NOT STATED	111/	899

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE				PAGE	96
FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
548	QC24	1	0908	QC24 - WHAT IS THE REASON YOU WILL USUALLY WORK LESS THAN 30 HOURS PER WEEK?	
				BLANK (QUESTION NOT APPLICABLE)	35236/ 243762
				1 FULL-TIME WORK IS LESS THAN 30 HOURS A WEEK	2/ 15
				2 DID NOT WANT FULL-TIME WORK	2/ 6
				3 OWN ILLNESS OR DISABILITY	0/ 0
				4 PERSONAL OR FAMILY RESPONSIBILITIES	12/ 98
				5 GOING TO SCHOOL	13/ 83
				6 COULD ONLY FIND PART-TIME WORK	18/ 123
				7 OTHER REASON (SPECIFY)	7/ 76
				9 NOT STATED	111/ 899
549	QC24FLG	1	0909	QC24FLG - SPECIFY OTHER REASON	
				BLANK (QUESTION NOT APPLICABLE)	35283/ 244086
				1 TEXT PRESENT	7/ 76
				9 NOT STATED	111/ 899
550	QC25	1	0910	QC25 - LAST WEEK, WERE YOU LOOKING FOR A FULL-TIME JOB OR A JOB AT WHICH YOU WOULD USUALLY WORK 30 OR MORE HOURS PER WEEK?	
				BLANK (QUESTION NOT APPLICABLE)	34154/ 235045
				1 YES	402/ 3071
				2 NO	724/ 5906
				9 NOT STATED	121/ 1039
551	QC26YR	2	0911-0912	QC26YR - WHEN DID YOU BEGIN THE JOB YOU HELD LAST WEEK? (YEAR)	
				BLANK (QUESTION NOT APPLICABLE)	19341/ 129922
				00 NOT STATED	85/ 576
				60:91	15975/ 114563
552	QC26MO	2	0913-0914	QC26MO - WHEN DID YOU BEGIN THE JOB YOU HELD LAST WEEK? (MONTH)	
				BLANK (QUESTION NOT APPLICABLE)	19341/ 129922
				00 NOT STATED	161/ 996
				01:12	15899/ 114143
553	QC27	1	0915	QC27 - INTERVIEWER CHECK ITEM	
				BLANK (QUESTION NOT APPLICABLE)	19341/ 129922
				1 DATE IN QC26 IS AFTER NOV. 1990	2112/ 15772
				2 OTHERWISE	13863/ 98792
				9 NOT STATED	85/ 576
554	QC28	1	0916	QC28 - SINCE JANUARY 1988, DID YOU EVER WORK AT THAT JOB FULL-TIME FOR A PERIOD OF SIX MONTHS OR MORE? BY THIS WE MEAN DOING THE SAME KIND OF WORK FOR THE SAME EMPLOYER.	
				BLANK (QUESTION NOT APPLICABLE)	21453/ 145694
				1 YES	11011/ 77878
				2 NO	2852/ 20914
				9 NOT STATED	85/ 576
555	QC29	1	0917	QC29 - SINCE JANUARY 1988, DID YOU EVER WORK AT THAT JOB FOR 30 HOURS OR MORE PER WEEK FOR A PERIOD OF SIX MONTH OR MORE?	
				BLANK (QUESTION NOT APPLICABLE)	32464/ 223571
				1 YES	434/ 3415
				2 NO	2418/ 17498
				9 NOT STATED	85/ 576

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE				PAGE	97
FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
556	QC30	1	0918	QC30 - SINCE JANUARY 1988, DID YOU EVER HAVE A FULL-TIME JOB WHICH LASTED SIX MONTHS OR MORE? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	30786/ 211215 2761/ 18678 1769/ 14592 85/ 576
557	QC31	1	0919	QC31 - SINCE JANUARY 1988, DID YOU EVER HAVE A JOB AT WHICH YOU USUALLY WORKED 30 OR MORE HOURS PER WEEK AND WHICH LASTED SIX MONTHS OR MORE? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	33547/ 229893 99/ 682 1670/ 13909 85/ 576
558	QC32	1	0920	QC32 - INTERVIEWER CHECK ITEM BLANK (QUESTION NOT APPLICABLE) 1 YEAR IN QC26 IS 1990 OR 1991 2 OTHERWISE 9 NOT STATED	22201/ 149282 5386/ 41505 7729/ 53698 85/ 576
SECTION D: MOST RECENT JOB LASTING SIX MONTHS OR MORE					
559	QD1CHK	1	0921	QD1CHK - FOR WHOM DID YOU WORK? BLANK (SAME EMPLOYER CATEGORY NOT APPLICABLE) 1 SAME EMPLOYER AS IN C1 9 NOT STATED	34993/ 242447 272/ 1676 136/ 938
560	QD2CHK	1	0922	QD2CHK - WHAT KIND OF BUSINESS, INDUSTRY OR SERVICE WAS THIS? BLANK (SAME BUSINESS CATEGORY NOT APPLICABLE) 1 SAME BUSINESS, INDUSTRY OR SERVICE AS IN C2 9 NOT STATED	34766/ 241088 507/ 3145 128/ 829
561	QD2SIC	3	0923-0925	STANDARD INDUSTRIAL CODE FOR QD1 & QD2 BLANK NOT APPLICABLE 000 NOT STATED AND UNCODABLE 011:023 A-AGRICULTURAL & RELATED 031:033 B-FISHING & TRAPPING 041:051 C-LOGGING & FORESTRY 061:092 D-MINING, QUARRYING & OIL WELL 101:399 E-MANUFACTURING 401:449 F-CONSTRUCTION 451:479 G-TRANSPORTATION & STORAGE 481:499 H-COMMUNICATION & OTH UTILITY 501:599 I-WHOLESALE TRADE 601:692 J-RETAIL TRADE 701:749 K-FINANCE & INSURANCE 751:761 L-REAL ESTATE OP. & INS. AGENT 771:779 M-BUSINESS SERVICES 811:841 N-GOVERNMENT SERVICES 851:859 O-EDUCATION SERVICE 861:869 P-HEALTH & SOCIAL SERVICE 911:922 Q-ACCOMM., FOOD & BEV. SERV. 961:999 R OTHER SERVICE	29614/ 205555 121/ 806 77/ 362 18/ 62 50/ 206 104/ 473 740/ 5449 436/ 2496 149/ 851 125/ 1055 241/ 1538 467/ 3289 179/ 1636 70/ 497 606/ 4860 433/ 2639 602/ 3853 838/ 5413 221/ 1714 310/ 2307
562	QD3CHK	1	0926	QD3CHK - WHAT KIND OF WORK DID YOU DO? BLANK (SAME WORK CATEGORY NOT APPLICABLE) 1 SAME KIND OF WORK AS IN C3 9 NOT STATED	34757/ 240998 524/ 3256 120/ 807

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE				PAGE	98
FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTO/WEIGHTED
563	QD4CHK	1	0927	QD4CHK - IN THIS WORK, WHAT WERE YOUR MOST IMPORTANT ACTIVITIES OR DUTIES?	
				BLANK (SAME ACTIVITIES CATEGORY NOT APPLICABLE)	34754/ 240948
				1 SAME ACTIVITIES OR DUTIES AS IN C4	521/ 3278
				9 NOT STATED	126/ 835
564	QD3SOC	4	0928-0931	STANDARD OCCUPATION CODE FOR QD3 & QD4	
				BLANK NOT APPLICABLE	29614/ 205555
				0000 NOT STATED	117/ 790
				1111:1179 11-MANAGER, ADMIN. & RELATED	881/ 7194
				2111:2189 21-NAT. SCI, ENGINEER & MATH	577/ 3362
				2311:2399 23-SOC. SCIENCE & REL. FIELD	299/ 2250
				2511:2519 25-RELIGION	25/ 160
				2711:2799 27-TEACHING & RELATED	495/ 3315
				3111:3169 31-MEDICINE & HEALTH	535/ 3229
				3311:3379 33-ART, LITERARY, REC. & REL.	134/ 1406
				4110:4199 41-CLERICAL & RELATED	740/ 5820
				5130:5199 51-SALES	332/ 2719
				6111:6199 61-SERVICE	352/ 2223
				7113:7199 71-FARM, HORTICUL, ANIMAL HUSB	74/ 353
				7311:7319 73-FISHING, TRAPPING, RELATED	11/ 36
				7510:7519 75-FORESTRY & LOGGING	32/ 145
				7710:7719 77-MIN., QUARRY, INCL OIL, GAS	18/ 67
				8110:8299 81-PROCESSING	87/ 444
				8310:8399 83-MACHINING & RELATED	145/ 796
				8510:8599 85-PROD FAB., ASSEML & REPAIR	426/ 2295
				8710:8799 87-CONSTRUCTION TRADES	325/ 1720
				9110:9199 91-TRANSPORT EQUIP. OPERAT.	91/ 532
				9310:9319 93-MATERIAL HAND. & RELATED	40/ 250
				9510:9599 95-OTHER CRAFTS & EQUIP. OP.	51/ 399
565	QD5	1	0932	QD5 - INTERVIEWER CHECK ITEM	
				BLANK (QUESTION NOT APPLICABLE)	29614/ 205555
				1 IF "NO" IN ITEM A2	2830/ 19482
				2 OTHERWISE	2860/ 19361
				9 NOT STATED	97/ 664
566	QD6	3	0933-0935	QD6 - WORKING YOUR USUAL HOURS, APPROXIMATELY WHAT WOULD HAVE BEEN YOUR GROSS ANNUAL EARNINGS AT THAT JOB?	
				BLANK (QUESTION NOT APPLICABLE)	32474/ 224916
				001:996	2498/ 17063
				997 DON'T KNOW	221/ 1599
				998 REFUSED	51/ 429
				999 NOT STATED	157/ 1054
567	QD7	1	0936	QD7 - WAS THE EDUCATIONAL PROGRAM YOU COMPLETED IN 1986 INTENDED TO PREPARE YOU FOR THIS JOB?	
				BLANK (QUESTION NOT APPLICABLE)	32474/ 224916
				1 YES	1654/ 10485
				2 NO	1126/ 8656
				3 DON'T KNOW	3/ 9
				9 NOT STATED	144/ 995
568	QD8	1	0937	QD8 - WERE YOU A PAID WORKER OR SELF-EMPLOYED?	
				BLANK (QUESTION NOT APPLICABLE)	32474/ 224916
				1 PAID WORKER	2691/ 18583
				2 SELF-EMPLOYED	95/ 632
				3 OTHER (E.G., UNPAID FAMILY WORKER)	2/ 11
				9 NOT STATED	139/ 919

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	PAGE	**
					UNMTD/WEIGHTED	
569	QD9	1	0938	QD9 - HAS THIS A PERMANENT POSITION OR A TEMPORARY POSITION?		
				BLANK (QUESTION NOT APPLICABLE)	32569/	225548
				1 PERMANENT	2009/	13854
				2 TEMPORARY	679/	4692
				9 NOT STATED	144/	968
570	QD10	2	0939-0940	QD10 - WHEN YOU WERE SELECTED FOR THAT JOB, WHAT LEVEL OF EDUCATION WAS NEEDED TO GET THE JOB?		
				BLANK (QUESTION NOT APPLICABLE)	32569/	225548
				01 DON'T KNOW	150/	969
				02 NO QUALIFICATIONS SPECIFIED	584/	4175
				03 SOME HIGH SCHOOL	111/	550
				04 HIGH SCHOOL DIPLOMA/CERTIFICATE	403/	2791
				05 SOME POSTSECONDARY EDUCATION	60/	291
				06 SOME TRADE-VOCATIONAL	53/	276
				07 TRADE OR VOCATION CERTIFICATE/DIPLOMA	254/	1156
				08 SOME COLLEGE OR SIMILAR INSTITUTION	58/	353
				09 COLLEGE OR SIMILAR INST. DIPLOMA/CERTIFICATE	386/	2971
				10 SOME UNIVERSITY	17/	130
				11 U. DIPLOMA/CERTIFICATE BELOW BACHELOR	34/	349
				12 U. DEGREE, LEVEL NOT SPECIFIED	27/	279
				13 BACHELOR'S DEGREE	370/	3211
				14 U. DIPLOMA/CERTIFICATE LEVEL NOT SPECIFIED	6/	27
				15 U. DIPLOMA/CERTIFICATE ABOVE BACH. UNDER MAST.	12/	87
				16 MASTER'S DEGREE	98/	492
				17 U. FIRST PROFESSIONAL DEGREE	24/	182
				18 DOCTORATE DEGREE (E.G. PH.D.)	15/	25
				19 OTHER (SPECIFY)	30/	182
				99 NOT STATED	148/	1017
				NOTE: FIRST PROFESSIONAL DEGREES: DEGREE IN MEDICINE, DENTISTRY, VETERINARY MEDICINE, LAW, OPTOMETRY, THEOLOGY OR 1 YEAR B.ED. AFTER BACHELOR'S DEGREE		
571	QD10FLG	1	0941	QD10FLG - SPECIFY OTHER EDUCATION LEVEL		
				BLANK (QUESTION NOT APPLICABLE)	35223/	243862
				1 TEXT PRESENT	30/	182
				9 NOT STATED	148/	1017
572	QD11	1	0942	QD11 - DID THE EMPLOYER SPECIFY THAT IT MUST BE IN A SPECIFIC FIELD OR FIELDS OF STUDY?		
				BLANK (QUESTION NOT APPLICABLE)	33817/	234034
				1 YES	1023/	6901
				2 NO	402/	2982
				9 NOT STATED	159/	1144
573	QD11LEV1	1	0943	TYPE OF INSTITUTION DERIVED FROM QD10 (LEVEL OF EDUCATION) DETERMINES TYPE OF EDUCATION CODES TO APPLY TO QD11TXT1		
				BLANK NOT APPLICABLE	34442/	238505
				1 TRADE-VOCATIONAL (CSIS CODES)	228/	1011
				2 COLLEGE (CSIS CODES)	307/	2178
				3 UNIVERSITY (USIS CODES)	424/	3367
574	QD11ECD1	5	0944-0948	QD11 FIRST FIELD OF STUDY CODE ASSIGNED		
				BLANK NOT APPLICABLE	34219/	237016
				00000:04900 (USIS/CSIS CODES)	951/	6529
				99997 CODER COULD NOT DETERMINE	8/	27
				99998 UNSUITABLE/UNDETERMINABLE	50/	230
				99999 NOT STATED	173/	1259

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
575	QD11LEV2	1	0949	TYPE OF INSTITUTION DERIVED FROM QD10 (LEVEL OF EDUCATION) DETERMINES TYPE OF EDUCATION CODES TO APPLY TO QD11TXT2 BLANK NOT APPLICABLE 1 TRADE-VOCATIONAL (CSIS CODES) 2 COLLEGE (CSIS CODES) 3 UNIVERSITY (USIS CODES)	35313/ 244445 9/ 38 22/ 202 57/ 377
576	QD11EC02	5	0950-0954	QD11 SECOND FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 00000:80900 (USIS/CSIS CODES) 99997 CODER COULD NOT DETERMINE 99998 UNSUITABLE/UNDETERMINABLE 99999 NOT STATED	35135/ 243171 87/ 601 1/ 16 5/ 14 173/ 1259
577	QD12	1	0955	QD12 - DID THE EMPLOYER SPECIFY THAT RELATED WORK EXPERIENCE WAS ESSENTIAL FOR THAT JOB? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 3 DON'T KNOW 9 NOT STATED	32569/ 225548 1340/ 9363 1304/ 8985 46/ 232 142/ 933
578	QD13	1	0956	QD13 - IN THIS JOB, DID YOU USE ANY OF THE SKILLS ACQUIRED FROM THE EDUCATIONAL PROGRAM YOU COMPLETED IN 1986? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	32474/ 224916 2031/ 13178 745/ 5942 151/ 1025
579	QD14	1	0957	QD14 - CONSIDERING ALL ASPECTS OF THE JOB YOU HAD LAST WEEK, HOW SATISFIED WERE YOU WITH THE JOB? WOULD YOU SAY THAT YOU WERE.....? BLANK (QUESTION NOT APPLICABLE) 1 VERY SATISFIED 2 SATISFIED 3 DISSATISFIED 4 VERY DISSATISFIED 5 DON'T KNOW, NO OPINION 9 NOT STATED	32474/ 224916 872/ 5736 1425/ 9908 361/ 2612 120/ 873 5/ 23 144/ 993
580	QD15	1	0958	QD15 - CONSIDERING THE DUTIES & RESPONSIBILITIES OF THAT JOB, HOW SATISFIED WERE YOU WITH THE MONEY YOU MADE? WOULD YOU SAY THAT YOU WERE ...? BLANK (QUESTION NOT APPLICABLE) 1 VERY SATISFIED 2 SATISFIED 3 DISSATISFIED 4 VERY DISSATISFIED 5 DON'T KNOW, NO OPINION 9 NOT STATED	32474/ 224916 446/ 2761 1457/ 10006 649/ 4811 220/ 1530 9/ 50 146/ 987
581	QD16YR	2	0959-0960	QD16YR - WHEN DID YOU BEGIN THAT JOB? (YEAR) BLANK (QUESTION NOT APPLICABLE) 00 NOT STATED 40:90 99 SECTION NOT STATED	29614/ 205555 104/ 574 5586/ 38269 97/ 664

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
582	QD16MO	2	0961-0962	QD16MO - WHEN DID YOU BEGIN THAT JOB? (MONTH)	
				BLANK (QUESTION NOT APPLICABLE)	29614/ 205555
				00 NOT STATED	187/ 1035
				01:12	5503/ 37808
				99 SECTION NOT STATED	97/ 664
583	QD17YR	2	0963-0964	QD17YR - WHEN DID YOU END THAT JOB? (YEAR)	
				BLANK (QUESTION NOT APPLICABLE)	29614/ 205555
				00 NOT STATED	89/ 573
				88:91	5601/ 38269
				99 SECTION NOT STATED	97/ 664
584	QD17MO	2	0965-0966	QD17MO - WHEN DID YOU END THAT JOB? (MONTH)	
				BLANK (QUESTION NOT APPLICABLE)	29614/ 205555
				00 NOT STATED	116/ 834
				01:12	5574/ 38006
				99 SECTION NOT STATED	97/ 664
585	QD18	1	0967	QD18 - INTERVIEWER CHECK ITEM	
				BLANK (QUESTION NOT APPLICABLE)	29614/ 205555
				1 YEAR IN ITEM D16 IS 1990	552/ 4049
				2 OTHERWISE	5074/ 34419
				9 NOT STATED	161/ 1038
586	QD19	1	0968	QD19 - INTERVIEWER CHECK ITEM	
				BLANK (QUESTION NOT APPLICABLE)	30166/ 209605
				1 YEAR IN ITEM D17 IS 1991	582/ 3950
				2 OTHERWISE	4473/ 30361
				9 NOT STATED	180/ 1145
				SECTION E: ACTIVITIES IN 1990	
587	QE1A	1	0969	QE1A - NOW SOME QUESTIONS ABOUT THE WHOLE OF 1990 DURING THAT YEAR, WERE YOU EVER WITHOUT A JOB OR BUSINESS BECAUSE YOU WERE GOING TO SCHOOL?	
				BLANK (QUESTION NOT APPLICABLE)	22931/ 152436
				1 YES	2556/ 22890
				2 NO	9479/ 64568
				9 NOT STATED	435/ 3168
588	QE1B	1	0970	QE1B - DURING THAT YEAR, WERE YOU EVER WITHOUT A JOB OR BUSINESS BECAUSE YOU HAD PERSONAL OR FAMILY RESPONSIBILITIES?	
				BLANK (QUESTION NOT APPLICABLE)	22931/ 152436
				1 YES	1556/ 10846
				2 NO	10479/ 78612
				9 NOT STATED	435/ 3168
				NOTE: PERSONAL OR FAMILY RESPONSIBILITIES INCLUDES MATERNITY LEAVE/PREGNANCY & MOVED/RELOCATED	
589	QE1C	1	0971	QE1C - DURING THAT YEAR, WERE YOU EVER WITHOUT A JOB OR BUSINESS BECAUSE YOU COULDN'T FIND WORK?	
				BLANK (QUESTION NOT APPLICABLE)	22931/ 152436
				1 YES	3236/ 23272
				2 NO	8799/ 66186
				9 NOT STATED	435/ 3168

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
590	QE10	1	0972	QE10 - DURING THAT YEAR, WERE YOU EVER WITHOUT A JOB OR BUSINESS FOR ANY OTHER REASON? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	22931/ 152436 1037/ 7541 10998/ 81917 435/ 3168
591	QE1FLG	1	0973	QE1FLG - SPECIFY OTHER REASON BLANK (QUESTION NOT APPLICABLE) 1 TEXT PRESENT 9 NOT STATED	33929/ 234353 1018/ 7443 454/ 3266
592	QE2	1	0974	QE2 - INTERVIEWER CHECK ITEM BLANK (QUESTION NOT APPLICABLE) 1 IF ANY "YES" CHECKED IN ITEM E1 2 OTHERWISE 9 NOT STATED	22931/ 152436 7286/ 56026 4749/ 33432 435/ 3168
593	QE3	2	0975-0976	QE3 - CONSIDERING ALL THESE REASONS, HOW LONG IN TOTAL WERE YOU WITHOUT A JOB IN 1990? BLANK (QUESTION NOT APPLICABLE) 01:12 MONTH(S) 99 NOT STATED	27680/ 185868 7252/ 55819 469/ 3375
594	QE4	1	0977	QE4 - WAS THERE ANY TIME DURING THIS..(QE3 VALUE). MONTH-PERIOD WHEN YOU WERE NOT LOOKING FOR A JOB? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	27680/ 185868 3675/ 30386 3576/ 25430 470/ 3378
595	QE5	1	0978	QE5 - AT ANY TIME DURING THIS..(QE3 VALUE).. MONTH-PERIOD WAS THERE ANY TIME YOU WERE LOOKING FOR A JOB? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	31256/ 211298 1310/ 11106 2359/ 19220 476/ 3438
596	QE6	2	0979-0980	QE6 - DURING THIS..(QE3 VALUE)..MONTH-PERIOD, HOW LONG IN TOTAL WERE YOU LOOKING FOR A JOB? BLANK (QUESTION NOT APPLICABLE) 01:12 MONTH(S) 99 NOT STATED	33615/ 230518 1306/ 11084 480/ 3459
597	QE7	1	0981	QE7 - AT ANY TIME DURING THIS..(QE6 VALUE)... MONTH-PERIOD YOU WERE LOOKING FOR A JOB, WERE YOU A FULL-TIME STUDENT? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	33615/ 230518 395/ 3625 911/ 7459 480/ 3459
598	QE8	2	0982-0983	QE8 - HOW MUCH OF THIS..(QE6 VALUE)..MONTH-PERIOD WERE YOU A FULL-TIME STUDENT? BLANK (QUESTION NOT APPLICABLE) 01:12 MONTH(S) 99 NOT STATED	34526/ 237977 392/ 3610 483/ 3474

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNNTD/WEIGHTED
599	QE9	1	0984	QE9 - DURING THE PERIOD WHEN YOU WERE NOT LOOKING FOR A JOB, WERE YOU EVER WAITING TO START A NEW JOB OR RETURN TO AN OLD JOB? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	31256/ 211298 821/ 6988 2840/ 23317 484/ 3482
600	QE10	2	0985-0986	QE10 - HOW LONG WERE YOU WAITING? THAT IS, HOW LONG WERE YOU WAITING TO START A NEW JOB OR RETURN TO AN OLD JOB DURING THE PERIOD YOU WERE NOT LOOKING FOR A JOB? BLANK (QUESTION NOT APPLICABLE) 01:12 MONTH(S) 99 NOT STATED	34096/ 234614 814/ 6917 491/ 3530
601	QE11	1	0987	QE11 - AT ANY TIME DURING THIS..(QE3 VALUE).. MONTH-PERIOD YOU WERE WITHOUT A JOB, WERE YOU EVER A FULL-TIME STUDENT? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	31355/ 216253 509/ 4377 3066/ 21024 471/ 3407
602	QE12	2	0988-0989	QE12 - HOW MUCH OF THIS..(QE3 VALUE)..MONTH-PERIOD WERE YOU A FULL-TIME STUDENT? BLANK (QUESTION NOT APPLICABLE) 01:12 MONTH(S) 99 NOT STATED	34421/ 237278 503/ 4310 477/ 3473
SECTION F: EDUCATION TAKEN SINCE MAY 1988					
603	QF1	1	0990	QF1 INTERVIEWER CHECK ITEM 1 IF INFO ITEM 3 IS BLANK 2 OTHERWISE	28061/ 176563 7340/ 68499
604	QF2	1	0991	QF2 - THE INFORMATION FROM THE MAY 1988 SURVEY INDICATES THAT YOU WERE ATTENDING AN EDUCATIONAL PROGRAM LEADING TO A..(READ INFO ITEMS).. IS THIS CORRECT? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	28061/ 176563 6435/ 61403 615/ 4937 290/ 2159

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTO/WEIGHTED
605	QF3	2	0992-0993	QF3 - WHAT TYPE OF DEGREE, DIPLOMA, CERTIFICATE OR LICENCE WAS IT?	
				BLANK (QUESTION NOT APPLICABLE)	34496/ 237966
				01 NONE	329/ 2438
				02 TRADE OR VOCATIONAL CERTIF/DIPLOMA	9/ 37
				03 COLLEGE, TECH INST, NURSING SCHL, CERTIF/DIPL	30/ 277
				04 U. CERTIF/DIPLOMA BELOW BACHELOR	35/ 478
				05 BACHELOR'S DEGREE	54/ 525
				06 U. CERTIF/DIPLOMA ABOVE BACHELOR BELOW MASTER	13/ 105
				07 MASTER'S DEGREE	16/ 110
				08 FIRST PROFESSIONAL DEGREE	26/ 150
				09 DOCTORATE DEGREE	20/ 147
				10 PROFESSIONAL ASSOC. DIPLOMA/CERTIF OR LICENCE	20/ 127
				11 OTHER (SPECIFY)	41/ 328
				99 NOT STATED	312/ 2372
				NOTE: FIRST PROFESSIONAL DEGREE IS COMPRISED OF: DIPLOMA DEGREE IN MEDICINE, DENTISTRY, VETERINARY MEDICINE, LAW, OPTOMETRY OR THEOLOGY OR 1 YEAR B.ED. AFTER A BACHELOR'S DEGREE	
606	QF3FLG	1	0994	QF3FLG - SPECIFY OTHER DEGREE, DIPLOMA, CERTIF	
				BLANK (QUESTION NOT APPLICABLE)	35048/ 242361
				1 TEXT PRESENT	41/ 328
				9 NOT STATED	312/ 2372
607	QF4	1	0995	QF4 - INTERVIEWER CHECK ITEM	
				BLANK (QUESTION NOT APPLICABLE)	28390/ 179001
				1 IF INFO ITEM 4 IS BLANK	25/ 205
				2 OTHERWISE	6986/ 65855
608	QF5	1	0996	QF5 - WAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION..(READ INFO ITEM 4)..?	
				BLANK (QUESTION NOT APPLICABLE)	28415/ 179206
				1 YES	6308/ 60304
				2 NO	367/ 3208
				9 NOT STATED	311/ 2343
609	QF6LEV1	1	0997	TYPE OF INSTITUTION DERIVED FROM QF3 OR INF3LVL (LEVEL OF EDUCATION) DETERMINES TYPE OF EDUCATION CODES TO APPLY TO QF6TXT1	
				BLANK NOT APPLICABLE	35061/ 241973
				1 TRADE-VOCATIONAL (CSIS CODES)	13/ 64
				2 COLLEGE (CSIS CODES)	37/ 237
				3 UNIVERSITY (USIS CODES)	290/ 2788
610	QF6ECD1	5	0998-1002	QF6 FIRST FIELD OF STUDY CODE ASSIGNED	
				BLANK NOT APPLICABLE	34698/ 239305
				00000:84900 (USIS/CSIS CODES)	333/ 3040
				99997 CODER COULD NOT DETERMINE	7/ 49
				99998 UNSUITABLE/UNDETERMINABLE	29/ 224
				99999 NOT STATED	334/ 2444
611	QF6LEV2	1	1003	TYPE OF INSTITUTION DERIVED FROM QF3 OR INF3LVL (LEVEL OF EDUCATION) DETERMINES TYPE OF EDUCATION CODES TO APPLY TO QF6TXT2	
				BLANK NOT APPLICABLE	35367/ 244724
				1 TRADE-VOCATIONAL (CSIS CODES)	2/ 9
				2 COLLEGE (CSIS CODES)	3/ 28
				3 UNIVERSITY (USIS CODES)	29/ 301

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
612	QF6ECD2	5	1004-1008	QF6 SECOND FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 00000:84900 (USIS/CSIS CODES) 99997 CODER COULD NOT DETERMINE 99998 UNSUITABLE/UNDETERMINABLE 99999 NOT STATED	35033/ 242280 33/ 334 1/ " 0/ 0 334/ 2444
613	QF7YR	2	1009-1010	QF7YR - IN WHAT YEAR DID YOU, OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 NOT STATED 01 DON'T KNOW 02 DROPPED OUT 88:99	28390/ 179001 337/ 2564 774/ 6274 1089/ 9590 4811/ 47632
614	QF7MO	2	1011-1012	QF7MO - IN WHAT MONTH DID YOU, OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 DON'T KNOW, DROPPED OUT, NOT STATED 01:12	28390/ 179001 2262/ 18847 4749/ 47214
615	QF8	1	1013	QF8 - INTERVIEWER CHECK ITEM BLANK (QUESTION NOT APPLICABLE) 1 IF INFO ITEM 5 IS BLANK 2 OTHERWISE	28061/ 174563 7261/ 67794 79/ 704
616	QF9	1	1014	QF9 - THE INFORMATION FROM THE MAY 1988 SURVEY ALSO INDICATES THAT YOU WERE ATTENDING AN EDUCATIONAL PROGRAM LEADING TO A...(READ INFO ITEM 5) IS THIS CORRECT? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	35322/ 244357 56/ 463 14/ 109 9/ 132
617	QF10	2	1015-1016	QF10 - WHAT TYPE OF DEGREE, DIPLOMA, CERTIFICATE OR LICENCE WAS IT? BLANK (QUESTION NOT APPLICABLE) 01 NONE 02 TRADE OR VOCATIONAL CERTIF/DIPLOMA 03 COLLEGE, TECH INST, NURSING SCHL, CERTIF/DIPL 04 U. CERTIF/DIPLOMA BELOW BACHELOR 05 BACHELOR'S DEGREE 06 U. CERTIF/DIPLOMA ABOVE BACHELOR BELOW MASTER 07 MASTER'S DEGREE 08 FIRST PROFESSIONAL DEGREE 09 DOCTORATE DEGREE 10 PROFESSIONAL ASSOC. DIPLOMA/CERTIF OR LICENCE 11 OTHER (SPECIFY) 99 NOT STATED	35378/ 244820 9/ 37 1/ 23 1/ 32 0/ 0 3/ 17 0/ 0 0/ 0 0/ 0 0/ 0 0/ 0 0/ 0 0/ 0 9/ 132
				NOTE: FIRST PROFESSIONAL DEGREES: DIPLOMA DEGREE IN MEDICINE, DENTISTRY, VETERINARY MEDICINE, LAW, OPTOMETRY OR THEOLOGY OR 1 YEAR B.ED. AFTER A BACHELOR'S DEGREE	
618	QF10FLG	1	1017	QF10FLG - SPECIFY OTHER DEGREE, DIPLOMA OR CERTIF. BLANK (QUESTION NOT APPLICABLE) 1 TEXT PRESENT 9 NOT STATED	35392/ 244929 0/ 0 9/ 132

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
619	QF11	1	1018	QF11 - INTERVIEWER CHECK ITEM BLANK (QUESTION NOT APPLICABLE) 1 IF INFO ITEM 6 IS BLANK 2 OTHERWISE	35331/ 244394 1/ 21 69/ 646
620	QF12	1	1019	QF12 - HAS THE MAJOR FIELD OF STUDY OR SPECIALIZATION..(READ INFO ITEM 6)..? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	35332/ 244415 49/ 436 12/ 99 8/ 111
621	QF13LEV1	1	1020	TYPE OF INSTITUTION DERIVED FROM QF10 OR INF5LVL (LEVEL OF EDUCATION) DETERMINES TYPE OF EDUCATION CODES TO APPLY TO QF13TXT1 BLANK NOT APPLICABLE 1 TRADE-VOCATIONAL (CSIS CODES) 2 COLLEGE (CSIS CODES) 3 UNIVERSITY (USIS CODES)	35391/ 244986 0/ 0 2/ 34 8/ 42
622	QF13ECD1	5	1021-1025	QF13 FIRST FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 00000:04900 (USIS/CSIS CODES) 99997 CODER COULD NOT DETERMINE 99998 UNSUITABLE/UNDETERMINABLE 99999 NOT STATED	35380/ 244830 9/ 44 1/ 32 2/ 24 9/ 132
623	QF13LEV2	1	1026	TYPE OF INSTITUTION DERIVED FROM QF10 OR INF5LVL (LEVEL OF EDUCATION) DETERMINES TYPE OF EDUCATION CODES TO APPLY TO QF13TXT2 BLANK NOT APPLICABLE 1 TRADE-VOCATIONAL (CSIS CODES) 2 COLLEGE (CSIS CODES) 3 UNIVERSITY (USIS CODES)	35401/ 245061 0/ 0 0/ 0 0/ 0
624	QF13ECD2	5	1027-1031	QF13 SECOND FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 00000:04900 (USIS CODES) 99997 CODER COULD NOT DETERMINE 99998 UNSUITABLE/UNDETERMINABLE 99999 NOT STATED	35392/ 244929 0/ 0 0/ 0 0/ 0 9/ 132
625	QF14YR	2	1032-1033	QF14YR - IN WHAT YEAR DID YOU, OR DO YOU EXPECT TO COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 NOT STATED 01 DON'T KNOW 02 DROPPED OUT 88:99	35331/ 244394 9/ 132 11/ 115 16/ 127 34/ 293
626	QF14MO	2	1034-1035	QF14MO - IN WHAT MONTH DID YOU, OR DO YOU EXPECT TO COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 DON'T KNOW, DROPPED OUT OR NOT STATED 01:12	35331/ 244394 36/ 374 34/ 293
627	QF15	1	1036	QF15 - SINCE MAY 1988 HAVE TAKEN ANY (OTHER) EDUCATION OR TRAINING PROGRAMS LEADING TO ANY DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES? 1 YES 2 NO 9 NOT STATED	10384/ 77902 25010/ 167107 7/ 53

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
628	QF16A	1	1037	QF16A - WHAT TYPE OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE? BLANK (QUESTION NOT APPLICABLE) 1 TRADE OR VOCATIONAL CERTIFICATE OR DIPLOMA 9 NOT STATED	33808/ 234902 1506/ 10107 7/ 53
629	QF16AEC	5	1038-1042	QF16A FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 10000:92000 (CSIS CODES) 99997 CODER COULD NOT DETERMINE 99999 NOT STATED	33808/ 234902 1515/ 9639 71/ 468 7/ 53
630	QF16AYR	2	1043-1044	QF16AYR - IN WHAT YEAR DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 NOT STATED 01 DON'T KNOW 02 DROPPED OUT 88:99	33808/ 234902 9/ 66 111/ 593 43/ 353 1430/ 9148
631	QF16AMO	2	1045-1046	QF16AMO - IN WHAT MONTH DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 DON'T KNOW, DROPPED OUT OR NOT STATED 01:12	33808/ 234902 211/ 1289 1382/ 8871
632	QF16B	1	1047	QF16B - WHAT TYPE OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE? BLANK (QUESTION NOT APPLICABLE) 1 COLLEGE, TECH. INST., NURSING SCH. CERT/DIPLOMA 9 NOT STATED	33416/ 231494 1978/ 13515 7/ 53
633	QF16BEC	5	1048-1052	QF16B FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 10000:92000 (CSIS CODES) 99997 CODER COULD NOT DETERMINE 99999 NOT STATED	33416/ 231494 1916/ 13077 62/ 438 7/ 53
634	QF16BYR	2	1053-1054	QF16BYR - IN WHAT YEAR DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 NOT STATED 01 DON'T KNOW 02 DROPPED OUT 88:99	33416/ 231494 9/ 69 163/ 1183 68/ 578 1745/ 11745
635	QF16BMO	2	1055-1056	QF16BMO - IN WHAT MONTH AND YEAR DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 DON'T KNOW, DROPPED OUT OR NOT STATED 01:12	33416/ 231494 296/ 2142 1689/ 11426
636	QF16C	1	1057	QF16C - WHAT TYPE OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE? BLANK (QUESTION NOT APPLICABLE) 1 UNIVERSITY CERTIFICATE OR DIPLOMA BELOW BACHELOR 9 NOT STATED	34433/ 235243 961/ 9765 7/ 53

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
637	QF16CECD	5	1058-1062	QF16C FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 00000:83099 (USIS CODES) 99997 CODER COULD NOT DETERMINE 99999 NOT STATED	34433/ 235243 911/ 9331 50/ 435 7/ 53
638	QF16CYR	2	1063-1064	QF16CYR - IN WHAT YEAR DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 NOT STATED 01 DON'T KNOW 02 DROPPED OUT 88:99 YEAR	34433/ 235243 9/ 89 168/ 1754 35/ 445 756/ 7530
639	QF16CMO	2	1065-1066	QF16CMO - IN WHAT MONTH DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 DON'T KNOW, DROPPED OUT OR NOT STATED 01:12	34433/ 235243 238/ 2427 730/ 7391
640	QF16D	1	1067	QF16D - WHAT TYPE OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE? BLANK (QUESTION NOT APPLICABLE) 1 UNIVERSITY BACHELOR DEGREE 9 NOT STATED	34101/ 233951 1293/ 11058 7/ 53
641	QF16DECD	5	1068-1072	QF16D FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 00000:83099 (USIS CODES) 99997 CODER COULD NOT DETERMINE 99999 NOT STATED	34101/ 233951 1284/ 10927 9/ 130 7/ 53
642	QF16DYR	2	1073-1074	QF16DYR - IN WHAT YEAR DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 NOT STATED 01 DON'T KNOW 02 DROPPED OUT 88:99	34101/ 233951 10/ 58 253/ 1786 33/ 362 1004/ 8905
643	QF16DMO	2	1075-1076	QF16DMO - IN WHAT MONTH AND YEAR DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 DON'T KNOW, DROPPED OUT OR NOT STATED 01:12	34101/ 233951 334/ 2512 966/ 8598
644	QF16E	1	1077	QF16E - WHAT TYPE OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE? BLANK (QUESTION NOT APPLICABLE) 1 UNIV. CERTIF/DIPL ABOVE BACHELOR BELOW MASTER 9 NOT STATED	35043/ 241713 351/ 3296 7/ 53
645	QF16EECD	5	1078-1082	QF16E FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 00000:83099 (USIS CODES) 99997 CODER COULD NOT DETERMINE 99999 NOT STATED	35043/ 241713 335/ 3215 16/ 81 7/ 53

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
646	QF16EYR	2	1083-1084	QF16EYR - IN WHAT YEAR DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS?	
				BLANK (QUESTION NOT APPLICABLE)	35043/ 241713
				00 NOT STATED	7/ 53
				01 DON'T KNOM	52/ 335
				02 DROPPED OUT	10/ 111
				88:99	289/ 2849
647	QF16EMO	2	1085-1086	QF16EMO - IN WHAT MONTH DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS?	
				BLANK (QUESTION NOT APPLICABLE)	35043/ 241713
				00 DON'T KNOM, DROPPED OUT OR NOT STATED	77/ 526
				01:12	281/ 2822
648	QF16F	1	1087	QF16F - WHAT TYPE OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE?	
				BLANK (QUESTION NOT APPLICABLE)	34603/ 237273
				1 UNIVERSITY MASTER DEGREE	791/ 7736
				9 NOT STATED	7/ 53
649	QF16FECD	5	1088-1092	QF16F FIELD OF STUDY CODE ASSIGNED	
				BLANK NOT APPLICABLE	34603/ 237273
				00000:83099 (USIS CODES)	785/ 7672
				99997 CODER COULD NOT DETERMINE	6/ 64
				99999 NOT STATED	7/ 53
650	QF16FYR	2	1093-1094	QF16FYR - IN WHAT YEAR DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS?	
				BLANK (QUESTION NOT APPLICABLE)	34603/ 237273
				00 NOT STATED	7/ 53
				01 DON'T KNOM	86/ 946
				02 DROPPED OUT	40/ 564
				88:99	665/ 6226
651	QF16FMO	2	1095-1096	QF16FMO - IN WHAT MONTH DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS?	
				BLANK (QUESTION NOT APPLICABLE)	34603/ 237273
				00 DON'T KNOM, DROPPED OUT OR NOT STATED	149/ 1672
				01:12	649/ 6117
652	QF16G	1	1097	QF16G - WHAT TYPE OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE?	
				BLANK (QUESTION NOT APPLICABLE)	35195/ 243412
				1 FIRST PROFESSIONAL DEGREE	199/ 1597
				9 NOT STATED	7/ 53
				NOTE: FIRST PROFESSIONAL DEGREE: UNIVERSITY DEGREE IN MEDICINE, DENTISTRY, VETERINARY MEDICINE, LAW, OPTOMETRY OR THEOLOGY, OR 1 YR B.ED AFTER BACHELOR'S DEGREE	
653	QF16GECD	5	1098-1102	QF16G FIELD OF STUDY CODE ASSIGNED	
				BLANK NOT APPLICABLE	35195/ 243412
				00000:83099 (USIS CODES)	194/ 1519
				99997 CODER COULD NOT DETERMINE	5/ 78
				99999 NOT STATED	7/ 53

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
654	QF16CYR	2	1103-1104	QF16CYR - IN WHAT YEAR DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 NOT STATED 01 DON'T KNOW 02 DROPPED OUT 88:99	35195/ 243412 7/ 53 8/ 63 3/ 13 188/ 1520
655	QF16GMO	2	1105-1106	QF16GMO - IN WHAT MONTH DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 DON'T KNOW, DROPPED OUT OR NOT STATED 01:12	35195/ 243412 21/ 139 185/ 1511
656	QF16H	1	1107	QF16H - WHAT TYPE OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE? BLANK (QUESTION NOT APPLICABLE) 1 UNIVERSITY DOCTORATE DEGREE 9 NOT STATED	35037/ 242803 357/ 2206 7/ 53
657	QF16NECD	5	1108-1112	QF16H FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 00000:83099 (USIS CODE) 99997 CODER COULD NOT DETERMINE 99999 NOT STATED	35037/ 242803 350/ 2158 7/ 47 7/ 53
658	QF16HYR	2	1113-1114	QF16HYR - IN WHAT YEAR DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 NOT STATED 01 DON'T KNOW 02 DROPPED OUT 88:99	35037/ 242803 9/ 68 32/ 163 9/ 41 314/ 1986
659	QF16HMO	2	1115-1116	QF16HMO - IN WHAT MONTH DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 DON'T KNOW, DROPPED OUT, NOT STATED 01:12	35037/ 242803 68/ 425 296/ 1833
660	QF16I	1	1117	QF16I - WHAT TYPE OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE? BLANK (QUESTION NOT APPLICABLE) 1 PROFESSIONAL ASSOC. DIPLOMA, CERTIF. OR LICENCE 9 NOT STATED NOTE: NO CODES WERE ASSIGNED FOR FIELDS OF STUDY IN THIS CATEGORY	34645/ 239142 749/ 5867 7/ 53
661	QF16IYR	2	1118-1119	QF16IYR - IN WHAT YEAR DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 NOT STATED 01 DON'T KNOW 02 DROPPED OUT 88:99	34645/ 239142 7/ 53 82/ 595 10/ 121 657/ 5151
662	QF16IMO	2	1120-1121	QF16IMO - IN WHAT MONTH DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 DON'T KNOW, DROPPED OUT OR NOT STATED 01:12	34645/ 239142 119/ 884 637/ 5035

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
663	QF16J	1	1122	QF16J - WHAT TYPE OF DEGREES, DIPLOMAS, CERTIFICATES OR LICENCES WERE THESE? BLANK (QUESTION NOT APPLICABLE) 1 OTHER 9 NOT STATED	32901/ 229300 2493/ 15709 7/ 53
NOTE: NO CODES WERE ASSIGNED FOR FIELDS OF STUDY IN THIS CATEGORY					
664	QF16JYR	2	1123-1124	QF16JYR - IN WHAT YEAR DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 NOT STATED 01 DON'T KNOW 02 DROPPED OUT 88:99 YEAR	32901/ 229300 14/ 92 260/ 1546 23/ 132 2203/ 13992
665	QF16JMO	2	1125-1126	QF16JMO - IN WHAT MONTH DID YOU OR DO YOU EXPECT TO, COMPLETE THE REQUIREMENTS? BLANK (QUESTION NOT APPLICABLE) 00 DON'T KNOW, DROPPED OUT OR NOT STATED 01:12	32901/ 229300 378/ 2253 2122/ 13508
666	QF17	1	1127	QF17 - DID YOU TAKE ANY OF THESE PROGRAMS AS FULL-TIME STUDENT? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	25010/ 167107 3607/ 28611 6707/ 48624 77/ 720
667	QF18	1	1128	QF18 - GIVEN YOUR EXPERIENCES SINCE COMPLETING THE EDUCATIONAL PROGRAM IN 1986, WOULD YOU HAVE SELECTED THE SAME EDUCATIONAL PROGRAM, A DIFFERENT PROGRAM OR NOT TAKEN ANY POSTSECONDARY PROGRAM? 1 SAME 2 DIFFERENT 3 NONE 4 DON'T KNOW 9 NOT STATED	23772/ 163088 10576/ 75045 396/ 2614 643/ 4198 14/ 118
668	QF19	1	1129	QF19 - WOULD YOU HAVE CHOSEN THE SAME FIELD OF STUDY OR SPECIALIZATION? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 3 DON'T KNOW 9 NOT STATED	24811/ 169899 3198/ 20780 7094/ 52362 279/ 1863 19/ 158
669	QF20LEV1	1	1130	TYPE OF INSTITUTION DERIVED FROM QF21 (LEVEL OF EDUCATION) DETERMINES TYPE OF EDUCATION CODES TO APPLY TO QF20TXT1 BLANK NOT APPLICABLE 1 TRADE-VOCATIONAL (CSIS CODES) 2 COLLEGE (CSIS CODES) 3 UNIVERSITY (USIS CODES)	29225/ 198810 807/ 4259 1453/ 11366 3916/ 30627
670	QF20ECD1	5	1131-1135	QF20 FIRST FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 00000:84900 (USIS/CSIS CODES) 99997 CODER COULD NOT DETERMINE 99998 UNSUITABLE/UNDETERMINABLE 99999 NOT STATED	29111/ 198158 6122/ 45765 54/ 487 94/ 489 20/ 162

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
671	QF20LEV2	1	1136	TYPE OF INSTITUTION DERIVED FROM QF21 (LEVEL OF EDUCATION) DETERMINES TYPE OF EDUCATION CODES TO APPLY TO QF20TXT2 BLANK NOT APPLICABLE 1 TRADE-VOCATIONAL (CSIS CODES) 2 COLLEGE (CSIS CODES) 3 UNIVERSITY (USIS CODES)	34561/ 238728 95/ 523 160/ 1094 585/ 4717
672	QF20ECD2	5	1137-1141	QF20 SECOND FIELD OF STUDY CODE ASSIGNED BLANK NOT APPLICABLE 00000:84900 (USIS/CSIS CODES) 99997 CODER COULD NOT DETERMINE 99998 UNSUITABLE/UNDETERMINABLE 99999 NOT STATED	34548/ 238653 834/ 6298 6/ 36 13/ 75 0/ 0
673	QF20FLG	1	1142	QF20FLG - WHAT FIELD OF STUDY OR SPECIALIZATION WOULD YOU HAVE CHOSEN? (DON'T KNOW CATEGORY) BLANK (CATEGORY NOT APPLICABLE) 1 DON'T KNOW 9 NOT STATED	34558/ 239283 823/ 5616 20/ 162
674	QF21	1	1143	QF21 - WHAT KIND OF PROGRAM WOULD YOU HAVE TAKEN: UNIVERSITY, COLLEGE, OR TRADE-VOCATIONAL? BLANK (QUESTION NOT APPLICABLE) 1 UNIVERSITY 2 COLLEGE 3 TRADE OR VOCATIONAL 4 DON'T KNOW 5 OTHER (SPECIFY) 9 NOT STATED	24811/ 169899 6596/ 48387 2302/ 17569 1325/ 6977 286/ 1701 59/ 361 22/ 167
675	QF21FLG	1	1144	QF21FLG - SPECIFY OTHER TYPE OF PROGRAM BLANK (QUESTION NOT APPLICABLE) 1 TEXT PRESENT 9 NOT STATED	35320/ 244533 59/ 361 22/ 167
676	QF22	1	1145	QF22 - WHAT LEVEL OF DEGREE OR DIPLOMA WOULD YOU HAVE TAKEN? BLANK (QUESTION NOT APPLICABLE) 1 UNIVERSITY DIPL/CERTIF BELOW BACHELOR 2 BACHELOR'S DEGREE GENERAL OR HONOURS 3 UNIV. DIPL/CERTIF ABOVE BACHELOR BELOW MASTER 4 MASTER'S DEGREE 5 FIRST PROFESSIONAL DEGREE 6 DOCTORATE 7 DON'T KNOW 8 OTHER (SPECIFY) 9 NOT STATED	28783/ 196508 228/ 1451 3983/ 32076 164/ 1377 1340/ 8644 345/ 2128 303/ 1304 195/ 1177 24/ 164 36/ 232
				NOTE: PROFESSIONAL DEGREE: DEGREE IN MEDICINE, DENTISTRY, VETERINARY MEDICINE, LAM, OPTOMETRY OR THEOLOGY, OR 1-YEAR B.ED. AFTER ANOTHER BACHELOR'S DEGREE	
677	QF22FLG	1	1146	QF22FLG - SPECIFY OTHER LEVEL BLANK (QUESTION NOT APPLICABLE) 1 TEXT PRESENT 9 NOT STATED	35341/ 244665 24/ 164 36/ 232

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNNMTD/WEIGHTED
678	QF23	1	1147	<p>QF23 - IN GENERAL, HOW IMPORTANT IS IT THAT ANY JOB YOU GET BE RELATED TO YOUR FIELD OF STUDY OR SPECIALIZATION? WOULD YOU SAY IT IS...?</p> <p>1 VERY IMPORTANT 2 IMPORTANT 3 NOT IMPORTANT 4 NOT AT ALL IMPORTANT 5 DON'T KNOW, NO OPINION 9 NOT STATED</p>	<p>16865/ 115272 13562/ 92702 3848/ 28765 948/ 7148 140/ 911 38/ 263</p>
SECTION G: GENERAL QUESTIONS					
679	QG1	1	1148	<p>QG1 - WHAT IS YOUR MARITAL STATUS? ARE YOU...?</p> <p>1 NOW MARRIED OR LIVING COMMON-LAW 2 SINGLE, THAT IS, NEVER MARRIED 3 A WIDOW OR WIDOWER 4 SEPARATED OR DIVORCED 9 NOT STATED</p>	<p>20371/ 130799 13108/ 102140 138/ 1076 1713/ 10548 71/ 498</p>
680	QG2A	1	1149	<p>QG2A - DO YOU HAVE ANY DEPENDENT CHILDREN?</p> <p>1 YES 2 NO 9 NOT STATED</p>	<p>12472/ 74584 22854/ 169979 75/ 499</p>
681	QG2BA	2	1150-1151	<p>QG2BA - AGE OF 1ST DEPENDENT CHILD</p> <p>BLANK (QUESTION NOT APPLICABLE) 00:60 99 NOT STATED</p>	<p>22854/ 169979 12433/ 74312 114/ 771</p>
682	QG2BB	2	1152-1153	<p>QG2BB - AGE OF 2ND DEPENDENT CHILD</p> <p>BLANK (QUESTION NOT APPLICABLE) 00:60 99 NOT STATED</p>	<p>28627/ 206807 6660/ 37483 114/ 771</p>
683	QG2BC	2	1154-1155	<p>QG2BC - AGE OF 3RD DEPENDENT CHILD</p> <p>BLANK (QUESTION NOT APPLICABLE) 00:60 99 NOT STATED</p>	<p>33428/ 234300 1859/ 9990 114/ 771</p>
684	QG2BD	2	1156-1157	<p>QG2BD - AGE OF 4TH DEPENDENT CHILD</p> <p>BLANK (QUESTION NOT APPLICABLE) 00:60 99 NOT STATED</p>	<p>34902/ 242325 385/ 1965 114/ 771</p>
685	QG2BE	2	1158-1159	<p>QG2BE - AGE OF 5TH DEPENDENT CHILD</p> <p>BLANK (QUESTION NOT APPLICABLE) 00:60 99 NOT STATED</p>	<p>35199/ 243876 88/ 414 114/ 771</p>
686	QG2BF	2	1160-1161	<p>QG2BF - AGE OF 6TH DEPENDENT CHILD</p> <p>BLANK (QUESTION NOT APPLICABLE) 00:60 99 NOT STATED</p>	<p>35263/ 244157 24/ 133 114/ 771</p>
687	QG2BG	2	1162-1163	<p>QG2BG - AGE OF 7TH DEPENDENT CHILD</p> <p>BLANK (QUESTION NOT APPLICABLE) 00:60 99 NOT STATED</p>	<p>35275/ 244217 12/ 73 114/ 771</p>

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
688	QG2BH	2	1164-1165	QG2BH - AGE OF 8TH DEPENDENT CHILD	
				BLANK (QUESTION NOT APPLICABLE)	35281/ 244252
				00:60	6/ 38
				99 NOT STATED	114/ 771
689	QG2BI	2	1166-1167	QG2BI - AGE OF 9TH DEPENDENT CHILD	
				BLANK (QUESTION NOT APPLICABLE)	35285/ 244278
				00:60	2/ 12
				99 NOT STATED	114/ 771
690	QG2BJ	2	1168-1169	QG2BJ - AGE OF 10TH DEPENDENT CHILD	
				BLANK (QUESTION NOT APPLICABLE)	35286/ 244282
				00:60	1/ 8
				99 NOT STATED	114/ 771
691	QG3A	1	1170	QG3A - WHAT WHAT YOUR TOTAL PERSONAL INCOME FROM ALL SOURCES BEFORE TAXES AND DEDUCTIONS FOR THE LAST 12 MONTHS? WAS IT....	
				0 NO INCOME	167/ 1435
				1 LESS THAN \$30,000	17130/ 124940
				2 \$30,000 OR MORE	16436/ 106585
				7 DON'T KNOW	498/ 3517
				8 REFUSED	1119/ 8211
				9 NOT STATED	51/ 373
692	FILLER9	1	1171	FILLER9	
693	QG3C	1	1172	QG3C - WHAT WHAT YOUR TOTAL PERSONAL INCOME FROM ALL SOURCES BEFORE TAXES AND DEDUCTIONS FOR THE LAST 12 MONTHS? WAS IT....	
				0 NO INCOME	167/ 1435
				1 LESS THAN \$20,000	8729/ 66336
				2 \$20,000 - \$29,999	8320/ 57991
				3 \$30,000 - \$39,999	7558/ 52083
				4 \$40,000 - \$49,999	4546/ 29497
				5 \$50,000 - \$59,999	2198/ 12893
				6 \$60,000 OR MORE	1999/ 11129
				7 DON'T KNOW	498/ 3517
				8 REFUSED	1119/ 8211
				9 NOT STATED	267/ 1970
694	QG3D	2	1173-1174	QG3D - WHAT WHAT YOUR TOTAL PERSONAL INCOME FROM ALL SOURCES BEFORE TAXES AND DEDUCTIONS FOR THE LAST 12 MONTHS? WAS IT....	
				00 NO INCOME	167/ 1435
				01 LESS THAN \$15,000	4937/ 40017
				02 \$15,000 - \$19,999	3758/ 26094
				03 \$20,000 - \$24,999	4005/ 27488
				04 \$25,000 - \$29,999	4257/ 30189
				05 \$30,000 - \$34,999	3859/ 26307
				06 \$35,000 - \$39,999	3662/ 25551
				07 \$40,000 - \$44,999	2700/ 18310
				08 \$45,000 - \$49,999	1810/ 10947
				09 \$50,000 - \$54,999	1283/ 7649
				10 \$55,000 - \$59,999	891/ 5153
				11 \$60,000 - \$64,999	655/ 3693
				12 \$65,000 OR MORE	1327/ 7318
				77 DON'T KNOW	498/ 3517
				88 REFUSED	1119/ 8211
				99 NOT STATED	473/ 3184

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED	
695	QG4A	1	1175	QG4A - ARE YOU LIMITED IN THE KIND OR AMOUNT OF ACTIVITY YOU CAN DO BECAUSE OF A LONG-TERM PHYSICAL CONDITION, MENTAL CONDITION OR HEALTH PROBLEM... AT HOME? 1 YES 2 NO 9 NOT STATED	854/ 34476/ 71/	5333 239263 465
696	QG4B	1	1176	QG4B - ARE YOU LIMITED IN THE KIND OR AMOUNT OF ACTIVITY YOU CAN DO BECAUSE OF A LONG-TERM PHYSICAL CONDITION, MENTAL CONDITION OR HEALTH PROBLEM... AT SCHOOL OR WORK? 1 YES 2 NO 9 NOT STATED	1017/ 34313/ 71/	6225 238371 465
697	QG4C	1	1177	QG4C - ARE YOU LIMITED IN THE KIND OR AMOUNT OF ACTIVITY YOU CAN DO BECAUSE OF A LONG-TERM PHYSICAL CONDITION, MENTAL CONDITION OR HEALTH PROBLEM... IN OTHER ACTIVITIES, SUCH AS TRANSPORTATION OR LEISURE ACTIVITIES? 1 YES 2 NO 9 NOT STATED	1103/ 34227/ 71/	6843 237753 465
698	QG5	1	1178	QG5 - INTERVIEWER CHECK ITEM 1 IF ANY "YES" CHECKED IN ITEM G4 2 OTHERWISE 9 NOT STATED	1326/ 34004/ 71/	8212 236384 465
699	QG6A	1	1179	QG6A - ARE YOU HANDICAPPED OR DISABLED WITH REGARD TO ...MOBILITY, AGILITY? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	34004/ 830/ 485/ 82/	236384 5070 3062 546
700	QG6AYRS	2	1180-1181	QG6AYRS - HOW MANY YEARS HAVE YOU BEEN HANDICAPPED OR DISABLED IN THIS MAY? BLANK (QUESTION NOT APPLICABLE) 01:60 NUMBER OF YEARS 99 NOT STATED	34489/ 793/ 119/	239445 4837 779
701	QG6B	1	1182	QG6B - ARE YOU HANDICAPPED OR DISABLED WITH REGARD TO ...SIGHT, SEEING? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	34004/ 68/ 1247/ 82/	236384 499 7634 546
702	QG6BYRS	2	1183-1184	QG6BYRS - HOW MANY YEARS HAVE YOU BEEN HANDICAPPED OR DISABLED IN THIS MAY? BLANK (QUESTION NOT APPLICABLE) 01:60 NUMBER OF YEARS 99 NOT STATED	35251/ 58/ 92/	244017 630 614
703	QG6C	1	1185	QG6C - ARE YOU HANDICAPPED OR DISABLED WITH REGARD TO ...HEARING? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	34004/ 64/ 1251/ 82/	236384 356 7777 546

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
704	QG6CYRS	2	1186-1187	QG6CYRS - HOW MANY YEARS HAVE YOU BEEN HANDICAPPED OR DISABLED IN THIS WAY? BLANK (QUESTION NOT APPLICABLE) 01:60 NUMBER OF YEARS 99 NOT STATED	35255/ 244160 58/ 326 88/ 575
705	QG6D	1	1188	QG6D - ARE YOU HANDICAPPED OR DISABLED WITH REGARD TO ...SPEECH, SPEAKING? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	34004/ 236384 31/ 187 1284/ 7946 82/ 546
706	QG6DYRS	2	1189-1190	QG6DYRS - HOW MANY YEARS HAVE YOU BEEN HANDICAPPED OR DISABLED IN THIS WAY? BLANK (QUESTION NOT APPLICABLE) 01:60 NUMBER OF YEARS 99 NOT STATED	35288/ 244329 25/ 157 88/ 575
707	QG6E	1	1191	QG6E - ARE YOU HANDICAPPED OR DISABLED WITH REGARD TO ...LEARNING? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	34004/ 236384 37/ 237 1278/ 7895 82/ 546
708	QG6EYRS	2	1192-1193	QG6EYRS - HOW MANY YEARS HAVE YOU BEEN HANDICAPPED OR DISABLED IN THIS WAY? BLANK (QUESTION NOT APPLICABLE) 01:60 NUMBER OF YEARS 99 NOT STATED	35282/ 244279 31/ 189 88/ 593
709	QG6F	1	1194	QG6F - ARE YOU HANDICAPPED OR DISABLED WITH REGARD TO ...EMOTIONS, MENTAL PROBLEMS? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	34004/ 236384 116/ 724 1199/ 7408 82/ 546
710	QG6FYRS	2	1195-1196	QG6FYRS - HOW MANY YEARS HAVE YOU BEEN HANDICAPPED OR DISABLED IN THIS WAY? BLANK (QUESTION NOT APPLICABLE) 01:60 NUMBER OF YEARS 99 NOT STATED	35203/ 243792 103/ 655 95/ 615
711	QG6G	1	1197	QG6G - ARE YOU HANDICAPPED OR DISABLED WITH REGARD TO ...ANYTHING ELSE? BLANK (QUESTION NOT APPLICABLE) 1 YES 2 NO 9 NOT STATED	34004/ 236384 374/ 2390 941/ 5742 82/ 546
712	QG6GYRS	2	1198-1199	QG6GYRS -HOW MANY YEARS HAVE YOU BEEN HANDICAPPED OR DISABLED IN THIS WAY? BLANK (QUESTION NOT APPLICABLE) 01:60 NUMBER OF YEARS 99 NOT STATED	34945/ 242126 315/ 2010 141/ 926

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
713	QG6FLG	1	1200	QG6FLG - SPECIFY ANYTHING ELSE BLANK (QUESTION NOT APPLICABLE) 1 TEXT PRESENT 9 NOT STATED	34945/ 242126 361/ 2297 95/ 639
714	QG7A	1	1201	QG7A - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? CHINESE 1 YES 2 NO 9 NOT STATED	830/ 5468 34427/ 238782 144/ 812
715	QG7B	1	1202	QG7B - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? JAPANESE 1 YES 2 NO 9 NOT STATED	113/ 751 35144/ 243499 144/ 812
716	QG7C	1	1203	QG7C - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? KOREAN 1 YES 2 NO 9 NOT STATED	34/ 239 35223/ 244011 144/ 812
717	QG7D	1	1204	QG7D - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? FILIPINO 1 YES 2 NO 9 NOT STATED	98/ 666 35159/ 243584 144/ 812
718	QG7E	1	1205	QG7E - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? EAST INDIAN (FROM INDIA, PAKISTAN, BANGLADESH, EAST AFRICA, GUYANA, ETC.) 1 YES 2 NO 9 NOT STATED	430/ 2550 34827/ 241700 144/ 812
719	QG7F	1	1206	QG7F - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? BLACK (FROM AFRICA, THE CARIBBEAN, HAITI, THE U.S.A., CANADA ETC.) 1 YES 2 NO 9 NOT STATED	346/ 2757 34911/ 241493 144/ 812
720	QG7G	1	1207	QG7G - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? NORTH AMERICAN INDIAN 1 YES 2 NC 9 NOT STATED	510/ 2767 34747/ 241483 144/ 812
721	QG7H	1	1208	QG7H - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? METIS 1 YES 2 NO 9 NOT STATED	214/ 1060 35043/ 243190 144/ 812

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
722	QG7I	1	1209	QG7I - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? INUIT (ESKIMO)	
				1 YES	56/ 217
				2 NO	35201/ 244032
				9 NOT STATED	144/ 812
723	QG7J	1	1210	QG7J - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? ARAB (FROM EGYPT, JORDAN, LEBANON, IRAQ, ETC.)	
				1 YES	174/ 1408
				2 NO	35083/ 242842
				9 NOT STATED	144/ 812
724	QG7K	1	1211	QG7K - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? WEST INDIAN (FROM SYRIA, TURKEY, AFGHANISTAN, ARMENIA, IRAN ETC.)	
				1 YES	98/ 809
				2 NO	35159/ 243441
				9 NOT STATED	144/ 812
725	QG7L	1	1212	QG7L - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? SOUTH EAST ASIAN (FROM BURMA, CAMBODIA/KAMPUCHEA, LAOS, THAILAND, VIETNAM, ETC.)	
				1 YES	164/ 1250
				2 NO	35093/ 243000
				9 NOT STATED	144/ 812
726	QG7M	1	1213	QG7M FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? NORTH AFRICAN (FROM EGYPT, MOROCCO, ALGERIA, TUNISIA, ETC.)	
				1 YES	64/ 607
				2 NO	35193/ 243643
				9 NOT STATED	144/ 812
727	QG7N	1	1214	QG7N FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? LATIN AMERICAN (MEXICO, CENTRAL AMERICA, SOUTH AMERICA)	
				1 YES	144/ 1005
				2 NO	35113/ 243244
				9 NOT STATED	144/ 812
728	QG7O	1	1215	QG7O - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? BRITISH (FROM ENGLAND, SCOTLAND, IRELAND ETC.)	
				1 YES	11374/ 63909
				2 NO	23883/ 180341
				9 NOT STATED	144/ 812
729	QG7P	1	1216	QG7P - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? FRENCH	
				1 YES	4116/ 28382
				2 NO	31141/ 215868
				9 NOT STATED	144/ 812

NOTE: INCLUDES ENTRIES FOR ACADIANS, QUEBECOIS AND FRENCH CANADIANS

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
730	QG7Q	1	1217	QG7Q - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? ANY OTHER EUROPEAN GROUPS? 1 YES 2 NO 9 NOT STATED	10318/ 65750 24939/ 178500 144/ 812
731	QG7R	1	1218	QG7R - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? CANADIAN 1 YES 2 NO 9 NOT STATED	20423/ 153189 14834/ 91061 144/ 812
732	QG7S	1	1219	QG7S - FROM WHICH OF THE FOLLOWING GROUPS DID YOUR PARENTS OR GRANDPARENTS DESCEND? ANY OTHERS 1 YES 2 NO 9 NOT STATED	666/ 3712 34591/ 240538 144/ 812
733	QG7FLG	1	1220	QG7FLG - SPECIFY ANY OTHERS BLANK (CATEGORY NOT APPLICABLE) 1 TEXT PRESENT 9 NOT STATED	34591/ 240538 620/ 3441 190/ 1082
734	QCB	1	1221	QCB - DURING 1990, DID YOU TAKE PART IN ANY EMPLOYMENT AND IMMIGRATION CANADA FINANCIAL ASSISTANCE PROGRAMS? 1 YES 2 NO 9 NOT STATED	633/ 3771 34473/ 239421 295/ 1870
735	QG8TXT1	34	1222-1255	QG8TXT1 - WHICH OF THE EMPLOYMENT AND IMMIGRATION CANADA FINANCIAL ASSISTANCE PROGRAM DID YOU TAKE PART IN? NOTE: BLANK (QUESTION NOT APPLICABLE) 34 BYTE TXT FOR 1ST ENTRY 9'S NOT STATED	
736	QG8TXT2	34	1256-1289	QG8TXT2 - WHICH OF THE EMPLOYMENT AND IMMIGRATION CANADA FINANCIAL ASSISTANCE PROGRAM DID YOU TAKE PART IN? NOTE: BLANK (QUESTION NOT APPLICABLE) 34 BYTE TXT FOR 1ST ENTRY 9'S NOT STATED	
737	QG8TXT3	34	1290-1323	QG8TXT3 - WHICH OF THE EMPLOYMENT AND IMMIGRATION CANADA FINANCIAL ASSISTANCE PROGRAM DID YOU TAKE PART IN? NOTE: BLANK (QUESTION NOT APPLICABLE) 34 BYTE TXT FOR 1ST ENTRY 9'S NOT STATED	
SECTION H: ADMINISTRATIVE QUESTIONS					
738	QH3	1	1324	QH3 - DO YOU AGREE TO SHARE YOUR ANSWERS? 1 YES NOTE: H4 END OF INTERVIEW	35401/ 245061

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
739	QMS	2	1325-1326	QMS - PROVINCE OR TERRITORY WHERE RESPONDENT WAS LOCATED WHEN INTERVIEWED:	
				01 N.F.L.D.	1590/ 4715
				02 P.E.I.	501/ 917
				03 N.S.	1976/ 7671
				04 N.B.	1585/ 4971
				05 QUEBEC	6776/ 80949
				06 ONTARIO	9819/ 88025
				07 MANITOBA	2152/ 7839
				08 SASKATCHEWAN	1652/ 6030
				09 ALBERTA	5114/ 19313
				10 B.C.	3793/ 22475
				11 YUKON	87/ 254
				12 N.M.T.	114/ 418
				99 NOT STATED	242/ 1485
740	QH6	1	1327	QH6 - LANGUAGE OF INTERVIEW	
				1 ENGLISH	28772/ 170060
				2 FRENCH	6629/ 75001
741	HEIGHT	10	1328-1337	HEIGHT FORMATTED AS 10.5 (9999.99999) WITH A DECIMAL PHYSICALLY PRESENT IN THE 5TH BYTE.	
742	INF3LVL	1	1338	DERIVED NUMERIC VALUE FOR INFO3 (LEVEL OF CERTIFICATION) READ AS PART OF QF2	
				BLANK NOT APPLICABLE	28061/ 176563
				1 TRADE-VOCATIONAL	424/ 2580
				2 COMMUNITY COLLEGE	1049/ 7740
				3 UNIVERSITY CERTIFICATE BELOW BACHELOR'S	703/ 7603
				4 BACHELOR'S DEGREE	2050/ 28094
				5 UNIVERSITY DIPLOMA ABOVE BACHELOR'S	337/ 3094
				6 MASTER'S DEGREE	1077/ 10038
				7 FIRST PROFESSIONAL DEGREE	355/ 2576
				8 EARNED DOCTORATE	771/ 2716
				9 PROFESSIONAL CERTIFICATE OR LICENCE	574/ 4057
743	INF5LVL	1	1339	DERIVED NUMERIC VALUE FOR INFO5 (LEVEL OF CERTIFICATION) READ AS PART OF QF9	
				BLANK NOT APPLICABLE	35322/ 244357
				1 TRADE-VOCATIONAL	0/ 0
				2 COMMUNITY COLLEGE	7/ 36
				3 UNIVERSITY CERTIFICATE BELOW BACHELOR'S	3/ 15
				4 BACHELOR'S DEGREE	19/ 259
				5 UNIVERSITY DIPLOMA ABOVE BACHELOR'S	9/ 90
				6 MASTER'S DEGREE	16/ 154
				7 FIRST PROFESSIONAL DEGREE	6/ 59
				8 EARNED DOCTORATE	8/ 20
				9 PROFESSIONAL CERTIFICATE OR LICENCE	11/ 70
744	LFSTAT91	1	1340	LABOUR FORCE STATUS DURING THE 1991 SURVEY REFERENCE WEEK	
				1 EMPLOYED	30177/ 207011
				2 UNEMPLOYED	3124/ 21651
				3 OUT OF THE LABOUR FORCE	2100/ 16400

NOTE: THE VALUES ARE BASED ON THE ANSWERS TO QUESTIONS A1, A3, A4 AND A7.

IF A1="YES" OR A3="NO" THEN LFSTAT91="EMPLOYED"
 ELSE IF A3="YES" THEN LFSTAT91="UNEMPLOYED"
 ELSE IF A4="YES" THEN LFSTAT91="UNEMPLOYED"
 ELSE IF A7="NO" THEN LFSTAT91="OUT OF L.F."
 ELSE IF A7="YES" THEN LFSTAT91="UNEMPLOYED"

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
745	JOBCLA91	1	1341	CLASSIFICATION OF THE JOB HELD DURING THE 1991 SURVEY REFERENCE WEEK EITHER AS FULL-TIME OR PART-TIME	
				BLANK - NOT APPLICABLE	4721/ 35134
				1 FULL-TIME (30 HRS OR MORE)	27751/ 187440
				2 PART-TIME (29 HRS OR LESS)	2861/ 21990
				9 NOT STATED	68/ 497
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTION B29 OR C20.	
746	EMPSTAT	1	1342	EMPLOYMENT STATUS - THE 1991 SURVEY REFERENCE WEEK VS THE 1988 SURVEY REFERENCE WEEK	
				1 WORKED FOR SAME EMPLOYER CONTINUOUSLY	14810/ 96113
				2 WORKED FOR SAME EMPLOYER NOT CONTINUOUSLY	570/ 3541
				3 WORKED FOR DIFFERENT EMPLOYER	12142/ 87212
				4 HAD EMPLOYER IN 1991 BUT NO EMPLOYER IN 1988	1350/ 10574
				8 NO EMPLOYER IN 1991	4673/ 34783
				9 UNDETERMINABLE	1856/ 12838
				NOTE: THE VALUES ARE BASED ON RESULTS OBTAINED BY COMBINING THE LFSTAT91 CONCEPT TO THE ANSWERS GIVEN TO QUESTIONS B2, B3 AND LFSTAT3.	
747	SIC91	3	1343-1345	STANDARD INDUSTRIAL CLASSIFICATION CODE (1980 SIC) FOR THE JOB HELD IN THE 1991 SURVEY REFERENCE WEEK	
				BLANK NOT APPLICABLE	4175/ 31320
				000 NOT STATED AND UNCODABLE	78/ 395
				011:023 A-AGRICULTURAL & RELATED	433/ 2065
				031:033 B-FISHING & TRAPPING	74/ 268
				041:051 C-LOGGING & FORESTRY	162/ 743
				061:092 D-MINING, QUARRYING & OIL WELL	511/ 2206
				101:399 E-MANUFACTURING	3343/ 23325
				401:449 F-CONSTRUCTION	1092/ 6889
				451:479 G-TRANSPORTATION & STORAGE	637/ 4131
				481:499 H-COMMUNICATION & OTH UTILITY	1210/ 8272
				501:599 I-WHOLESALE TRADE	1107/ 7569
				601:692 J-RETAIL TRADE	1682/ 11535
				701:749 K-FINANCE & INSURANCE	1083/ 10151
				751:761 L-REAL ESTATE OP. & INS. AGENT	352/ 2791
				771:779 M-BUSINESS SERVICES	3126/ 22857
				811:841 N-GOVERNMENT SERVICES	3474/ 22365
				851:859 O-EDUCATION SERVICE	5495/ 37694
				861:869 P-HEALTH & SOCIAL SERVICE	5610/ 37015
				911:922 Q-ACCOMM., FOOD & BEV. SERV.	574/ 4694
				961:999 R OTHER SERVICE	1183/ 9576
				NOTE: THE CODES ARE OBTAINED FROM THE ANSWERS TO QUESTIONS C1 OR C2 OR FROM THE SIC CODES IN THE 1988 SURVEY.	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
748	SOC91	4	1346-1349	STANDARD OCCUPATION CLASSIFICATION CODE (1980 SOC) FOR THE JOB HELD IN THE 1991 SURVEY REFERENCE WEEK	
				BLANK NOT APPLICABLE	4175/ 31320
				0000 NOT STATED AND UNCODABLE	107/ 540
				1111:1179 11-MANAGER, ADMIN. & RELATED	5258/ 40424
				2111:2189 21-MAT. SCI, ENGINEER & MATH	4024/ 23619
				2311:2399 23-SOC. SCIENCE & REL. FIELD	1917/ 14288
				2511:2519 25-RELIGION	91/ 632
				2711:2799 27-TEACHING & RELATED	4397/ 32316
				3111:3169 31-MEDICINE & HEALTH	4049/ 25671
				3311:3379 33-ART, LITERARY, REC. & REL.	617/ 5784
				4110:4199 41-CLERICAL & RELATED	3122/ 23914
				5130:5199 51-SALES	1351/ 11511
				6111:6199 61-SERVICE	1495/ 10191
				7113:7199 71-FARM, HORTICUL, ANIMAL HUSB	352/ 1625
				7311:7319 73-FISHING, TRAPPING, RELATED	56/ 213
				7510:7519 75-FORESTRY & LOGGING	104/ 395
				7710:7719 77-MIN., QUARRY, INCL OIL, GAS	75/ 287
				8110:8299 81-PROCESSING	425/ 2286
				8310:8399 83-MACHINING & RELATED	372/ 2126
				8510:8599 85-PROD FAB., ASSEHL & REPAIR	1721/ 8754
				8710:8799 87-CONSTRUCTION TRADES	864/ 4486
				9110:9199 91-TRANSPORT EQUIP. OPERAT.	366/ 2109
				9310:9319 93-MATERIAL HAND. & RELATED	158/ 943
				9510:9599 95-OTHER CRAFTS & EQUIP. OP.	305/ 1628
				NOTE: THE CODES ARE OBTAINED FROM ANSWERS TO 88/89, 814/815, C3/C4 OR FROM THE SOC CODES GIVEN IN THE 1988 SURVEY.	
749	SICHTC3	1	1350	STANDARD INDUSTRIAL CLASSIFICATION CODES (1980 SIC) FOR THE JOBS HELD IN THE 1991 SURVEY REFERENCE WEEK AND THE 1988 SURVEY WEEK ARE COMPARED TO 3 DIGITS	
				BLANK NOT APPLICABLE	7376/ 54240
				1 MATCHED ON 3 DIGITS	18242/ 118867
				2 DID NOT MATCH ON 3 DIGITS	9690/ 71444
				9 NOT STATED/CODE NOT DETERMINED	93/ 511
750	SICHTC2	1	1351	STANDARD INDUSTRIAL CLASSIFICATION CODES (1980 SIC) FOR THE JOBS HELD IN 1991 SURVEY REFERENCE WEEK AND THE 1988 SURVEY WEEK ARE COMPARED ON THE FIRST 2 DIGITS	
				BLANK NOT APPLICABLE	7376/ 54240
				1 MATCHED ON FIRST 2 DIGITS	19486/ 127169
				2 DID NOT MATCH ON FIRST 2 DIGITS	8446/ 63142
				9 NOT STATED/CODE NOT DETERMINED	93/ 511
751	SICHTC1	1	1352	STANDARD INDUSTRIAL CLASSIFICATION CODES (1980 SIC) FOR THE JOBS HELD IN 1991 SURVEY REFERENCE WEEK AND THE 1988 SURVEY WEEK ARE COMPARED ON THE FIRST DIGIT	
				BLANK NOT APPLICABLE	7376/ 54240
				1 MATCHED ON 1ST DIGIT	21444/ 141358
				2 DID NOT MATCH ON 1ST DIGIT	6488/ 48952
				9 NOT STATED/CODE NOT DETERMINED	93/ 511
752	SOCHTC4	1	1353	STANDARD OCCUPATIONAL CLASSIFICATION CODES (1980 SOC) FOR THE JOBS HELD IN THE 1991 SURVEY REFERENCE WEEK AND THE 1988 SURVEY WEEK ARE COMPARED TO 4 DIGITS	
				BLANK NOT APPLICABLE	7386/ 54367
				1 MATCHED ON 4 DIGITS	15974/ 103124
				2 DID NOT MATCH ON 4 DIGITS	11898/ 86780
				9 NOT STATED/CODE NOT DETERMINED	143/ 791

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
753	SOCHTC3	1	1354	STANDARD OCCUPATIONAL CLASSIFICATION CODES (1980 SOC) FOR THE JOBS HELD IN 1991 SURVEY REFERENCE WEEK AND THE 1988 SURVEY WEEK ARE COMPARED ON THE FIRST 3 DIGITS	
				BLANK NOT APPLICABLE	7386/ 54367
				1 MATCHED ON FIRST 3 DIGITS	17564/ 114248
				2 DID NOT MATCH ON FIRST 3 DIGITS	10308/ 75656
				9 NOT STATED/CODE NOT DETERMINED	143/ 791
754	SOCHTC2	1	1355	STANDARD OCCUPATIONAL CLASSIFICATION CODES (1980 SOC) FOR THE JOBS HELD IN 1991 SURVEY REFERENCE WEEK AND THE 1988 SURVEY WEEK ARE COMPARED ON THE FIRST 2 DIGITS	
				BLANK NOT APPLICABLE	7386/ 54367
				1 MATCHED ON FIRST 2 DIGITS	19740/ 129712
				2 DID NOT MATCH ON FIRST 2 DIGITS	8132/ 60192
				9 NOT STATED/CODE NOT DETERMINED	143/ 791
755	SOCHTC1	1	1356	STANDARD OCCUPATIONAL CLASSIFICATION CODES (1980 SOC) FOR THE JOBS HELD IN THE 1991 SURVEY REFERENCE WEEK AND THE 1988 SURVEY WEEK ARE COMPARED ON THE FIRST DIGIT	
				BLANK NOT APPLICABLE	7386/ 54367
				1 MATCHED ON 1ST DIGIT	20574/ 134527
				2 DID NOT MATCH ON 1ST DIGIT	7298/ 55377
				9 NOT STATED/CODE NOT DETERMINED	143/ 791
756	JOBINCOM	3	1357-1359	ESTIMATED GROSS ANNUAL EARNINGS FOR THE JOB HELD DURING THE 1991 SURVEY REFERENCE WEEK	
				BLANK NOT APPLICABLE	4175/ 31320
				000:996	28236/ 191999
				997 DON'T KNOW	1478/ 10185
				998 REFUSED	1431/ 10987
				999 NOT STATED	81/ 570
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTIONS B28 OR C5.	
757	CLM91	1	1360	CLASS OF WORKER FOR THE JOB HELD DURING THE THE 1991 SURVEY REFERENCE WEEK	
				BLANK NOT APPLICABLE	4175/ 31320
				1 PAID WORKER	28893/ 197675
				2 SELF-EMPLOYED	2295/ 15853
				3 OTHER	33/ 199
				9 NOT STATED	5/ 16
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTIONS B12, B18 OR C7.	
758	JOBTYP91	1	1361	TYPE OF JOB HELD DURING THE 1991 SURVEY SURVEY REFERENCE WEEK - EITHER PERMANENT OR TEMPORARY	
				BLANK NOT APPLICABLE	6470/ 47172
				1 PERMANENT	25266/ 170960
				2 TEMPORARY	3647/ 26808
				9 NOT STATED	18/ 122
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTIONS B13, B19 OR C8.	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
759	EMPEXP91	1	1362	DID THE EMPLOYER SPECIFY THAT RELATED WORK EXPERIENCE WAS ESSENTIAL FOR THE JOB HELD DURING THE 1991 SURVEY REFERENCE WEEK	
				BLANK NOT APPLICABLE	6421/ 46795
				1 YES	16266/ 105548
				2 NO	12255/ 89784
				3 DON'T KNOW	429/ 2786
				9 NOT STATED	30/ 148
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTIONS B22, C11 OR TO SIMILAR QUESTIONS ASKED IN 1988.	
760	EDUJOB	2	1363-1364	EDUCATION LEVEL NEEDED WHEN SELECTED FOR THE JOB HELD DURING THE 1991 SURVEY REFERENCE WEEK	
				BLANK NOT APPLICABLE	6421/ 46795
				01 DON'T KNOW	955/ 6631
				02 NO QUALIFICATIONS SPECIFIED	3131/ 22684
				03 SOME HIGH SCHOOL	540/ 3471
				04 HIGH SCHOOL DIPLOMA/CERTIFICATE	2829/ 20044
				05 SOME POSTSECONDARY EDUCATION	572/ 3372
				06 SOME TRADE-VOCATIONAL	303/ 1424
				07 TRADE OR VOCATION CERTIFICATE/DIPLOMA	2416/ 11236
				08 SOME COLLEGE OR SIMILAR INSTITUTION	615/ 4086
				09 COLLEGE OR SIMILAR INST. DIPLOMA/CERTIFICATE	5796/ 40756
				10 SOME UNIVERSITY	243/ 1795
				11 U. DIPLOMA/CERTIFICATE BELOW BACHELOR	392/ 3447
				12 U. DEGREE, LEVEL NOT SPECIFIED	305/ 2679
				13 BACHELOR'S DEGREE	6590/ 55434
				14 U. DIPLOMA/CERTIFICATE LEVEL NOT SPECIFIED	91/ 519
				15 U. DIPLOMA/CERTIFICATE ABOVE BACH. UNDER MAST.	238/ 1719
				16 MASTER'S DEGREE	2079/ 8777
				17 U. FIRST PROFESSIONAL DEGREE	593/ 4852
				18 DOCTORATE DEGREE (E.G. PH.D.)	774/ 1693
				19 OTHER (SPECIFY)	492/ 3484
				99 NOT STATED	26/ 144
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTIONS B20, C9 OR TO SIMILAR QUESTIONS ASKED IN 1988.	
761	FS1JOB91	5	1365-1369	EMPLOYER SPECIFIED FIELDS OF STUDY FOR THE JOB HELD DURING THE 1991 SURVEY REFERENCE WEEK (FIRST FIELD OF STUDY CODE)	
				BLANK NOT APPLICABLE	20149/ 143171
				00000:84900 (USIS/CSIS CODES)	14358/ 96538
				99997 CODER COULD NOT DETERMINE	104/ 598
				99998 UNSUITABLE/UNDETERMINABLE	503/ 2898
				99999 NOT STATED	287/ 1857
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTIONS B21, C10 OR TO SIMILAR QUESTIONS ASKED IN 1988.	
762	FS2JOB91	5	1370-1374	EMPLOYER SPECIFIED FIELDS OF STUDY FOR THE JOB HELD DURING THE 1991 SURVEY REFERENCE WEEK (SECOND FIELD OF STUDY CODE)	
				BLANK NOT APPLICABLE	33825/ 234492
				00000:84900 (USIS/CSIS CODES)	1231/ 8262
				99997 CODER COULD NOT DETERMINE	28/ 212
				99998 UNSUITABLE/UNDETERMINABLE	53/ 346
				99999 NOT STATED	264/ 1750
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTIONS B21, C10 OR TO SIMILAR QUESTIONS ASKED IN 1988.	

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
763	EDUCHG	1	1375	HAS THE LEVEL OF EDUCATION REQUIRED TO GET THE JOB HELD DURING THE SURVEY REFERENCE WEEK CHANGED SINCE THE JOB STARTED	
				BLANK NOT APPLICABLE	
				1 YES	4721/ 35134
				2 NO	2387/ 16346
				3 DON'T KNOW	27375/ 186826
				9 NOT STATED	885/ 6497
					33/ 258
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTIONS B23 OR C15.	
764	EDCHGJOB	2	1376-1377	EDUCATION LEVEL NEEDED NOW FOR THE JOB HELD DURING THE 1991 SURVEY REFERENCE WEEK	
				BLANK NOT APPLICABLE	
				01 DON'T KNOW	32981/ 228458
				02 NO QUALIFICATIONS SPECIFIED	93/ 584
				03 SOME HIGH SCHOOL	19/ 139
				04 HIGH SCHOOL DIPLOMA/CERTIFICATE	19/ 125
				05 SOME POSTSECONDARY EDUCATION	138/ 713
				06 SOME TRADE-VOCATIONAL	57/ 316
				07 TRADE OR VOCATION CERTIFICATE/DIPLOMA	62/ 379
				08 SOME COLLEGE OR SIMILAR INSTITUTION	176/ 808
				09 COLLEGE OR SIMILAR INST. DIPLOMA/CERTIFICATE	79/ 508
				10 SOME UNIVERSITY	367/ 2825
				11 U. DIPLOMA/CERTIFICATE BELOW BACHELOR	36/ 280
				12 U. DEGREE, LEVEL NOT SPECIFIED	74/ 599
				13 BACHELOR'S DEGREE	53/ 229
				14 U. DIPLOMA/CERTIFICATE LEVEL NOT SPECIFIED	511/ 4450
				15 U. DIPLOMA/CERTIFICATE ABOVE BACH. UNDER MAST.	33/ 283
				16 MASTER'S DEGREE	59/ 460
				17 U. FIRST PROFESSIONAL DEGREE	236/ 1284
				18 DOCTORATE DEGREE (E.G. PH.D.)	12/ 69
				19 OTHER (SPECIFY)	79/ 220
				99 NOT STATED	265/ 1855
					52/ 399
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTIONS B24 OR C16.	
				NOTE THAT TO GET THE EDUCATION LEVEL NEEDED NOW, ONE HAS TO CONSULT VALUES GIVEN FOR "EDUJOB91".	
765	EDUCPREP	1	1378	HAS THE EDUCATIONAL PROGRAM YOU COMPLETED IN 1986 INTENDED TO PREPARE YOU FOR THE JOB HELD DURING THE 1991 SURVEY REFERENCE WEEK?	
				BLANK NOT APPLICABLE	
				1 YES	4177/ 31329
				2 NO	19958/ 127259
				3 DON'T KNOW	11145/ 85550
				9 NOT STATED	106/ 849
					15/ 74
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTIONS B17, C6 OR TO QUESTIONS ASKED IN 1988.	
766	SKILLUSE	1	1379	IN THE JOB HELD DURING THE 1991 SURVEY REFERENCE WEEK, DID YOU USE ANY OF THE SKILLS ACQUIRED FROM THE 1986 EDUCATIONAL PROGRAM?	
				BLANK NOT APPLICABLE	
				1 YES	4721/ 35134
				2 NO	26154/ 171482
				9 NOT STATED	4452/ 37925
					74/ 520
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTIONS B25 OR C17.	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNNTD/WEIGHTED
767	JOBSATIS	1	1380	IN THE JOB HELD DURING THE 1991 SURVEY REFERENCE WEEK, HOW SATISFIED WERE YOU WITH THE JOB?	
				BLANK (QUESTION NOT APPLICABLE)	4721/ 35134
				1 VERY SATISFIED	14376/ 95668
				2 SATISFIED	14470/ 100971
				3 DISSATISFIED	1363/ 9722
				4 VERY DISSATISFIED	355/ 2745
				5 DON'T KNOW, NO OPINION	59/ 379
				9 NOT STATED	57/ 442
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTIONS B26 OR C18.	
768	MONYSATI	1	1381	IN THE JOB HELD DURING THE 1991 SURVEY REFERENCE WEEK, HOW SATISFIED WERE YOU WITH THE MONEY YOU MADE?	
				BLANK (QUESTION NOT APPLICABLE)	4721/ 35134
				1 VERY SATISFIED	6274/ 42446
				2 SATISFIED	18344/ 124119
				3 DISSATISFIED	4848/ 34673
				4 VERY DISSATISFIED	1039/ 7421
				5 DON'T KNOW, NO OPINION	121/ 848
				9 NOT STATED	54/ 420
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO EITHER QUESTIONS B27 OR C19.	
769	EDUCRELA	1	1382	RELATIONSHIP BETWEEN EDUCATION AND THE JOB HELD DURING THE 1991 SURVEY REFERENCE WEEK.	
				BLANK NOT APPLICABLE	4177/ 31329
				1 DIRECTLY RELATED	19124/ 120641
				2 PARTLY RELATED	7414/ 54359
				3 UNRELATED	3949/ 33486
				9 RELATIONSHIP UNDETERMINABLE	737/ 5246
				NOTE: THE VALUES ARE BASED ON RESULTS OBTAINED BY COMBINING THE "EDUCPREP" AND THE "SKILLUSE" VALUES.	
				IF EDUCPREP=" " THEN EDUCRELA=" "	
				ELSE IF EDUCPREP="1" AND SKILLUSE="1" THEN EDUCRELA="1"	
				ELSE IF EDUCPREP="1" AND SKILLUSE="2" THEN EDUCRELA="2"	
				ELSE IF EDUCPREP="2" AND SKILLUSE="1" THEN EDUCRELA="2"	
				ELSE IF EDUCPREP="2" AND SKILLUSE="2" THEN EDUCRELA="3"	
				ELSE EDUCRELA="9"	
770	HLS91	2	1383-1384	HIGHEST LEVEL OF SCHOOLING COMPLETED BY THE 1991 SURVEY REFERENCE WEEK	
				01 TRADE-VOCATIONAL DIPLOMA OR CERTIFICATE	6428/ 32511
				05 COLLEGE DIPLOMA OR CERTIFICATE	11068/ 70558
				07 UNDERGRADUATE DIPLOMA OR CERTIFICATE	1013/ 11445
				08 BACHELOR'S OR FIRST PROFESSIONAL DEGREE	9662/ 100181
				10 GRADUATE DIPLOMA OR CERTIFICATE	700/ 5633
				11 MASTER'S DEGREE	5287/ 22296
				12 DOCTORATE	1243/ 2438
				NOTE: THE VALUES ARE BASED ON ANSWERS GIVEN TO QUESTIONS F3, F7, F10, F14 AND F16.	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNMTD/WEIGHTED
771	EDUJOB91	2	1385-1386	EDUCATION LEVEL REQUIRED AS OF THE 1991 SURVEY REFERENCE WEEK FOR THE JOB HELD DURING THAT PERIOD	
				BLANK NOT APPLICABLE	6268/ 45589
				01 DON'T KNOW	894/ 6331
				02 NO QUALIFICATIONS SPECIFIED	2991/ 21448
				03 SOME HIGH SCHOOL	498/ 3283
				04 HIGH SCHOOL DIPLOMA/CERTIFICATE	2715/ 18979
				05 SOME POSTSECONDARY EDUCATION	577/ 3398
				06 SOME TRADE-VOCATIONAL	327/ 1603
				07 TRADE OR VOCATION CERTIFICATE/DIPLOMA	2417/ 11165
				08 SOME COLLEGE OR SIMILAR INSTITUTION	640/ 4273
				09 COLLEGE OR SIMILAR INST. DIPLOMA/CERTIFICATE	5781/ 40562
				10 SOME UNIVERSITY	231/ 1757
				11 U. DIPLOMA/CERTIFICATE BELOW BACHELOR	408/ 3597
				12 U. DEGREE, LEVEL NOT SPECIFIED	342/ 2761
				13 BACHELOR'S DEGREE	6744/ 57339
				14 U. DIPLOMA/CERTIFICATE LEVEL NOT SPECIFIED	113/ 757
				15 U. DIPLOMA/CERTIFICATE ABOVE BACH. UNDER MAST.	285/ 2116
				16 MASTER'S DEGREE	2215/ 9797
				17 U. FIRST PROFESSIONAL DEGREE	600/ 4885
				18 DOCTORATE DEGREE (E.G. PH.D.)	835/ 1855
				19 OTHER (SPECIFY)	476/ 3434
				99 NOT STATED	24/ 129
				NOTE: THE VALUES ARE OBTAINED BY COMBINING "EDUJOB" AND "EDCHGJOB".	
772	EDUJOREC	2	1387-1388	EDUCATION LEVEL REQUIRED AS OF THE 1991 SURVEY REFERENCE WEEK FOR THE JOB HELD DURING THAT PERIOD (RECODED VALUES FOR "EDUJOB91")	
				BLANK NOT APPLICABLE	6268/ 45589
				00 SOME OR HIGH SCHOOL CERTIF./SOME POSTSECONDARY	3790/ 25660
				01 SOME OR COMPLETED TRADE/VOCATIONAL CERTIFICATE	2744/ 12768
				05 SOME OR COMPLETED COLLEGE CERTIFICATE/DIPLOMA	6421/ 44836
				07 SOME UNIV./BELOW BACHLR./DEGREE NOT SPECIFIED	981/ 8116
				08 BACHELOR OR FIRST PROFESSIONAL DEGREE	7344/ 62224
				10 U. DIPL./CERTIF. ABOVE BACHELOR UNDER MASTER	398/ 2874
				11 MASTER'S DEGREE	2215/ 9797
				12 DOCTORATE DEGREE (E.G. PH.D.)	835/ 1855
				14 DON'T KNOW	894/ 6331
				15 NO QUALIFICATIONS SPECIFIED	2991/ 21448
				99 OTHER OR NOT STATED	520/ 3563
773	JOBQL91	1	1389	COMPARISON OF THE HIGHEST LEVEL OF SCHOOLING COMPLETED BY THE 1991 SURVEY REFERENCE WEEK WITH THE EDUCATION LEVEL REQUIRED FOR THE JOB HELD DURING THAT PERIOD	
				BLANK NOT APPLICABLE	6268/ 45589
				1 MORE EDUCATION THAN REQUIRED FOR JOB	9472/ 60812
				2 SAME EDUCATION AS REQUIRED FOR JOB	13484/ 93825
				3 LESS EDUCATION THAN REQUIRED FOR JOB	1772/ 13493
				4 CAN'T BE DETERMINED	3885/ 27780
				9 NOT STATED	520/ 3563
				NOTE: THE VALUES ARE OBTAINED BY COMBINING "HLS91" AND "EDUJOREC".	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
774	JOBQL86	1	1390	COMPARISON OF THE LEVEL OF SCHOOLING COMPLETED IN 1986 WITH THE EDUCATION LEVEL REQUIRED FOR THE JOB HELD DURING THE 1991 SURVEY REFERENCE WEEK	
				BLANK NOT APPLICABLE	
				1 MORE EDUCATION THAN REQUIRED FOR JOB	6268/ 45589
				2 SAME EDUCATION AS REQUIRED FOR JOB	8070/ 48549
				3 LESS EDUCATION THAN REQUIRED FOR JOB	13345/ 89334
				4 CAN'T BE DETERMINED	3313/ 30247
				9 NOT STATED	3885/ 27780
					520/ 3563
				NOTE: THE VALUES ARE OBTAINED BY COMBINING "CERT_LVL" AND "EDUJOREC".	
775	DVAGE91	2	1391-1392	ESTIMATED AGE FOR RESPONDENT IN 1991 DERIVED BY USING AGEHAY88 AND ADDING 3 YEARS	
				21:88	
				99 NOT STATED	35337/ 244819
					64/ 242
776	UNEMP90	2	1393-1394	NUMBER OF MONTHS UNEMPLOYED IN 1990	
				00:12 MONTHS	
				99 NOT STATED	34900/ 241422
					501/ 3640
				NOTE: DERIVED FROM DATA IN SECTION E.	
				IF QE3=" " THEN: UNEMP90="00", OUTLF90="00"; END;	
				ELSE IF QE3="99" OR QE6="99" OR QE8="99" OR QE10="99 OR QE12="99" THEN: UNEMP90="99"; OUTLF90="99"	
				END;	
				ELSE:	
				IF QE6=" " THEN QE6="0";	
				IF QE8=" " THEN QE8="0";	
				IF QE10=" " THEN QE10="0";	
				IF QE12=" " THEN QE12="0";	
				IF QE4="1" THEN:	
				UNEMP90=QE6 - QE8 + QE10;	
				OUTLF90 = :QE3 - UNEMP90;	
				END;	
				ELSE:	
				UNEMP90=QE3 - QE12;	
				OUTLF90=QE12;	
				END;	
				THE VALUES FOR QE3, QE4, QE6, QE8, QE10 AND QE12 ARE SET FOR THE PURPOSE OF CREATING THIS DERIVED VARIABLE ONLY. THEIR ORIGINAL VALUES ARE RETAINED ON THE FILE.	
777	OUTLF90	2	1395-1396	NUMBER OF MONTHS OUT OF THE LABOUR FORCE IN 1990	
				00:12 MONTHS	
				99 NOT STATED	34900/ 241422
					501/ 3640
				NOTE: DERIVED FROM DATA IN SECTION E	

FOLLOW-UP OF 1986 GRADUATES SECT12 RELEASE FILE

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FIELD	ACRONYM	LEN	POSITION	QUESTION AND VARIABLE DESCRIPTIONS	UNWTD/WEIGHTED
778	NEDAFTER	2	1397-1398	THE HIGHEST LEVEL OF ADDITIONAL SCHOOLING COMPLETED BY MAY 1988 SINCE GRADUATION IN 1985/6.	
				BLANK NOT APPLICABLE	29983/ 204441
				01 TRADE-VOCATIONAL DIPLOMA OR CERTIFICATE	656/ 3778
				05 COLLEGE DIPLOMA OR CERTIFICATE	1245/ 8584
				07 UNDERGRADUATE DIPLOMA OR CERTIFICATE	369/ 3657
				08 BACHELOR'S OR FIRST PROFESSIONAL DEGREE	608/ 4400
				10 GRADUATE DIPLOMA OR CERTIFICATE	236/ 2367
				11 MASTER'S DEGREE	232/ 2105
				12 DOCTORATE	14/ 77
				13 PROF. ASSN. OR "OTHER"	1234/ 7990
				99 NOT STATED	824/ 5462
				NOTE: A RECODING OF THE HIGHEST LEVEL REPORTED AS COMPLETED BY MAY 1988 IN Q136 (UNIV/COLL) OR Q124 (TVOC). LEVELS 01 TO 12 TOOK PRECEDENCE OVER LEVEL 13 WHEN MORE THAN ONE CATEGORY WAS CHECKED. SEE NOTE FOR VARIABLE EDAFTER IN FIELD 390.	
779	HLS88	2	1399-1400	THE HIGHEST LEVEL OF SCHOOLING COMPLETED BY THE MAY 1988 SURVEY DATE.	
				01 TRADE-VOCATIONAL DIPLOMA OR CERTIFICATE	6284/ 31989
				02 MORE THAN ONE TRADE-VOCATIONAL DIPL./ CERT.	679/ 3267
				05 COLLEGE DIPLOMA OR CERTIFICATE	10249/ 75581
				06 MORE THAN ONE COLLEGE DIPLOMA OR CERT.	1253/ 8470
				07 UNDERGRADUATE DIPLOMA OR CERTIFICATE	950/ 11889
				08 BACHELOR'S OR FIRST PROFESSIONAL DEGREE	8240/ 79048
				09 MORE THAN ONE B.A.'S OR 1ST PROF DEGREE	1400/ 13756
				10 GRADUATE DIPLOMA OR CERTIFICATE	527/ 3402
				11 MASTER'S DEGREE	4829/ 16883
				12 DOCTORATE	990/ 1576
				NOTE: A COMBINATION OF CODES IN "HLOS1" AND "NEDAFTER", WHICHEVER IS HIGHER. THIS VARIABLE ONLY INCLUDES LEVELS THAT WERE COMPLETED BY MAY 1988. SEE NOTE FOR VARIABLE HLOS2 IN FIELD 391.	
780	JOBQL88	1	1401	THE EDUCATION REQUIREMENTS OF THE MAY 1988 JOB COMPARED TO THE HIGHEST LEVEL OF EDUCATION COMPLETED BY MAY 1988.	
				0 BLANK NOT APPLICABLE	5867/ 41898
				1 MORE EDUCATION THAN REQUIRED FOR JOB	13250/ 92452
				2 SAME EDUCATION AS REQUIRED FOR JOB	13897/ 92623
				3 LESS EDUCATION THAN REQUIRED FOR JOB	711/ 6249
				* NOT DETERMINABLE	1676/ 11839
				NOTE: DERIVED FROM "JOBED" AND "HLS88". THIS VARIABLE ONLY INCLUDES LEVELS THAT WERE COMPLETED BY MAY 1988. SEE NOTE FOR VARIABLE JOBQL2 IN FIELD 394.	

APPENDIX I

Derivation and Coding of the *NELM Retention Variable*, following the Derivation and Coding of the *Activity Variable*

Utilization of this coding system for the NELM retention status variable necessitated the development of separate coding-rules for use with respondents who were "employed" or "not employed but eligible for work" versus those who were "students". Consequently, a new variable, labelled "activity", was derived (see Table 4).

The *activity* variable was coded as 1="employed"; 2="not employed but eligible for work"; and, 3="student". Basically, any respondent whose main life activity was deemed to be educational pursuits was classed as a student. All others were considered to be potential candidates for employment--in that they were either employed or not employed/not students. The reader will note that this system differs from the traditional employed/unemployed labour force status classification in that *everyone* is considered to be in the labour force, in so far as they are "potential" candidates for employment. In this way, the ultimate coding of the dichotomous NELM retention status variable could be carried out based on a content-analysis of "occupational pursuits" for employment candidates (i.e., those with a score of 1 or 2 on the activity variable) versus a content-analysis of "educational pursuits" for students (i.e., those with a score of 3 on the activity variable).

Unfortunately, the coding-strategy for the activity variable was not straight forward, as the variable "Labour Force Status" derived by Statistics Canada and included in the data set did not lend itself to a simplistic categorization of "students". In fact, by its coding-rules Statistics Canada actually absorbed many "students" into the "employed" category. Compounding the problem was the fact that respondents were not asked whether, during the reference week, they were, indeed, full-time students. A discussion of the resolution of this problem (i.e., the derivation of the activity variable and its coding-rule[s]) follows.

For their purposes, Statistics Canada coded the variable "Labour Force Status" as follows: "A full-time student looking for a part-time job (and available for work in the reference week) was classed as *unemployed*. Whereas, a full-time student looking for full-time work was classed as *out-of-the-labour-force*. If the full-time student happened to have a job, whether it was full-time or part-time, they were classified as *employed*." (Statistics Canada, 1991, p. 68). Clearly, this system of classification obscured the identification of those respondents whose main life activity was "educational pursuits". The problem was compounded by the fact that respondents were not asked, if, during the reference-week, they were, indeed, full-time students.

For the purpose of this investigation it was deemed necessary to code category 3 of the activity variable (i.e., "student") based on respondents' responses to three questions (i.e., 70, 71, and 90) at post-graduation year-two and to four questions (i.e., A10, A6, B30, and B33) at post-graduation year-five. As shown in Appendix F and Appendix G, each of these questions had "going to school" as a possible response. For example, question 71 asks "What is the main reason you had a part-time job?", with the third valid response being "going to school". Thus, it was assumed--by inference--that "educational pursuits" were the main life activity of respondents who answered "going to school" as their main reason for either not looking for work or not working full-time. These respondents were, therefore, coded as students; all others were considered to be job-candidates. The "Labour Force Status" variable was then applied to further refine the coding of activity among job-candidates. Specifically, those who were "unemployed" or "out of the labour force" were coded as "job-candidate who was not working"; those who were "employed" were coded as "job-candidate who was working".

With the activity variable coded, the assignment of values for the NELM retention status variable proceeded as follows. Respondents who were "not employed but eligible for work" received a value of 0 (i.e., "not retained"). Respondents who were "students" received a value according to the field in which they were studying (i.e., those in non-NELM fields received a score of 0, "not retained"; those in NELM fields received a score of 1, "retained").

Finally, among "employed" respondents, the value was assigned on the basis of the job held (i.e., those working in jobs outside of NELM received a score of 0, "not retained"; those working in N, E, L, or M-related jobs received a value of 1, "retained").

117 Occupations Related to Management and Administration

- 1171 Accountants, Auditors and Other Financial Officers
- 1173 Organization and Methods Analysts
- 1174 Personnel and Related Officers
- 1175 Purchasing Officers and Buyers, Except Wholesale and Retail Trade
- 1176 Inspectors and Regulatory Officers, n.e.c.
- 1179 Occupations Related to Management and Administration, n.e.c.

MAJOR GROUP 21 - OCCUPATIONS IN NATURAL SCIENCES, ENGINEERING AND MATHEMATICS

211 Occupations in Physical Sciences

- 2111 Chemists
- 2112 Geologists
- 2113 Physicists
- 2114 Meteorologists
- 2117 Physical Sciences Technologists and Technicians
- 2119 Occupations in Physical Sciences, n.e.c.

213 Occupations in Life Sciences

- 2131 Agriculturists and Related Scientists
- 2133 Biologists and Related Scientists
- 2135 Life Sciences Technologists and Technicians
- 2139 Occupations in Life Sciences, n.e.c.

214/215 Architects, Engineers and Community Planners

- 2141 Architects
- 2142 Chemical Engineers
- 2143 Civil Engineers
- 2144 Electrical Engineers
- 2145 Industrial Engineers
- 2146 Agricultural Engineers
- 2147 Mechanical Engineers
- 2151 Metallurgical Engineers
- 2153 Mining Engineers
- 2154 Petroleum Engineers
- 2155 Aerospace Engineers
- 2156 Nuclear Engineers
- 2157 Community Planners
- 2159 Professional Engineers, n.e.c.

- 216 Other Occupations in Architecture and Engineering
 - 2160 Supervisors: Other Occupations in Architecture and Engineering
 - 2161 Surveyors
 - 2163 Draughting Occupations
 - 2164 Architectural Technologists and Technicians
 - 2165 Engineering Technologists and Technicians
 - 2169 Other Occupations in Architecture and Engineering, n.e.c.
-
- 218 Occupations in Mathematics, Statistics, Systems Analysis and Related Fields
 - 2181 Mathematicians, Statisticians and Actuaries
 - 2183 Systems Analysts, Computer Programmers and Related Occupations
 - 2189 Occupations in Mathematics, Statistics, Systems Analysis and Related Fields, n.e.c.

MAJOR GROUP 23 - OCCUPATIONS IN SOCIAL SCIENCES AND RELATED FIELDS

- 231 Occupations in Social Sciences
 - 2311 Economists
 - 2313 Sociologists, Anthropologists and Related Social Scientists
 - 2315 Psychologists
 - 2319 Occupations in Social Sciences, n.e.c.
-
- 233 Occupations in Social Work and Related Fields
 - 2331 Social Workers
 - 2333 Occupations in Welfare and Community Services
 - 2339 Occupations in Social Work and Related Fields, n.e.c.
-
- 234 Occupations in Law and Jurisprudence
 - 2341 Judges and Magistrates
 - 2343 Lawyers and Notaries
 - 2349 Occupations in Law and Jurisprudence, n.e.c.
-
- 235 Occupations in Library, Museum and Archival Sciences
 - 2350 Supervisors: Occupations in Library, Museum and Archival Sciences

- 2351 Librarians, Archivists and Conservators
- 2353 Technicians in Library, Museum and Archival Sciences
- 2359 Occupations in Library, Museum and Archival Sciences, n.e.c.

239 Other Occupations in Social Sciences and Related Fields

- 2391 Educational and Vocational Counsellors
- 2399 Other Occupations in Social Sciences and Related Fields, n.e.c.

MAJOR GROUP 25 - OCCUPATIONS IN RELIGION

251 Occupations in Religion

- 2511 Ministers of Religion
- 2513 Nuns and Brothers
- 2519 Occupations in Religion, n.e.c.

MAJOR GROUP 27 - TEACHING AND RELATED OCCUPATIONS

271 University Teaching and Related Occupations

- 2711 University Teachers
- 2719 University Teaching and Related Occupations, n.e.c.

273 Elementary and Secondary School Teaching and Related Occupations

- 2731 Elementary and Kindergarten Teachers
- 2733 Secondary School Teachers
- 2739 Elementary and Secondary School Teaching and Related Occupations, n.e.c.

279 Other Teaching and Related Occupations

- 2791 Community College and Vocational School Teachers
- 2792 Fine Arts Teachers, n.e.c.
- 2793 Post-secondary School Teachers, n.e.c.
- 2795 Teachers of Exceptional Students, n.e.c.
- 2797 Instructors and Training Officers, n.e.c.
- 2799 Other Teaching and Related Occupations, n.e.c.

MAJOR GROUP 31 - OCCUPATIONS IN MEDICINE AND HEALTH

311 Health Diagnosing and Treating Occupations

- 3111 Physicians and Surgeons
- 3113 Dentists
- 3115 Veterinarians
- 3117 Osteopaths and Chiropractors
- 3119 Health Diagnosing and Treating Occupations, n.e.c.

313 Nursing, Therapy and Related Assisting Occupations

- 3130 Supervisors: Nursing, Therapy and Related Assisting Occupations
- 3131 Nurses, Registered, Graduate and Nurses-in-training
- 3132 Orderlies
- 3134 Registered Nursing Assistants
- 3135 Nursing Attendants
- 3136 Audio and Speech Therapists
- 3137 Physiotherapists
- 3138 Occupational Therapists
- 3139 Nursing, Therapy and Related Assisting Occupations, n.e.c.

315/316 Other Occupations in Medicine and Health

- 3151 Pharmacists
- 3152 Dietitians and Nutritionists
- 3153 Optometrists
- 3154 Dispensing Opticians
- 3155 Radiological Technologists and Technicians
- 3156 Medical Laboratory Technologists and Technicians
- 3157 Denturists
- 3158 Dental Hygienists and Dental Assistants
- 3161 Dental Laboratory Technicians
- 3162 Respiratory Technicians
- 3169 Other Occupations in Medicine and Health, n.e.c.

MAJOR GROUP 33 - ARTISTIC, LITERARY, RECREATIONAL AND RELATED
OCCUPATIONS

331 Occupations in Fine and Commercial Art, Photography and
Related Fields

- 3311 Painters, Sculptors and Related Artists
- 3313 Product and Interior Designers
- 3314 Advertising and Illustrating Artists
- 3315 Photographers and Camera Operators

3319 Occupations in Fine and Commercial Art, Photography and Related Fields, n.e.c.

333 Occupations in Performing and Audio-visual Arts

3330 Producers and Directors, Performing and Audio-visual Arts

3331 Conductors, Composers and Arrangers

3332 Musicians and Singers

3333 Occupations Related to Music and Musical Entertainment, n.e.c.

3334 Dancers and Choreographers

3335 Actors/Actresses

3337 Radio and Television Announcers

3339 Occupations in Performing and Audio-visual Arts, n.e.c.

335 Occupations in Writing

3351 Writers and Editors

3355 Translators and Interpreters

3359 Occupations in Writing, n.e.c.

336/337 Occupations in Sports and Recreation

3360 Supervisors: Occupations in Sports and Recreation

3370 Coaches, Trainers and Instructors, Sports and Recreation

3371 Referees and Related Officials

3373 Athletes

3375 Attendants, Sports and Recreation

3379 Occupations in Sports and Recreation, n.e.c.

MAJOR GROUP 41 - CLERICAL AND RELATED OCCUPATIONS

411 Stenographic and Typing Occupations

4110 Supervisors: Stenographic and Typing Occupations

4111 Secretaries and Stenographers

4113 Typists and Clerk-typists

413 Bookkeeping, Account-recording and Related Occupations

4130 Supervisors: Bookkeeping, Account-recording and Related Occupations

4131 Bookkeepers and Accounting Clerks

4133 Cashiers and Tellers

4135 Insurance, Bank and Other Finance Clerks

- 4137 Statistical Clerks
- 4139 Bookkeeping, Account-recording and Related Occupations, n.e.c.

- 414 Office Machine and Electronic Data-processing Equipment Operators

- 4140 Supervisors: Office Machine and Electronic Data-processing Equipment Operators
- 4141 Office Machine Operators
- 4143 Electronic Data-processing Equipment Operators

- 415 Material Recording, Scheduling and Distributing Occupations

- 4150 Supervisors: Material Recording, Scheduling and Distributing Occupations
- 4151 Production Clerks
- 4153 Shipping and Receiving Clerks
- 4155 Stock Clerks and Related Occupations
- 4157 Weighers
- 4159 Material Recording, Scheduling and Distributing Occupations, n.e.c.

- 416 Library, File and Correspondence Clerks and Related Occupations

- 4160 Supervisors: Library, File and Correspondence Clerks and Related Occupations
- 4161 Library and File Clerks
- 4169 Library, File and Correspondence Clerks and Related Occupations, n.e.c.

- 417 Reception, Information, Mail and Message Distribution Occupations

- 4170 Supervisors: Reception, Information, Mail and Message Distribution Occupations
- 4171 Receptionists and Information Clerks
- 4172 Mail Carriers
- 4173 Mail and Postal Clerks
- 4175 Telephone Operators
- 4177 Messengers
- 4179 Reception, Information, Mail and Message Distribution Occupations, n.e.c.

419 Other Clerical and Related Occupations

- 4190 Supervisors: Other Clerical and Related Occupations, n.e.c.
- 4191 Collectors
- 4192 Claim Adjusters
- 4193 Travel Clerks, Ticket, Station and Freight Agents
- 4194 Hotel Clerks
- 4195 Personnel Clerks
- 4197 General Office Clerks
- 4199 Other Clerical and Related Occupations, n.e.c.

MAJOR GROUP 51 - SALES OCCUPATIONS

513/514 Sales Occupations, Commodities

- 5130 Supervisors: Sales Occupations, Commodities
- 5131 Technical Sales Occupations and Related Advisers
- 5133 Commercial Travellers
- 5135 Sales Clerks and Salespersons, Commodities, n.e.c.
- 5141 Street Vendors and Door-to-door Sales Occupations
- 5143 Newspaper Carriers and Vendors
- 5145 Service Station Attendants
- 5149 Sales Occupations: Commodities, n.e.c.

517 Sales Occupations, Services

- 5170 Supervisors: Sales Occupations, Services
- 5171 Insurance Sales Occupations
- 5172 Real Estate Sales Occupations
- 5173 Sales Agents and Traders, Securities
- 5174 Advertising Sales Occupations
- 5177 Business Services Sales Occupations
- 5179 Sales Occupations: Services, n.e.c.

519 Other Sales Occupations

- 5190 Supervisors: Other Sales Occupations
- 5191 Buyers, Wholesale and Retail Trade
- 5193 Route Drivers
- 5199 Other Sales Occupations, n.e.c.

MAJOR GROUP 61 - SERVICE OCCUPATIONS

611 Protective Service Occupations

- 6111 Fire-fighting Occupations
- 6112 Police Officers and Detectives, Government
- 6113 Police Agents and Investigators, Private
- 6115 Guards and Related Security Occupations
- 6116 Commissioned Officers, Armed Forces
- 6117 Other Ranks, Armed Forces
- 6119 Protective Service Occupations, n.e.c.

612 Food and Beverage Preparation and Related Service Occupations

- 6120 Supervisors: Food and Beverage Preparation and Related Service Occupations
- 6121 Chefs and Cooks
- 6123 Bartenders
- 6125 Food and Beverage Serving Occupations
- 6129 Food and Beverage Preparation and Related Service Occupations, n.e.c.

613 Occupations in Lodging and Other Accommodation

- 6130 Supervisors: Occupations in Lodging and Other Accommodation
- 6133 Lodging Cleaners, Except Private Household
- 6135 Sleeping-car and Baggage Porters
- 6139 Occupations in Lodging and Other Accommodation, n.e.c.

614 Personal Service Occupations

- 6141 Funeral Directors, Embalmers and Related Occupations
- 6142 Housekeepers, Servants and Related Occupations
- 6143 Barbers, Hairdressers and Related Occupations
- 6144 Guides
- 6145 Travel and Related Attendants, Except Food and Beverage
- 6147 Child-care Occupations
- 6149 Personal Service Occupations, n.e.c.

616 Apparel and Furnishings Service Occupations

- 6160 Supervisors: Apparel and Furnishings Service Occupations
- 6162 Laundering and Dry Cleaning Occupations
- 6165 Pressing Occupations
- 6169 Apparel and Furnishings Service Occupations, n.e.c.

619 Other Service Occupations

- 6190 Supervisors: Other Service Occupations
- 6191 Janitors, Charworkers and Cleaners
- 6193 Elevator-operating Occupations
- 6198 Occupations in Labouring and Other Elemental Work: Other Services
- 6199 Other Service Occupations, n.e.c.

MAJOR GROUP 71 - FARMING, HORTICULTURAL AND ANIMAL HUSBANDRY
OCCUPATIONS

711 Farmers

- 7113 Livestock Farmers
- 7115 Crop Farmers
- 7119 Farmers, n.e.c.

718/719 Other Farming, Horticultural and Animal Husbandry
Occupations

- 7180 Foremen/women: Other Farming, Horticultural and Animal
Husbandry Occupations
- 7183 Livestock Farm Workers
- 7185 Crop Farm Workers
- 7195 Nursery and Related Workers
- 7196 Inspecting, Testing, Grading and Sampling Occupations:
Other Farming, Horticultural and Animal Husbandry
- 7197 Farm Machinery Operators
- 7199 Other Farming, Horticultural and Animal Husbandry
Occupations, n.e.c.

MAJOR GROUP 73 - FISHING, TRAPPING AND RELATED OCCUPATIONS

731 Fishing, Trapping and Related Occupations

- 7311 Captains and Other Officers, Fishing Vessels
- 7313 Net, Trap and Line Fishing Occupations
- 7315 Trapping and Related Occupations
- 7319 Fishing, Trapping and Related Occupations, n.e.c.

MAJOR GROUP 75 - FORESTRY AND LOGGING OCCUPATIONS

751 Forestry and Logging Occupations

- 7510 Foremen/women: Forestry and Logging Occupations
- 7511 Forestry Conservation Occupations
- 7513 Timber Cutting and Related Occupations
- 7516 Log Inspecting, Grading, Scaling and Related Occupations
- 7517 Log Hoisting, Sorting, Moving and Related Occupations
- 7518 Occupations in Labouring and Other Elemental Work: Forestry and Logging
- 7519 Forestry and Logging Occupations, n.e.c.

MAJOR GROUP 77 - MINING AND QUARRYING INCLUDING OIL AND GAS FIELD OCCUPATIONS

771 Mining and Quarrying Including Oil and Gas Field Occupations

- 7710 Foremen/women: Mining and Quarrying Including Oil and Gas Field Occupations
- 7711 Rotary Well-drilling and Related Occupations
- 7713 Rock and Soil Drilling Occupations
- 7715 Blasting Occupations
- 7717 Mining and Quarrying: Cutting, Handling and Loading Occupations
- 7718 Occupations in Labouring and Other Elemental Work: Mining and Quarrying Including Oil and Gas Fields
- 7719 Mining and Quarrying Including Oil and Gas Field Occupations, n.e.c.

MAJOR GROUP 81/82 - PROCESSING OCCUPATIONS

811 Mineral Ore Treating Occupations

- 8110 Foremen/women: Mineral Ore Treating Occupations
- 8111 Crushing and Grinding Occupations, Mineral Ores
- 8113 Mixing, Separating, Filtering and Related Occupations, Mineral Ores
- 8115 Melting and Roasting Occupations, Mineral Ores
- 8116 Inspecting, Testing, Grading and Sampling Occupations: Mineral Ore Treating
- 8118 Occupations in Labouring and Other Elemental Work: Mineral Ore Treating
- 8119 Mineral Ore Treating Occupations, n.e.c.

813/814 Metal Processing and Related Occupations

- 8130 Foremen/women: Metal Processing and Related Occupations
- 8131 Metal Smelting, Converting and Refining Occupations
- 8133 Metal Heat-treating Occupations
- 8135 Metal Rolling Occupations
- 8137 Moulding, Coremaking and Metal Casting Occupations
- 8141 Metal Extruding and Drawing Occupations
- 8143 Plating, Metal Spraying and Related Occupations
- 8146 Inspecting, Testing, Grading and Sampling Occupations, Metal Processing
- 8148 Occupations in Labouring and Other Elemental Work: Metal Processing
- 8149 Metal Processing and Related Occupations, n.e.c.

815 Clay, Glass and Stone Processing, Forming and Related Occupations

- 8150 Foremen/women: Clay, Glass and Stone Processing, Forming and Related Occupations
- 8151 Furnace and Kiln Workers: Clay, Glass and Stone
- 8153 Separating, Grinding, Crushing and Mixing Occupations: Clay, Glass and Stone
- 8155 Forming Occupations: Clay, Glass and Stone
- 8156 Inspecting, Testing, Grading and Sampling Occupations: Clay, Glass and Stone Processing and Forming
- 8158 Occupations in Labouring and Other Elemental Work: Clay, Glass and Stone Processing and Forming
- 8159 Clay, Glass and Stone Processing, Forming and Related Occupations, n.e.c.

816/817 Chemicals, Petroleum, Rubber, Plastic and Related Materials Processing Occupations

- 8160 Foremen/women: Chemicals, Petroleum, Rubber, Plastic and Related Materials Processing Occupations
- 8161 Mixing and Blending Occupations, Chemicals and Related Materials
- 8163 Filtering, Straining and Separating Occupations, Chemicals and Related Materials
- 8165 Distilling, Subliming and Carbonizing Occupations, Chemicals and Related Materials
- 8167 Roasting, Cooking and Drying Occupations, Chemicals and Related Materials
- 8171 Crushing and Grinding Occupations, Chemicals and Related Materials
- 8173 Coating and Calendering Occupations, Chemicals and Related Materials
- 8176 Inspecting, Testing, Grading and Sampling Occupations: Chemicals, Petroleum, Rubber, Plastic and Related Materials Processing

- 8178 Occupations in Labouring and Other Elemental Work: Chemicals, Petroleum, Rubber, Plastic and Related Materials Processing
- 8179 Chemicals, Petroleum, Rubber, Plastic and Related Materials Processing Occupations, n.e.c.

821/822 Food, Beverage and Related Processing Occupations

- 8210 Foremen/women: Food, Beverage and Related Processing Occupations
- 8211 Flour and Grain Milling Occupations
- 8213 Baking, Confectionery Making and Related Occupations
- 8215 Slaughtering and Meat Cutting, Canning, Curing and Packing Occupations
- 8217 Fish Canning, Curing and Packing Occupations
- 8221 Fruit and Vegetable Canning, Preserving and Packing Occupations
- 8223 Milk Processing and Related Occupations
- 8225 Sugar Processing and Related Occupations
- 8226 Inspecting, Testing, Grading and Sampling Occupations: Food, Beverage and Related Processing
- 8227 Beverage Processing and Related Occupations
- 8228 Occupations in Labouring and Other Elemental Work: Food, Beverage and Related Processing
- 8229 Food, Beverage and Related Processing Occupations, n.e.c.

823 Wood Processing Occupations, Except Pulp and Papermaking

- 8230 Foremen/women: Wood Processing Occupations, Except Pulp and Papermaking
- 8231 Sawmill Sawyers and Related Occupations
- 8233 Plywood Making and Related Occupations
- 8235 Wood Treating Occupations
- 8236 Inspecting, Testing, Grading and Sampling Occupations: Wood Processing, Except Pulp and Papermaking
- 8238 Occupations in Labouring and Other Elemental Work: Wood Processing, Except Pulp and Papermaking
- 8239 Wood Processing Occupations, Except Pulp and Papermaking, n.e.c.

825 Pulp and Papermaking and Related Occupations

- 8250 Foremen/women: Pulp and Papermaking and Related Occupations
- 8251 Cellulose Pulp Preparing Occupations
- 8253 Papermaking and Finishing Occupations
- 8256 Inspecting, Testing, Grading and Sampling Occupations: Pulp and Papermaking
- 8258 Occupations in Labouring and Other Elemental Work: Pulp and Papermaking
- 8259 Pulp and Papermaking and Related Occupations, n.e.c.

826/827 Textile Processing Occupations

- 8260 Foremen/women: Textile Processing Occupations
- 8261 Textile Fibre Preparing Occupations
- 8263 Textile Spinning and Twisting Occupations
- 8265 Textile Winding and Reeling Occupations
- 8267 Textile Weaving Occupations
- 8271 Knitting Occupations
- 8273 Textile Bleaching and Dyeing Occupations
- 8275 Textile Finishing and Calendering Occupations
- 8276 Inspecting, Testing, Grading and Sampling Occupations. Textile Processing
- 8278 Occupations in Labouring and Other Elemental Work: Textile Processing
- 8279 Textile Processing Occupations, n.e.c.

829 Other Processing Occupations

- 8290 Foremen/women: Other Processing Occupations
- 8293 Tobacco Processing Occupations
- 8295 Hide and Pelt Processing Occupations
- 8296 Inspecting, Testing, Grading and Sampling Occupations: Other Processing
- 8298 Occupations in Labouring and Other Elemental Work: Other Processing
- 8299 Other Processing Occupations, n.e.c.

MAJOR GROUP 83 - MACHINING AND RELATED OCCUPATIONS

831 Metal Machining Occupations

- 8310 Foremen/women: Metal Machining Occupations
- 8311 Tool and Die Making Occupations
- 8313 Machinist and Machine Tool Setting-up Occupations
- 8315 Machine Tool Operating Occupations
- 8316 Inspecting, Testing, Grading and Sampling Occupations: Metal Machining
- 8319 Metal Machining Occupations, n.e.c.

833 Metal Shaping and Forming Occupations, Except Machining

- 8330 Foremen/women: Metal Shaping and Forming Occupations, Except Machining
- 8331 Forging Occupations
- 8333 Sheet Metal Workers
- 8334 Metalworking-machine Operators, n.e.c.
- 8335 Welding and Flame Cutting Occupations

- 8336 Inspecting, Testing, Grading and Sampling Occupations:
Metal Shaping and Forming, Except Machining
- 8337 Boilermakers, Platers and Structural Metal Workers
- 8339 Metal Shaping and Forming Occupations, Except Machining, n.e.c.

835 Wood Machining Occupations

- 8350 Foremen/women: Wood Machining Occupations
- 8351 Wood Patternmaking Occupations
- 8353 Wood Sawing and Related Occupations, n.e.c.
- 8355 Planing, Turning, Shaping and Related Wood Machining
Occupations
- 8356 Inspecting, Testing, Grading and Sampling Occupations: Wood
Machining
- 8357 Wood Sanding Occupations
- 8359 Wood Machining Occupations, n.e.c.

837 Clay, Glass, Stone and Related Materials Machining
Occupations

- 8370 Foremen/women: Clay, Glass, Stone and Related Materials
Machining Occupations
- 8371 Cutting and Shaping Occupations: Clay, Glass, Stone and
Related Materials
- 8373 Abrading and Polishing Occupations: Clay, Glass, Stone and
Related Materials
- 8376 Inspecting, Testing, Grading and Sampling Occupations:
Clay, Glass, Stone and Related Materials Machining
- 8379 Clay, Glass, Stone and Related Materials Machining
Occupations, n.e.c.

839 Other Machining and Related Occupations, n.e.c.

- 8390 Foremen/women: Other Machining and Related Occupations, n.e.c.
- 8391 Engravers, Etchers and Related Occupations, n.e.c.
- 8393 Filing, Grinding, Buffing, Cleaning and Polishing
Occupations, n.e.c.
- 8395 Patternmakers and Mouldmakers, n.e.c.
- 8396 Inspecting, Testing, Grading and Sampling Occupations:
Other Machining and Related Occupations, n.e.c.
- 8399 Other Machining and Related Occupations, n.e.c.

MAJOR GROUP 85 - PRODUCT FABRICATING, ASSEMBLING AND REPAIRING
OCCUPATIONS

- 851/852 Fabricating and Assembling Occupations: Metal Products, n.e.c.
- 8510 Foremen/women: Fabricating and Assembling Occupations: Metal Products, n.e.c.
- 8511 Engine and Related Equipment Fabricating and Assembling Occupations, n.e.c.
- 8513 Motor Vehicle Fabricating and Assembling Occupations, n.e.c.
- 8515 Aircraft Fabricating and Assembling Occupations, n.e.c.
- 8523 Industrial, Farm, Construction and Other Mechanized Equipment and Machinery Fabricating and Assembling Occupations, n.e.c.
- 8525 Business and Commercial Machines Fabricating and Assembling Occupations, n.e.c.
- 8526 Inspecting, Testing, Grading and Sampling Occupations: Fabricating and Assembling Metal Products, n.e.c.
- 8527 Precision Instruments and Related Equipment Fabricating and Assembling Occupations, n.e.c.
- 8528 Occupations in Labouring and Other Elemental Work: Fabricating and Assembling Metal Products, n.e.c.
- 8529 Other Fabricating and Assembling Occupations: Metal Products, n.e.c.

- 853 Fabricating, Assembling, Installing and Repairing Occupations: Electrical, Electronic and Related Equipment
- 8530 Foremen/women: Fabricating, Assembling, Installing and Repairing Occupations: Electrical, Electronic and Related Equipment
- 8531 Electrical and Related Equipment Fabricating and Assembling Occupations
- 8533 Electrical and Related Equipment Installing and Repairing Occupations, n.e.c.
- 8534 Electronic and Related Equipment Fabricating and Assembling Occupations
- 8535 Electronic and Related Equipment Installing and Repairing Occupations, n.e.c.
- 8536 Inspecting, Testing, Grading and Sampling Occupations: Fabricating, Assembling, Installing and Repairing Electrical, Electronic and Related Equipment
- 8537 Radio and Television Repairers
- 8538 Occupations in Labouring and Other Elemental Work: Fabricating, Assembling, Installing and Repairing Electrical, Electronic and Related Equipment
- 8539 Fabricating, Assembling, Installing and Repairing Occupations: Electrical, Electronic and Related Equipment, n.e.c.

854 Fabricating, Assembling and Repairing Occupations: Wood Products

- 8540 Foremen/women: Fabricating, Assembling and Repairing Occupations: Wood Products
- 8541 Cabinet and Wood Furniture Makers
- 8546 Inspecting, Testing, Grading and Sampling Occupations: Fabricating, Assembling and Repairing Wood Products
- 8548 Occupations in Labouring and Other Elemental Work: Fabricating, Assembling and Repairing Wood Products
- 8549 Fabricating, Assembling and Repairing Occupations: Wood Products, n.e.c.

855/856 Fabricating, Assembling and Repairing Occupations: Textile, Fur and Leather Products

- 8550 Foremen/women: Fabricating, Assembling and Repairing Occupations: Textile, Fur and Leather Products
- 8551 Patternmaking, Marking and Cutting Occupations: Textile, Fur and Leather Products
- 8553 Tailors and Dressmakers
- 8555 Furriers
- 8557 Milliners, Hat and Cap Makers
- 8561 Shoemaking and Repairing Occupations
- 8562 Upholsterers
- 8563 Sewing Machine Operators, Textile and Similar Materials
- 8566 Inspecting, Testing, Grading and Sampling Occupations: Fabricating, Assembling and Repairing Textile, Fur and Leather Products
- 8568 Occupations in Labouring and Other Elemental Work: Fabricating, Assembling and Repairing Textile, Fur and Leather Products
- 8569 Fabricating, Assembling and Repairing Occupations: Textile, Fur and Leather Products, n.e.c.

857 Fabricating, Assembling and Repairing Occupations: Rubber, Plastic and Related Products

- 8570 Foremen/women: Fabricating, Assembling and Repairing Occupations: Rubber, Plastic and Related Products
- 8571 Bonding and Cementing Occupations: Rubber, Plastic and Related Products
- 8573 Moulding Occupations: Rubber, Plastic and Related Products
- 8575 Cutting and Finishing Occupations: Rubber, Plastic and Related Products
- 8576 Inspecting, Testing, Grading and Sampling Occupations: Fabricating, Assembling and Repairing Rubber, Plastic and Related Products
- 8578 Occupations in Labouring and Other Elemental Work: Fabricating, Assembling and Repairing Rubber, Plastic and Related Products

8579 Fabricating, Assembling and Repairing Occupations: Rubber, Plastic and Related Products, n.e.c.

855 Mechanics and Repairers, n.e.c.

8580 Foremen/women: Mechanics and Repairers, n.e.c.

8581 Motor Vehicle Mechanics and Repairers

8582 Aircraft Mechanics and Repairers

8583 Rail Transport Equipment Mechanics and Repairers

8584 Industrial, Farm and Construction Machinery Mechanics and Repairers

8585 Business and Commercial Machine Mechanics and Repairers

8586 Inspecting, Testing, Grading and Sampling Occupations: Equipment Repair, n.e.c.

8587 Watch and Clock Repairers

8588 Precision Instrument Mechanics and Repairers

8589 Other Mechanics and Repairers, n.e.c.

859 Other Product Fabricating, Assembling and Repairing Occupations

8590 Foremen/women: Other Product Fabricating, Assembling and Repairing Occupations

8591 Jewellery and Silverware Fabricating, Assembling and Repairing Occupations

8592 Marine Craft Fabricating, Assembling and Repairing Occupations

8593 Paper Product Fabricating and Assembling Occupations

8595 Painting and Decorating Occupations, n.e.c.

8596 Inspecting, Testing, Grading and Sampling Occupations: Other Product Fabricating, Assembling and Repairing

8598 Occupations in Labouring and Other Elemental Work: Other Product Fabricating, Assembling and Repairing

8599 Other Product Fabricating, Assembling and Repairing Occupations, n.e.c.

MAJOR GROUP 87 - CONSTRUCTION TRADES OCCUPATIONS

871 Excavating, Grading, Paving and Related Occupations

8710 Foremen/women: Excavating, Grading, Paving and Related Occupations

8711 Excavating, Grading and Related Occupations

8713 Paving, Surfacing and Related Occupations

8715 Railway Section and Track Workers

8718 Occupations in Labouring and Other Elemental Work: Excavating, Grading, Paving and Related Activities

8719 Excavating, Grading, Paving and Related Occupations, n.e.c.

- 873 Electrical Power, Lighting and Wire Communications Equipment Erecting, Installing and Repairing Occupations
- 8730 Foremen/women: Electrical Power, Lighting and Wire Communications Equipment Erecting, Installing and Repairing Occupations
- 8731 Electrical Power Line Workers and Related Occupations
- 8733 Construction Electricians and Repairers
- 8735 Wire Communications and Related Equipment Installing and Repairing Occupations
- 8736 Inspecting, Testing, Grading and Sampling Occupations: Electrical Power, Lighting and Wire Communications Equipment Erecting, Installing and Repairing
- 8738 Occupations in Labouring and Other Elemental Work: Electrical Power, Lighting and Wire Communications Equipment Erecting, Installing and Repairing
- 8739 Electrical Power, Lighting and Wire Communications Equipment Erecting, Installing and Repairing Occupations, n.e.c.

878/879 Other Construction Trades Occupations

- 8780 Foremen/women: Other Construction Trades Occupations
- 8781 Carpenters and Related Occupations
- 8782 Brick and Stone Masons and Tile Setters
- 8783 Concrete Finishing and Related Occupations
- 8784 Plasterers and Related Occupations
- 8785 Painters, Paperhangers and Related Occupations
- 8786 Insulating Occupations, Construction
- 8787 Roofing, Waterproofing and Related Occupations
- 8791 Pipefitting, Plumbing and Related Occupations
- 8793 Structural Metal Erectors
- 8795 Glaziers
- 8796 Inspecting, Testing, Grading and Sampling Occupations: Other Construction Trades
- 8798 Occupations in Labouring and Other Elemental Work: Other Construction Trades
- 8799 Other Construction Trades Occupations, n.e.c.

MAJOR GROUP 91 - TRANSPORT EQUIPMENT OPERATING OCCUPATIONS

911 Air Transport Operating Occupations

- 9110 Foremen/women: Air Transport Operating Occupations
- 9111 Air Pilots, Navigators and Flight Engineers
- 9113 Air Transport Operating Support Occupations
- 9119 Air Transport Operating Occupations, n.e.c.

913 Railway Transport Operating Occupations

- 9130 Foremen/women: Railway Transport Operating Occupations
- 9131 Locomotive Operating Occupations
- 9133 Conductors and Brake Workers, Railway
- 9135 Railway Transport Operating Support Occupations
- 9139 Railway Transport Operating Occupations, n.e.c.

915 Water Transport Operating Occupations

- 9151 Deck Officers
- 9153 Engineering Officers, Ship
- 9155 Deck Crew, Ship
- 9157 Engine and Boiler-room Crew, Ship
- 9159 Water Transport Operating Occupations, n.e.c.

917 Motor Transport Operating Occupations

- 9170 Foremen/women: Motor Transport Operating Occupations
- 9171 Bus Drivers
- 9173 Taxi Drivers and Chauffeurs
- 9175 Truck Drivers
- 9179 Motor Transport Operating Occupations, n.e.c.

919 Other Transport Equipment Operating Occupations

- 9190 Foremen/women: Other Transport Equipment Operating Occupations
- 9191 Subway and Street Railway Operating Occupations
- 9193 Rail Vehicle Operators, Except Rail Transport
- 9199 Other Transport Equipment Operating Occupations, n.e.c.

MAJOR GROUP 93 - MATERIAL HANDLING AND RELATED OCCUPATIONS,
N.E.C.

931 Material Handling and Related Occupations, n.e.c.

- 9310 Foremen/women: Material Handling and Related Occupations, n.e.c.
- 9311 Hoisting Occupations, n.e.c.
- 9313 Longshore Workers, Stevedores and Freight Handlers
- 9314 Parcel Carriers, n.e.c.
- 9315 Material Handling Equipment Operators, n.e.c.
- 9317 Packaging Occupations, n.e.c.
- 9318 Occupations in Labouring and Other Elemental Work: Material Handling and Related Activities, n.e.c.
- 9319 Other Material Handling and Related Occupations, n.e.c.

MAJOR GROUP 95 - OTHER CRAFTS AND EQUIPMENT OPERATING
OCCUPATIONS

951 Printing and Related Occupations

- 9510 Foremen/women: Printing and Related Occupations
- 9511 Typesetting and Composing Occupations
- 9512 Printing Press Occupations
- 9513 Stereotyping and Electrotyping Occupations
- 9514 Printing Engraving, Except Photoengraving, Occupations
- 9515 Photoengraving and Related Occupations
- 9517 Bookbinding and Related Occupations
- 9518 Occupations in Labouring and Other Elemental Work: Printing
and Related Activities
- 9519 Printing and Related Occupations, n.e.c.

953 Stationary Engine and Utilities Equipment Operating and
Related Occupations

- 9530 Foremen/women: Stationary Engine and Utilities Equipment
Operating and Related Occupations
- 9531 Power Station Operators
- 9539 Stationary Engine and Utilities Equipment Operating and
Related Occupations, n.e.c.

955 Electronic and Related Communications Equipment Operating
Occupations, n.e.c.

- 9550 Foremen/women: Electronic and Related Communications
Equipment Operating Occupations, n.e.c.
- 9551 Radio and Television Broadcasting Equipment Operators
- 9553 Telegraph Operators
- 9555 Sound and Video Recording and Reproduction Equipment
Operators
- 9557 Motion Picture Projectionists
- 9559 Other Electronic and Related Communications Equipment
Operating Occupations, n.e.c.

959 Other Crafts and Equipment Operating Occupations, n.e.c.

- 9590 Foremen/women: Other Crafts and Equipment Operating
Occupations, n.e.c.
- 9591 Photographic Processing Occupations
- 9599 Other Crafts and Equipment Operating Occupations, n.e.c.

MAJOR GROUP 99 - OCCUPATIONS NOT ELSEWHERE CLASSIFIED

991 Occupations Not Elsewhere Classified

- 9910 Supervisors and Foremen/women, n.e.c.
- 9916 Inspecting, Testing, Grading and Sampling Occupations, n.e.c.
- 9918 (9921-9926) Occupations in Labouring and Other Elemental Work: n.e.c. (in the following industries):
 - 9921 Manufacturing Industries
 - 9922 Transportation, Communication and Other Utilities
 - 9923 Trade
 - 9924 Community, Business and Personal Service
 - 9925 Public Administration and Defence
 - 9926 Other Industries and Unspecified(4)
- 9919 Other Occupations, n.e.c.

ENDNOTES

- (1) Includes wood industries, furniture and fixture industries, primary metal industries, metal fabricating industries (except machinery and transportation equipment industries), machinery industries (except electrical machinery), transportation equipment industries, electrical products industries and non-metallic mineral products industries.
- (2) Includes food and beverage industries, tobacco products industries, rubber and plastic products industries, leather industries, textile industries, knitting mills, clothing industries, paper and allied industries, printing, publishing and allied industries, petroleum and coal products industries, chemical and chemical products industries, and miscellaneous manufacturing industries.
- (3) Includes industry unspecified or undefined, agriculture, forestry, fishing and trapping, finance, insurance and real estate and public administration and defence.
- (4) Includes industry unspecified or undefined, agriculture, forestry, fishing and trapping, mines (including milling), quarries and oil wells, construction industry and finance, insurance and real estate.

ABBREVIATION

n.e.c. = not elsewhere classified.

APPENDIX K

Standard Occupational Codes (Statistics Canada, 1980)
Comprising the N, E, L, M, and C Occupational Areas

Standard Occupational Codes comprising the "NATURAL SCIENCE" designation (N)

- 2111 Chemists
- 2112 Geologists
- 2113 Physicists
- 2114 Meteorologists
- 2117 Physical Sciences Technologists and Technicians
- 2119 Occupations in Physical Sciences, n.e.c.

Standard Occupational Codes comprising the "ENGINEERING" designation (E)

- 2142 Chemical Engineers
- 2143 Civil Engineers
- 2144 Electrical Engineers
- 2145 Industrial Engineers
- 2146 Agricultural Engineers
- 2147 Mechanical Engineers
- 2151 Metallurgical Engineers
- 2153 Mining Engineers
- 2154 Petroleum Engineers
- 2155 Aerospace Engineers
- 2156 Nuclear Engineers
- 2159 Professional Engineers, n.e.c.
- 2160 Supervisors: Other occupations in Architecture and Engineering
- 2161 Survey Engineers
- 2165 Engineering Technologists and Technicians
- 2169 Other occupations in Architecture and Engineering, n.e.c.

Standard Occupational Codes comprising the "LIFE SCIENCE/HEALTH PROFESSIONS" designation (L)

- 1134 Administrators in Medicine and Health
- 2131 Agriculturists and Related Scientists
- 2133 Biologists and Related Scientists
- 2135 Life Sciences Technologists and Technicians
- 2139 Occupations in Life Sciences, n.e.c.
- 3111 Physicians and Surgeons
- 3113 Dentists
- 3115 Veterinarians
- 3117 Osteopaths and Chiropractors
- 3119 Health Diagnosing and Treating Occupations, n.e.c.
- 3130 Supervisors: Nursing, Therapy and Related Assisting Occupations
- 3131 Nurses, Registered, Graduate and Nurses-in-training

- 3136 Audio and Speech Therapists
- 3137 Physiotherapists
- 3138 Occupational Therapists
- 3151 Pharmacists
- 3152 Dietitians and Nutritionists
- 3153 Optometrists
- 3155 Radiological Technologists and Technicians
- 3156 Medical Laboratory Technologists and Technicians
- 3161 Dental Laboratory Technicians
- 3162 Respiratory Technicians
- 3169 Other occupations in Medicine and Health, n.e.c.

Standard Occupational Codes comprising the "MATHEMATICS/COMPUTER SCIENCE" designation (M)

- 2181 Mathematicians, Statisticians and Actuaries
- 2183 Systems Analysts, Computer Programmers and Related Occupations
- 2189 Occupations in Mathematics, Statistics, Systems Analysis & Related Fields, n.e.c.

Standard Occupational Codes comprising the "COMBINATION OF NELS-RELATED OCCUPATIONS" designation (C)

- 1131 Management Occupations, Natural Sciences and Engineering
- 2711 University Teachers
- 2719 University Teaching and Related Occupations, n.e.c.
- 2791 Community College and Vocational School Teachers
- 2793 Post-Secondary School Teachers, n.e.c.
- 6116 Commissioned Officers, Armed Forces

ABBREVIATION

n.e.c. = not elsewhere classified.

APPENDIX L

Derivation and Coding of the Variables *Mother's Level of Education* and *Father's Level of Education*

Item 162 of the 1988 Survey (Statistics Canada, 1991, p. 18) asked and was coded as follows:

162. What is the highest level of education completed by your father and by your mother (or guardian)?

- | | |
|--------------------------|---|
| School: | 1 = No formal schooling |
| | 2 = Elementary school |
| | 3 = Some secondary (high school) |
| | 4 = Completed secondary school |
| Trade-Vocational: | 5 = Trade or vocational diploma or certificate |
| College: | 6 = Some college, CEGEP, Institute of Technology, or nursing school |
| | 7 = Completed college, CEGEP, Institute of Technology, or nursing school |
| University: | 8 = Some university |
| | 9 = Teachers' college |
| | 10 = University certificate or diploma below bachelor level |
| | 11 = Bachelor's degree(s) (e.g., B.A., B.Sc., B.A.Sc., 4-year B.Ed.) |
| | 12 = University certificate or diploma above the bachelor level |
| | 13 = Master's degree(s) (e.g., M.A., M.Sc., M.Ed.) |
| | 14 = First professional degree in medicine, dentistry, veterinary medicine, law, optometry, or theology (e.g., M.D., D.D.S., D.M.D., D.V.M., L.L.B., O.D., M.DIV., or 1-year B.Ed. after another Bachelor's degree) |
| | 15 = Earned doctorate (e.g., Ph.D., D.Sc., D.Ed.) |
| | 16 = Don't know / Not Stated |

For the purpose of the present study (i.e., logistic regression analyses) the variables *mother's level of education* and *father's level of education* were derived by collapsing these categories into 5-point scales, coded as follows:

- | | |
|---|---|
| 1, 2, and 3, above, collapsed to equal 1. | 1 = "from no formal schooling to less than secondary school completion" |
| 4, above, became equal to 2. | 2 = "completed secondary school" |
| 5, 6, and 7, above, collapsed to equal 3. | 3 = "from some to completed any of the following: CEGEP, college, technical, trade, vocational, or nursing school" |
| 8, 9, 10, and 11, above, collapsed to equal 4. | 4 = "from some university, to earned a bachelor's degree or completed teacher's college" |
| 12, 13, 14, 15, and 16, above, collapsed to equal 5. | 5 = "earned a degree or diploma above bachelor's level (i.e., master's, Ph.D., or other professional degree)" |

APPENDIX M

**Summary of Principal Components Analysis of the Four Retrospective Questions
Relating to Respondents' Original Motivation for Enrolling in NELM Program of Study**

For the sake of parsimony, it was undesirable to have 4 separate variables--each comprised of a single item and each measuring a specific "aspect" of original motivation for enrolling in a NELM program of study. Therefore, statistical analyses were conducted to determine whether the four items enquiring about the respondents' original motivation could be reduced in number to form coherent subsets, or components. (According to Tabachnick & Fidell [1989], components reflect underlying processes that have created the correlations among variables).

Given that the objective of these analyses was to produce an empirical summary of the data set, principal components analyses (PCAs) were carried out. The goal of PCA is to extract maximum variance from the data set with each component; moreover, PCA is the analysis of choice for researchers primarily interested in reducing a number of variables down to a smaller number of components (Tabachnick & Fidell, 1989).

To this end, PCAs were conducted using principal components extraction with oblique rotation, separately in each of the N, E, L, and M cohorts, on the following 4 items from the 1988 Survey (Statistics Canada, 1991, p. 13):

121. Now, I'd like to ask you about your reasons for enrolling in the *...(read line A)...* program. On a scale of one to four, where one means "not at all" and four means "to a great extent", how important was it for you to acquire the skills needed in a particular occupation?

1	2	3	4
"not at all"			"to a great extent"

123. Again on the scale of one to four, when you enrolled how important was it for you to acquire an in-depth knowledge of an academic discipline?

1	2	3	4
"not at all"			"to a great extent"

125. When you enrolled, how important was it for you to improve yourself generally?

1	2	3	4
"not at all"			"to a great extent"

127. When you enrolled, how important was it for you to improve your chances of a good income?

1	2	3	4
"not at all"			"to a great extent"

All four of the PCAs yielded two clearly defined components, as follows: A first component representing a composite of items 123 and 125; and, a second component representing a composite of items 121 and 127. These two components were labelled respectively: "*intrinsic motivation*" (comprised of the desire for in-depth knowledge and to improve the self, generally), and "*extrinsic motivation*" (comprised the desire to acquire the skills needed in an occupation and to improve chances of a good income).

The variance accounted for by each of these two components was, respectively: 41.1% and 23.7% in the N cohort; 40.3% and 23.2% in the E cohort; 41.4% and 24.1% in the L cohort; and, 40.5% and 26.2% in the M cohort. As shown in the Table below, in each of the 4 cohorts, all 4 of the items loaded at greater than .55 on the expected components; none of the items were complex (i.e., cross-loaded), with all non-target loadings being less than .35. The correlations among the two components (i.e., *intrinsic* and *extrinsic motivation*) were: .24, .26, .23, and .20, in the N, E, L, and M cohorts, respectively.

Table Appendix M

Principle Component Loadings for the Two Component Solutions, by NELM Cohort

variable (1988 Survey item)	Component 1: <i>Intrinsic Motivation</i>				Component 2: <i>Extrinsic Motivation</i>			
	N	E	L	M	N	E	L	M
...acquire in-depth knowledge...(123)	.81	.77	.77	.73	---	---	---	---
...improve yourself generally...(125)	.76	.75	.84	.89	---	---	---	---
....improve chances of a good income...(127)	---	---	---	---	.93	.83	.89	.76
...acquire skills needed in an occupation...(121)	---	---	---	---	.58	.83	.63	.84

Note: Loadings less than .35 are replaced by dashes. N = Natural Science cohort; E = Engineering cohort; L = Life Science/Health Professions cohort; M = Mathematics/Computer Science cohort.

APPENDIX N

Derivation and Coding of the variables *Further Education at the 2-year Follow-up*
and *Further Education at the 5-year Follow-up*

As shown in Table 6, the variables *further education at the 2-year follow-up* and *further education at the 5-year follow-up* were coded as: 0="no further education"; 1="some NELM-related further education"; and 2="some non-NELM-related further education".

The first of these variables, *further education at the 2-year follow-up*, was derived, as follows, based on the responses to these three questions from the "Survey of 1986 Graduates University and College Programs Questionnaire":

- (1) Question 135: *Since you completed the program in 1986, have you taken any education or training programs leading to any degrees, diplomas, certificates or licences?*

Only respondents answering "yes" to question 135 were asked questions 136a and 136b.

- (2) Question 136a: *What types of degrees, diplomas, certificates or licences were these?*

Trade-vocational:

- a. certificate or diploma

Community college, CEGEP, Technical Institute, Nursing School:

- b. certificate or diploma

University:

- c. certificate or diploma below bachelor level
d. bachelor's degree (e.g., B.A., B.Sc., B.A.Sc., 4-year B.Ed.)
e. certificate or diploma above bachelor level
f. master's degree (e.g., M.A., M.Sc., M.Ed.)
g. degree in medicine, dentistry, veterinary medicine, law, optometry or theology (e.g., M.D., D.D.S., D.M.D., D.V.M., LL.B., O.D., M.DIV), or 1-year B.Ed. after a bachelor's degree
h. earned doctorate (e.g., Ph.D., D.Sc., D.Ed.)

Professional Association:

- i. diploma, certificate or licence such as in accounting, banking or insurance

Other:

- j. other

From among the respondents who had answered "yes" to question 135, 38 declared more than one level of further education upon answering question 136a. These 38 cases were evaluated *individually*; based on this evaluation, the *highest* level of education was retained for these respondents.

- (3) Question 136b *What was the major field of study or specialization?*

There were two different coding system used to classify the respondents' answers to this question. The USIS coding system and the CCSIS coding system. By now, the USIS system is likely familiar to most readers; it was presented in its entirety in Appendix B. The CCSIS coding system, or Community College Student Information System, is highly similar to the USIS, except that it is used to classify fields-of-specialization in

college programs of study. Like USIS, CCSIS was developed by the Education, Culture, and Tourism Division of Statistics Canada (Statistics Canada, 1991).

Based on the respondents' answers to questions 136a and 136b, a series of 24 other variables were created (i.e., variables *Q136ACD1* to *Q136JBK2* in the Statistics Canada "Record Layout" manual) which served to indicate two things: *first*, based on the response to question 136a, whether the USIS or CCSIS code books had been used to assign codes to the respondents' answers to question 136b, and *second*, based on the response to question 136b, what those codes were.

Thus, it was based on these codes (i.e., either USIS or CCSIS), as well as on the respondents' initial response to question 135, that each was assigned a value for the variable *further education at the 2-year follow-up*, as follows:

- 0 = "no further education" was assigned to those respondents who had answered "no" question 135.
- 1 = "some NELM-related further education" was assigned to those respondents whose USIS (or CCSIS) codes (at variables *Q136ACD1* to *Q136JBK2*) corresponded to one of the NELM academic areas (as per the aggregation presented in Appendix A), and,
- 2 = "some non-NELM-related further education" was assigned to those respondents whose USIS (or CCSIS) codes (at variables *Q136ACD1* to *Q136JBK2*) did *not* correspond to one of the NELM academic areas (as per the aggregation presented in Appendix A).

With regard to the second variable in question, *further education at the 5-year follow-up* was derived, as follows, based on the responses to these three questions from the "Follow-up of 1986 Graduates Questionnaire":

- (1) Question F15: *Since May, 1988, have you taken any (other) education or training programs leading to any degrees, diplomas, certificates or licences?*

Only respondents answering "yes" to question F15 were asked questions F16a and F16b.

- (2) Question F16a: *What types of degrees, diplomas, certificates or licences were these?*

Trade-vocational:

- a. certificate or diploma

Community college, CEGEP, Technical Institute, Nursing School:

- b. certificate or diploma

University:

- c. certificate or diploma below bachelor level
d. bachelor's degree (e.g., B.A., B.Sc., B.A.Sc., 4-year B.Ed.)
e. certificate or diploma above bachelor level
f. master's degree (e.g., M.A., M.Sc., M.Ed.)

- g. degree in medicine, dentistry, veterinary medicine, law, optometry or theology (e.g., M.D., D.D.S., D.M.D., D.V.M., LL.B., O.D., M.DIV), or 1-year B.Ed. after a bachelor's degree
 - h. earned doctorate (e.g., Ph.D., D.Sc., D.Ed.)
- Professional Association:**
- i. diploma, certificate or licence such as in accounting, banking or insurance
- Other:**
- j. other

(3) Question F16b *What was the major field of study or specialization?*

Again, both the USIS and the CCSIS coding system were used to classify the respondents' answers to this question. Based on the respondents' answers to questions F16a and F16b, a series of 18 other variables were created (i.e., variables *QF16AEC*D to *QF16J* in the Statistics Canada "Record Layout" manual) which served to indicate two things: *first*, based on the response to question F16a, whether the USIS or CCSIS code books had been used to assign codes to the respondents' answers to question 136b, and *second*, based on the response to question F16b, what those codes were.

Ultimately, for each respondent, a value was assigned for the variable *further education at the 5-year follow-up*, based on three criteria: the codes (i.e., either USIS or CCSIS) described above, the respondents' initial response to question F15; and, the value of the variable *further education at the 2-year follow-up*. Specifically,

0="no further education"

was assigned to those respondents who had answered "no" to question F15 *and* who had received a value of "0" on the variable *further education at the 2-year follow-up*. (For respondents answering "no" to question F15, but who had received a value of "1" or "2" on the variable *further education at the 2-year follow-up*, this value (i.e., "1" or "2") also became their score here, since, these individuals *had*, in fact, pursued further education since 1986 (i.e., at year-5).

1="some NELM-related further education"

was assigned to those respondents whose USIS (or CCSIS) codes (at variables *QF16AEC*D to *QF16J* or *Q136ACD*1 to *Q136JBK*2) corresponded to one or more of the NELM academic areas (as per the aggregation presented in Appendix A), and,

2="some non-NELM-related further education".

was assigned to those respondents whose USIS (or CCSIS) codes (at variables *QF16AEC*D to *QF16J* or *Q136ACD*1 to *Q136JBK*2) did *not* correspond to any of the NELM academic areas (as per the aggregation presented in Appendix A).

APPENDIX O

A Primer of Logistic Regression Analysis

Objective: *The objective of this Appendix is twofold. First, given that logistic regression analysis is a rather uncommon inferential statistical procedure in the behavioral sciences, an attempt is made to familiarize readers with the technique by providing a comparison with the much more commonplace, analog procedure of multiple regression analysis. Second, given that both direct and sequential logistic regression analyses were conducted in the present investigation (in order to test the gross-effect-of-sex models and net-effect-of-sex models, respectively), details are provided concerning the rationale for, and interpretation of, these two different types of logistic regression.*

Sources: Hosmer, D. W., & Lemeshow, S. (1989). *Applied logistic regression*. New York: Wiley.

Menard, S. (1995). *Applied logistic regression analysis*. Thousand Oaks, CA: Sage.

Norusis, M. J. (1990). *SPSS advanced statistics user's guide*. Chicago: SPSS.

Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.). New York: HarperCollins.

Wright, R. E. (1995). Logistic regression. In L. G. Grimm & P. R. Yarnold (Eds.), *Reading and understanding multivariate statistics* (pp. 217-244). Washington, DC: American Psychological Association.

INTRODUCTION: LOGISTIC REGRESSION ANALYSIS VERSUS ALTERNATIVE ANALYTIC STRATEGIES

"ARE WOMEN NELM BACHELOR'S DEGREE-HOLDERS LESS LIKELY TO BE RETAINED IN NELM-RELATED PURSUITS THAN THEIR MALE COUNTERPARTS?"

Predicting whether an event will or will not occur, as well as identifying the variables useful in making the prediction, is important in both academic and "real world" applications. At first glance, one might assume multiple regression analysis to be the appropriate technique for addressing the question posed above, given that it requires estimating the relationship among a set of independent/predictor variables and a dependent/outcome variable. This is not the case, however, due to the fact that the outcome variable of interest is not *continuous*, as is assumed in multiple regression analysis, but rather is *dichotomous*. Logistic regression analysis (LRA) is specifically designed for use in such situations¹ (Wright, 1995).

In multiple regression analysis, one attempts to predict a score on a continuous outcome variable. When the outcome variable can have only two values, the assumptions necessary for hypothesis testing in multiple regression analysis are necessarily violated. For example, it is unreasonable to assume that the distribution of errors is normal. Another difficulty with multiple regression analysis is that predicted values cannot be interpreted as probabilities (i.e., they are not constrained to fall in the interval between 0 and 1) (Menard, 1995).

¹Although LRA is used primarily with dichotomous dependent variables, it is acknowledged that the technique can be extended to situations involving outcome variables with three or more categories (i.e., *polytomous* or *multinomial* dependent variables) (see Hosmer & Lemeshow, 1989; Menard, 1995). This Appendix is limited in scope to the *dichotomous* outcome variable case, as it applies to the present investigation.

In LRA, one directly estimates the probability of an event occurring (i.e., the probability that an observation belongs to each of two groups) (Norusis, 1990). LRA allows one to evaluate the odds (or probability²) of membership in one of the groups (e.g., retention) based on the combination of values on the predictor variables (e.g., mother's level of education = "high school"; marital status = "single"; age = "32 years"; sex = "female"). Sometimes, predictors are assigned priorities and then assessed in terms of their contribution to prediction of group membership given their priority. For example, one may assess how well NELM retention-status can be predicted on the basis of sex, after adjusting for differences associated with mother's level of education, marital status, and age. The technique used in such cases is *sequential* logistic regression analysis (discussed below) (Tabachnick & Fidell, 1996).

The logistic regression model has become the standard method for regression analysis of dichotomous data, in recognition of the fact that it is preferable for estimating binary outcomes (Cox & Snell, 1989; Hosmer & Lemeshow, 1989). LRA allows one to predict a dichotomous outcome from a set of predictor variables that may be continuous, discrete, dichotomous, or a mix. In LRA, the predictors do not have to be normally distributed, linearly related, or of equal variance within each group. Thus, although LRA may--to some extent--be viewed as answering the same questions as three related statistical procedures, namely: multiple regression analysis, discriminant function analysis, and the logit form of multiway frequency analysis, it is actually more flexible than any of these other techniques (Tabachnick & Fidell, 1996).

For example, unlike discriminant function analysis, LRA makes no assumptions about the distribution of the predictor variables. Unlike multiway frequency analysis, LRA predictors do not have to be discrete. Finally (as noted above), unlike multiple regression analysis which also has distributional requirements for predictors, LRA cannot produce negative predicted probabilities (Norusis, 1990).

In the present investigation, the rationale for the use of LRA--of both the direct and sequential variety--can be summarized as follows (adapted from Table 2.1 "Choosing Among Statistical Techniques", Tabachnick & Fidell, 1996, p. 30-32):

(#1)	(#2)	(#3)	(#4)	(#5)	(#6)
<i>Major Research Question:</i>	<i>Number -- Kind of Dependent Variables:</i>	<i>Number -- Kind of Independent Variables:</i>	<i>Covariates:</i>	<i>Analytic Strategy:</i>	<i>Goal of Analysis:</i>
Prediction of Group Membership	One -- Discrete	Multiple -- Continuous and/or Discrete	None Some	(Direct) Logistic Regression Sequential Logistic Regression	Create a Linear Combination of the Log of the Odds of being in one group

²As detailed below, although one may evaluate the odds or the probability--these are *not* same concept (see LRA: KEY CONCEPTS INVOLVED IN INTERPRETATION).

DIRECT VERSUS SEQUENTIAL LRA

In direct LRA, all predictors enter the equation simultaneously. As with multiple regression analysis and discriminant function analysis, this is the method of choice only if there are no specific hypotheses about the order or importance of the predictor variables. This method has the usual difficulties with interpretation when predictors are correlated, in that a predictor that is highly correlated with the outcome by itself may show little predictive capability in the presence of the other predictors (Tabachnick & Fidell, 1996). In the present investigation, direct LRA was employed in the tests of the "gross-effect-of-sex models" (i.e., phase one of the hypothesis testing processes). Granted, this was a *special* application of direct LRA, given that only the variable of primary research interest—that is, sex—was entered into the prediction model.

Sequential LRA is similar to sequential/hierarchical multiple regression and sequential/hierarchical discriminant function analysis in that the researcher specifies the order of entry of predictors into the model³. As noted above, it is appropriate to conduct sequential LRA when one is interested in evaluating how well an outcome can be predicted on the basis of a predictor variable of particular interest (e.g., sex), after differences associated with other predictor variables (e.g., mother's level of education, marital status, age) have been adjusted/controlled for. As such, sequential LRA was employed in the present investigation in the tests of the "net-effect-of-sex models" (i.e., phase two of the hypothesis testing processes).

LRA: KEY CONCEPTS INVOLVED IN INTERPRETATION

In linear regression, the parameters of the model are estimated using the *least-squares criterion* of estimation. That is, the regression coefficients are selected to minimize the sum of the squared distances between the observed and the predicted values of the dependent variable (Norušis, 1990). Consequently, the model coefficients in multiple regression analysis have a rather straightforward interpretation. For example, the coefficient for a predictor variable estimates the change in the dependent variable for any one-unit increase in that predictor variable. The constant term estimates the value of the dependent variable for a case that has a predictor value of 0 (Wright, 1995).

In LRA, the parameters of the model are generally estimated using the *maximum-likelihood criterion* of estimation. That is, the coefficients that make the observed results most "likely" are selected (i.e., the coefficients are selected to maximize the probability/likelihood of obtaining the actual group memberships for cases in the sample). Since the logistic regression model is nonlinear, an iterative algorithm is necessary for parameter estimation (Norušis, 1990). This contributes to a somewhat less than straightforward interpretation of the estimated coefficients and related statistics in LRA; however, interpretation can be greatly facilitated by a basic understanding of certain key concepts.

Odds

To interpret LRA coefficients, one needs an understanding of the concept of *odds*. For a dichotomous variable, the odds of membership in the target group are equal to the probability of membership in the target group divided by the probability of membership in the other group. For example, if the probability of membership in the target group is .50, the odds are 1 (.50/.50); if the probability of membership in the target group is .80, the odds are 4 (.80/.20); and if the probability is .25, the odds are .33 (.25/.75) (Wright, 1995). Notice that the odds are 1 when both outcomes are equally likely, greater than 1 when the target event is more likely than the other event, and less than 1 when the target event is more likely than the other event. **Note that the concept of odds is different than probability.** A probability value can range from 0 to 1; an odds value can range from 0 to infinity. Odds indicate how much more likely it is that an observation is a member of the target group rather than of the non-target group.

³The only readily available statistical program that allows for the sequential entry of one or more predictor into the logistic regression model is SPSS LOGISTIC REGRESSION (Tabachnick & Fidell, 1996). Consequently, SPSS LOGISTIC REGRESSION was selected as the statistical program of choice for the purposes of the present investigation.

Odds ratio

Another important concept in LRA is the *odds ratio*. The odds ratio is the increase (or decrease if the ratio is less than one) in odds of being in one outcome category when the value of the predictor value increases by one unit. Similar to linear regression, LRA predictor variable coefficients are interpreted in the context of (i.e., adjusting for) the other predictor variables. Thus, the odds ratio associated with a given predictor variable estimates the change in the odds of membership in the target group for a one-unit increase in that predictor variable, while controlling for the other predictors in the model. Odds ratios are computed using the estimated logistic regression coefficients for the predictor variables as the exponent of e (the base of the natural logarithms). Therefore, interpretation of the odds ratio is dependent on predictor variable scaling and coding.

Predictor variable scaling

As noted above, the odds ratio coefficient for a given predictor variable represents the estimated change in odds of being in one outcome category when the value of that predictor variable increases by one unit. Whether a logistic regression model contains discrete or continuous predictor variables (or a mix of both), interpretation of the estimated coefficients for these variables depends on their particular units (i.e., variable scaling) (Hosmer & Lemeshow, 1989). With regard to the continuous variables' scale in the logit, *a one unit increase or decrease must represent a meaningful change*. Therefore, for interpretation purposes, the scaling of a number of continuous variables in the present investigation (e.g., mother's education, father's education, age @ year-2, and income @ year-2) were reparameterized to represent distinct, meaningful categories (refer to Chapter Three and Table V for specific variable scaling/coding information).

Variable coding strategies

Interpretation of LRA output (i.e., of the coefficients and statistics relating to both the models as a whole and to the individual predictor variables) is highly influenced by the particular coding of the outcome and predictor variables. Both Tabachnick and Fidell (1996) and Hosmer and Lemeshow (1989) recommend a convenient way of setting up predictor and outcome variable coding in order to facilitate interpretation of LRA output, which was adhered to in the present investigation.

For the outcome variable (e.g., NELM retention-status), the category coded as 1 is the "response" category (i.e., retention) and the category coded as 0 is the "reference" category (i.e., non-retention). This coding strategy facilitates comparison (e.g., by providing a comparison of the odds of being in the response group—"retained in NELM"—given some value on a predictor, with the odds being in the reference group—"not retained in NELM").

With regard to predictor variable coding, it is recommended that higher codes be given to the category of a predictor variable most likely associated with "response". In the present investigation, because it was expected that men would be more likely to be retained in NELM-related pursuits, both "retention" and "men" were coded as 1 (while "non-retention" and "women" were coded as 0). The use of this coding strategy serves to facilitate interpretation of LRA output for, as demonstrated in the Sample Table (presented below), positive parameter estimates (i.e., those that are statistically significant) represent findings lending support to the study's main hypothesis.

There are a number of coding schemes available for use with design variables (e.g., orthogonal polynomial coding). However, many of these coding schemes cause interpretation of the results, via odds ratios, to be far more difficult (Hosmer & Lemeshow, 1989; Tabachnick & Fidell, 1996). The predictor variable coding strategy recommended above is extended to predictor variables with multiple discrete levels where design variables are formed for all but one level of the discrete predictor (e.g., the *Program of Study* design variable, in the present investigation). According to this strategy, each design variable is coded 1 for one level of a predictor and 0 for all other levels. It is desirable to code as 0 levels that are likely to be associated with the "reference" group, and to code as 1 levels that are likely to be associated with the "response" group. With this design variable coding strategy in place, odds ratios are calculated in the standard manner and the usual interpretation can be made of each.

B coefficients

The estimated logistic regression or *B* coefficient associated with each predictor variable is equal to the natural log of its odds ratio. As such, *B* coefficients are comparatively more difficult to interpret than are the odds ratios. Again, the way that outcome categories are coded will determine not only the direction of the odds ratio but also the sign of the *B* coefficient. The interpretation is simplified, therefore, if one pays close attention to the coding of the categories and follows the recommendations of Tabachnick and Fidell (1996) and Hosmer and Lemeshow (1989).

With this coding strategy in place (as in the present investigation), *B* coefficients do have a useful interpretive function: A positive coefficient means that the predicted odds increase as the predictor value increases; a negative coefficient indicates that the predicted odds decrease as the predictor value increases; and a coefficient of zero means that the predicted odds are the same for any value of the predictor (i.e., the odds ratio is equal to 1).

STATISTICAL INFERENCE

LRA has two types of inferential tests: Tests of *models* and tests of individual *predictors*.

Tests of models

There are three different types of models in LRA: (1) a constant-only model that includes no predictors; (2) incomplete models that include the constant plus one (or more) predictors, and (3) a full model that includes the constant plus all predictors. Consequently, several types of model comparisons are possible, for example: between the constant-only model and the full-model, between the constant-only model and an incomplete model, between an incomplete model and the full model, etc. The actual comparisons made in a given investigation are driven by purpose and application at hand, however, it is important to note that *only* nested models can/should be compared.

Can an outcome (of research interest) be predicted from an (available) set of predictor variables? Though there are a number of ways to go about answering this question within the LRA framework, the most straightforward involves comparing a full model (i.e., a model containing the constant plus the set of predictors) with a constant-only model (i.e., a model containing only the constant). A reliable difference between the models indicates a relationship between the predictors and the outcome.

Tests of predictors

Which variables predict outcome? How do variables affect the outcome? Does a particular variable increase or decrease the probability of an outcome, or does it have no effect on outcome? Several methods of answering these questions are available in LRA. One may, for instance, ask how much the model is improved by adding a predictor, or one may assess the statistical significance of the coefficients associated with the predictor(s).

Alternatively, a researcher may be primarily interested in whether a single predictor variable of interest reliably *improves/enhances* prediction of an outcome, once the effects of other (available) predictor variables have been statistically controlled for. Under these circumstances, the "other" predictor variables effectively serve as covariates. As noted above, this type of question is most effectively addressed via *sequential* LRA.

PRESENTATION OF RESULTS

Studies using LRA typically present results in a format similar to that of multiple regression studies, however, presentation of results varies widely across studies (Tabachnick & Fidell, 1996; Wright, 1995). Generally, an overall measure of goodness-of-fit for the model as a whole is provided (e.g., -2 log likelihood); predictor variable coefficients (i.e., *B*s) are presented, together with test statistics (e.g., Wald's test), probabilities, and odds ratios (Menard, 1995; Wright, 1995).

As noted above, there are numerous models in LRA, making several types of comparison possible. In addition, there are several tests available to evaluate goodness-of-fit. In many studies employing LRA as the analytic strategy of choice, the primary objective is to derive the best fitting and most parsimonious, yet reasonable model to describe the relationship between an outcome variable and a set of predictor variables (Hosmer & Lemeshow, 1989). In such cases, primary interest is placed on the *goodness-of-fit* statistics for the model(s), as a whole. In the present investigation, however, primary interest was focussed on the predictors, themselves. As such, the approach to testing for the significance of the predictor coefficients was to ask the question:

Does the model that includes the variable in question (i.e., sex) tell us more about the outcome (or response) variable (i.e., NELM-retention status) than does a model that does not include that variable?

This question was answered in two ways:

- (1) By comparing a model containing only the predictor variable *sex* with a model containing no predictor variables, that is, the constant-only model (i.e., phase one, testing the **gross-effect-of-sex model**).
- (2) By comparing a model containing the predictor variable *sex*, *adjusted for* differences associated with other available predictor variables (e.g., see Sample Table, below: mother's education; father's education; age @ year-2; marital status @ year-2; number of children @ year-2; intrinsic motivation; and, extrinsic motivation), with the constant-only model (i.e., phase two, testing the **net-effect-of-sex model**).

Presented at the end of this Appendix is a Sample Table of LRA results (adapted from Chapter Five), containing goodness-of-fit statistics for a direct and a sequential LRA (i.e., estimated coefficients and related statistics for both the individual predictors and for the models). An explanation of each of the table's rows/columns is also provided.

TESTS OF MODELS

Statistics relating to the models are presented to the right of the vertical line dividing the table. These are: **-2 log likelihood** and its associated degrees of freedom (**df**); the **Model χ^2 (Δ -2LL)** (change in -2 log likelihood) and the associated change in degrees of freedom (**Δ df**); the **Improvement χ^2** value and its associated degrees of freedom.

-2 log likelihood

A preferred way of assessing the goodness-of-fit of the model is to determine how "likely" the sample results actually are, given the parameter estimates. The probability of the observed results, given the parameter estimates, is known as the *likelihood*. Since the likelihood is a small number less than 1, it is customary to use -2 times the log of the likelihood as a measure of how well the estimated model fits the data. A good model is one that results in a high likelihood of the observed results; this translates to a small value for **-2 log likelihood** (Norusis, 1990). Moreover, in LRA, comparisons of observed to predicted values are frequently based on the *log likelihood* function. For mathematical reasons (i.e., to obtain a quantity whose distribution is known and thus can be used for hypothesis testing purposes), minus twice the log likelihood—which follows a chi-square distribution—is customarily used (Hosmer & Lemeshow, 1989). This is the first statistic reported in right portion of the Sample Table, together with its associated degrees of freedom.

Model χ^2 (Δ -2 LL)

Does the **-2 log likelihood** increase significantly with the addition of a predictor or set of predictors? Because the **-2 log likelihood** statistic follows a chi-square distribution, the incomplete models at each block of the analysis can be readily compared against the constant-only model, with the differences also following a chi-square distribution. The second statistic reported in the right portion of the Sample Table, labelled **Model χ^2 (Δ -2LL)** represents the change in the **-2 log likelihood** statistic versus the constant-only model, for each sequential block included in the model. It appears together with the associated degrees of freedom (i.e., the change in degrees of freedom).

Improvement χ^2

Does the *-2 log likelihood* increase significantly with the addition of a given predictor, over the previous incomplete model tested? The **Improvement χ^2** value, together with its associated degrees of freedom, is the final statistic presented in the right portion of the Sample Table. This statistic quantifies the change in the *-2 log likelihood* over the *immediately preceding* block of the analysis.

Explanation of Sample Table of Results for the Models

As shown in the Sample Table, the *-2 log likelihood* for the constant-only model is 696.89, with 853 degrees of freedom. Comparing this value with the *-2 log likelihood* for the **gross-effect-of-sex model** (696.86, *df* = 852) yields a **Model χ^2 (Δ -2LL)** of .03, with 1 degree of freedom. This indicates no better prediction of NELM-retention status at Post-Graduation Year-5—on the basis of the variable sex, alone—than would be expected by chance ($p > .05$). The **Improvement χ^2** value (which is exactly equal to the **Model χ^2 (Δ -2LL)** value in this instance due to the fact that the immediately preceding block was the constant-only model) further indicates that the addition of the predictor variable sex to the model failed to result in any significant improvement in prediction.

Turning to the **net-effect-of-sex model**, one can see that model fit was notably superior (and was, in fact, statistically significant, $p < .01$) when NELM-retention status at post-graduation year-5 was predicted—on the basis of sex—controlling for the 7 antecedent predictor variables. When, at Block-8, the variable sex entered the model, the resulting *-2 log likelihood* value was 670.84, with 843 degrees of freedom. Comparing this value with the *-2 log likelihood* for the constant-only model yields a **Model χ^2 (Δ -2LL)** of 18.62, with 8 degrees of freedom. This finding is statistically significant ($p < .01$). In fact, all of the **Model χ^2 (Δ -2LL)** values (for Blocks 1 to 8) were statistically significant ($ps < .01$), indicating that, at each block, the model as a whole reliably distinguished between retention and non-retention in NELM at post-graduation year-5. Thus, each of these models, having 1, more than 1, or all 8 predictors in—provided better prediction of the outcome than would be expected by chance.

To begin to account for these statistically significant findings, one need only look to the **Improvement χ^2** values. There, one can see that—contrary to what was predicted—the statistical significance of the final model (at Block-8) was *not* attributable to the variable sex *enhancing* prediction beyond the other variables in the model. In fact, the **Improvement χ^2** value at Block-8 (.49, *df*=1, $p > .05$) indicated that the addition of the predictor variable sex to the model actually failed to result in any significant improvement in prediction over the immediately preceding block. Actually, the *only* marginally significant **Improvement χ^2** value was obtained at Block-1 (8.34, *df*=1, $p < .05$), when the variable mother's education entered the model. An examination of the test statistics for the individual predictor variables is required (see below) in order to provide a further explanation of these findings.

TESTS OF PREDICTORS

If a model containing one (or more) predictors is found to be better than one containing no predictors (i.e., the constant-only model), one can assume that the predictor(s) in the former model are related to the outcome. Once an acceptable model is found, it is appropriate to evaluate the contribution (i.e., statistical significance) of each of the predictor variables contained therein.

Statistics relating to the individual predictor variables, presented in the left portion of the Sample Table, include: the estimated logistic regression coefficient (*B*) and its associated standard error (*SE*); Wald's test and its associated degrees of freedom (*df*); the *R* statistic; and, the odds ratio.

***B* coefficient**

The *B* coefficient, that is, the estimated logistic regression coefficient (parameter estimate) for each variable, was discussed above. Presented with these coefficients are their associated standard errors (i.e., *SEs*), which estimate the variability from sample to sample in the *B* coefficients.

Wald's test

Wald's test is a test of the statistical significance of the parameter estimates. For large sample sizes, the test that a coefficient is 0 (in the population) can be based on the Wald statistic, which has a chi-square distribution. When a variable has a single degree of freedom, Wald's test is just the square of the ratio of the B coefficient to its standard error (Norusis, 1990). Large values indicate that the population coefficient probably differs from 0. Unfortunately, the Wald statistic has a very undesirable property. When the absolute value of the regression coefficient becomes large, the estimated standard error is too large. This produces a Wald statistic that is too small, leading to a failure to reject the null hypothesis that the coefficient is 0. Therefore, whenever the coefficient is large, one should not rely solely on the Wald statistic for hypothesis testing, but rather should also consider the change in the -2 log likelihood value (Hauck & Donner, 1977). This procedure was adhered to in the present investigation.

R statistic

As is the case in multiple regression, the contribution of individual variables in LRA is somewhat difficult to determine, as the contribution of each variable depends on the other variables in the model. This is a problem, particularly when independent variables are highly correlated. A statistic that is used to look at the partial correlation between the dependent variable and each of the independent variables is the R statistic. (Partial correlation refers to the correlation of each predictor with the outcome, after adjusting for all other predictors). The R statistic can range from -1 to +1. A positive value indicates that as the variable increase in value, so does the likelihood of the event occurring. If R is negative, the opposite is true. Small values for R indicate that the variable has a small partial contribution to the model.

Odds ratio

The odds ratio was discussed above. This statistic provides an estimate of the increase in odds of membership in the target group for a one-unit increase in the predictor while controlling for other predictors in the model.

Explanation of Sample Table Results for the Predictors

Findings for the gross-effect-of-sex model, presented at the left of the Sample Table, show that the parameter estimate for sex ($B = -.03$) is non-significant, as indicated by the results of Wald's test ($p > .05$), $R = .000$, and an odds ratio close to 1 (.97).

For the net-effect-of-sex model, an examination of the test statistics for each of the individual predictor variables supports the conclusion reached above—that is, contrary to what was predicted—the statistical-significance of the final model was *not* attributable to the variable *sex*. Rather, the statistically-significant fit of each of the nested full-models was due to the early contribution of the statistically significant predictor variable mother's education (entered at Block-1), and, to a lesser extent, to the marginally significant contribution of the predictor variable father's education (entered at Block-2). Specifically, as the test statistics for the individual predictor variables presented in the Sample Table show, mother's education was the only statistically significant predictor of NELM retention status at post-graduation year-5, according to the Wald's test ($p < .01$). The odds ratio associated with this variable indicated that—with each unit change in mother's level of education—a respondent's chance of being retained in NELM at post-graduation year-5 *increased* by a multiplicative factor of 1.29. Given the coding of the variable (i.e., higher scores represented higher levels of education), the positive B coefficient signified that, overall, respondents with more highly educated mothers were *more* likely to be retained in NELM at post-graduation year-5.

Test statistics for the individual predictor variable father's education showed this variable to be a marginally significant predictor of NELM retention status at post-graduation year-5, according to the Wald's test ($p < .05$). Entered at Block-2, the odds ratio associated with this variable indicated that—with each unit change in father's level of education—a respondent's chance of being retained in NELM at post-graduation year-5 *increased* by a multiplicative factor of 1.21. Again, given the coding of the variable (i.e., higher scores represented higher levels of education), the positive B coefficient signified that, overall, respondents with more highly educated fathers were *more* likely to be retained in NELM at post-graduation year-5.

Sample Table

Goodness-of-Fit Statistics in the Direct (gross-effect-of-sex model) and Sequential (net-effect-of-sex model) Logistic Regression Analyses Testing Hypothesis 2(c): NELM Retention Status at Post-Graduation Year-5 Among Life Science/Health Professions Bachelor's Degree-Holders (n=854)

variable*	B	SE	Wald's test	df	R	odds ratio	-2 log likelihood	df	Model χ^2 (Δ -2 LL)	Δ df	Improvement χ^2	df
constant	1.80	.10	--	--	--	--	696.89	853	--	--	--	--
GROSS-EFFECT-OF SEX MODEL	-.03	.21	.02	1	.000	.97	696.86	852	.03	1	.03	1
NET-EFFECT-OF SEX MODEL												
B1 mother's education	.25	.09	8.01**	1	.093	1.29	688.55	852	8.34**	1	8.34*	1
B2 father's education	.19	.08	4.98*	1	.066	1.21	683.47	851	13.42**	2	5.08	1
B3 age (category) @ year-2	.08	.06	1.78	1	.000	1.08	681.68	850	15.21**	3	1.79	1
B4 marital status @ year-2 (1=married, 0=other)	.09	.21	.20	1	.000	1.10	681.48	849	15.41**	4	.20	1
B5 number of children @ year-2	-.02	.16	.01	1	.000	.98	681.47	848	15.42**	5	.01	1
B6 intrinsic motivation	.28	.17	2.78	1	.034	1.33	678.80	847	18.09**	6	2.67	1
B7 extrinsic motivation	-.04	.19	.04	1	.000	.96	678.76	846	18.13**	7	.04	1
B8 sex (1=male, 0=female)	-.15	.22	.49	1	.000	.86	678.27	845	18.62**	8	.49	1

Note. LL = log likelihood

*Refer to Table V for a complete summary of predictor variable coding.

* $p < .05$ (marginally significant); ** $p < .01$ (significant).

APPENDIX P

Preliminary and Descriptive Data Analyses: Replacement of Missing Values

Upon inspection of the original total sample ($N = 3205$), 255 cases (i.e., approximately 8% of the total sample) were found to have missing values on at least 1 of the following variables:

- (1) sex
- (2) activity (see Appendix I)
- (3) mother's level of education
- (4) father's level of education
- (5) respondent's age at 2-years
- (6) respondent's age at 5-years
- (7) marital status at 2-years
- (8) marital status at 5-years
- (9) number of dependent children at 2-years
- (10) number of dependent children at 5-years
- (11) intrinsic motivation for having originally enrolled in a N, E, L, or M program of study
- (12) extrinsic motivation for having originally enrolled in a N, E, L, or M program of study
- (13) further education at 2-years
- (14) further education at 5-years
- (15) income at 2-years
- (16) income at 5-years
- (17) job satisfaction at 2-years
- (18) job satisfaction at 5-years
- (19) salary satisfaction at 2-years
- (20) salary satisfaction at 5-years

Careful examination of the pattern of these missing values showed them to be scattered randomly throughout the data set (i.e., across cases and variables). One exception was with regard to mother's and father's levels of education, where there was somewhat of a predominance of missing values. This was not considered to be unusual, however, as it would be expected that some of the graduates would come from one-parent homes, or would be unaware of the level of education obtained by one (or both) of their parents.

Forty-seven of the 255 cases (i.e., approximately 1.5% of the original total sample) were found to be missing values on 3 or more variables. Given that for these 47 cases this represented greater than 10% of the data, as a whole, the decision was made to drop these cases from the total sample. These 47 cases were subsequently deleted from the data set, resulting in a new total sample of $N=3158$. The breakdown of these 47 dropped cases was as follows:

		academic area			
sex		Natural Science	Engineering	Life Science/ Health Professions	Mathematics/ Computer Science
<i>men</i>	(total=27)	520-508 = 12	819-811 = 8	273-272 = 1	361-355 = 6
<i>women</i>	(total=20)	347-341 = 6	100-100 = 0	617-607 = 10	168-164 = 4
TOTAL		18	8	11	10

Note. Subtractions are of *ns* for each academic area by sex in the original total sample ($N=3205$) minus *ns* for each academic area by sex in the new total sample ($N=3158$). Differences represent the # of cases dropped in each cell.

It was deemed to be important not to lose *any* of the remaining 208 cases (by listwise deletion) due to missing on only 1 or 2 variables. Therefore, for the remaining 208 cases (i.e., approximately 6.5% of the new total sample), missing values were replaced with estimated values. Specifically, following a procedure recommended by Tabachnick and Fidell (1989), group means (by NELM academic area and by sex) were inserted in place of the missing values (e.g., where a female Natural Science graduate was missing the value for a given variable, the group mean for all female Natural Science graduates was used for that variable).

As noted by Tabachnick and Fidell (1989), in the absence of all other information, it is the overall or grand mean (for the total sample) that is a researcher's best guess about the value of a variable. Part of the attraction of inserting the grand mean in place of a missing value is that this procedure is conservative; the mean for the distribution as a whole does not change and the researcher is not required to guess at missing values. On the other hand, the variance of the variable is reduced because the mean is closer to itself than to the missing value it replaces, and the correlation the variable has with other variables is reduced because of the reduction in variance. A compromise is to insert the *group* mean for missing values, as was done in the present investigation. In that this procedure is not as conservative as inserting overall mean values and not as liberal as using prior knowledge, it is highly recommended (Tabachnick & Fidell, 1989, p. 64).

The breakdown of these 208 cases, by missing variable, academic areas, and sex, was as follows:

variable	n	academic area							
		Natural Science		Engineering		Life Science/ Health Professions		Mathematics/ Computer Science	
		men 508	women 341	men 811	women 100	men 272	women 607	men 355	women 164
(1) sex		0	0	0	0	0	0	0	0
(2) activity		0	0	0	0	0	0	0	0
(3) mother's level of education		8	12	23	3	8	24	19	6
(4) father's level of education		5	4	25	6	7	19	17	6
(5) respondent's age at 2-years		0	0	0	0	0	0	0	0
(6) respondent's age at 5-years		0	0	0	0	0	0	0	0
(7) marital status at 2-years		1	0	2	0	2	4	2	1
(8) marital status at 5-years		0	1	0	0	0	2	0	0
(9) # of dependent children at 2-years		3	2	5	1	5	4	2	1
(10) # of dependent children at 5-years		3	1	1	0	0	2	1	0
(11) intrinsic motivation for having originally enrolled in a N, E, L, or M program of study		2	1	2	0	0	1	0	2
(12) extrinsic motivation for having originally enrolled in a N, E, L, or M program of study		2	1	2	0	0	3	0	2
(13) further education at 2-years		2	0	4	0	1	2	2	1
(14) further education at 5-years		2	2	1	0	1	5	2	1
(15) income at 2-years		1	1	9	1	3	6	1	2
(16) income at 5-years		4	2	4	0	0	7	0	2
(17) job satisfaction at 2-years		1	5	6	2	0	1	2	1
(18) job satisfaction at 5-years		1	5	5	2	0	4	0	1
(19) salary satisfaction at 2-years		3	2	3	2	2	2	1	0
(20) salary satisfaction at 5-years		0	0	0	2	2	0	1	0

Finally, analyses were performed, on each of the 20 variables, to ensure that the replacement of missing values with group means had not resulted in significant differences between the original NELM male/female cohorts and the new NELM male/female cohorts. For continuous variables, *t*-tests were conducted to inspect for mean differences; for nominal-level variables, chi-square analyses were conducted. None of these analyses showed there to be any statistically significant differences between the original and the new sub-samples of respondents ($ps > .01$).