THE RELATIONSHIP BETWEEN PRESCRIPTION DRUG UTILIZATION AND EMPLOYMENT FOR SINGLE MOTHERS ON SOCIAL ASSISTANCE.

by

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This thesis is dedicated to my mother Ginette Carrier, who showed me first hand the strength and courage it takes to be a single mother.

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Abstract:

Introduction: The experience of being a family on social assistance is one of the least well understood areas of Canadian labour and family economics (Watson, 1995). Sole-support families in particular, make up an important sub-population of social assistance recipients as they are increasing in number, and represent a large proportion of families receiving financial support. **Objective:** To assess the relative importance of prescription drug utilization, living arrangement, and human-capital characteristics in the decision to participate in a work program from social assistance. **Data and Methods:** Data for this study was drawn from a Nova Scotia employment program and linked to both the provincial social assistance, and the social assistance pharmacare databases. The study utilized a case-control design. Both cases and controls were single mothers on social assistance between 1991-96 who were targeted for a work program. Cases were single mother family units who decided to participate in the work program. Controls were single mothers on social assistance who did not participate in the work program. **Results:** Contrary to expectations, the potential loss of prescription drug benefits was not associated with program participation. The results suggest that financial and non-financial barriers influenced women's participation in the work program. Women most likely to participate in the program were those who were better off financially, and who did not have young children.

Abbreviations and Symbols

ATC	Anatomical Therapeutic Classification
CI	Confidence interval
DIN	Drug Identification Number
DPD	Drug product database
FB	Family Benefits
GI	Gastrointestinal
NS	Nova Scotia
OR	Odds ratio
PHRU	Population Health Research Unit
SD	Standard deviation
SES	Socio economic status

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CHAPTER 1: INTRODUCTION

With record levels of unemployment and increased reliance on social assistance in Canada, the ultimate aim of current welfare policies is to return employable individuals back to work (Human Resources Development Canada, 1994). Many federal and provincial programs are targeting single mothers as they continue to grow in numbers, and are more likely to require social assistance for periods of time throughout their child-rearing years than two-parent families (Clark, 1991). While very few of these mothers stay on social assistance for extended periods, their re-entry into the labour force is often complicated by the heavy demands of being both primary or sole care-giver for their children and primary or sole wage-earner for their families (Clark, 1991).

The Nova Scotia Compass employment program (1992-1996) specifically targeted single mothers from social assistance to take part in their initiative. The employment program took a service approach to removing barriers to employment by offering employment opportunities and/or work experience to job-ready clients from both the provincial and municipal social assistance caseload. The component of the Compass program which attracted the most participation from single parents on social assistance was the Transitional Training Option (TTO). It provided job placement with private sector employers by contributing wage subsidies for up to six months for full-time work (Government of Nova Scotia, 1997).

Initial evaluation of the employment program concluded that one of the main barriers to participation in the program was the perceived loss of drug benefits by participants when entered into the employment program (Government of Nova Scotia,

1997). Although drug benefits were in fact not withdrawn from these families while they were participating in the work program, subsequent full-time employment would likely lead to the loss of drug benefits. The perceived loss of drug benefits is thought to have a particularly important effect on female-headed single-parent families as they are more likely to be poor, suffer lower mental and physical health, lack social support networks, have lower education levels, and have fewer opportunities than rest of the population (Lipman, Offord & Boyle, 1997; Offord, Boyle & Jones, 1987). Their children tend to have increased risk of asthma, cognitive development problems, psychiatric disorders, poor school performances and increased risk for substance abuse (Offord, Boyle, Fleming, et al., 1989;Offord, Boyle & Jones, 1987). As a result, it is important to assess the role prescription drug utilization has on single mothers decision to enter into work programs from social assistance in order to facilitate their transition into paid employment.

1.1 Objectives

(1) To assess the relationship between expected prescription utilization and the decision to enter into work programs.

- It was expected that individuals with high prescription needs would be less likely to participate in the work program because they would unlikely receive jobs with medical benefits (prescription drug coverage).

(2) To assess the relationship between human capital versus living arrangement variables in the decision to enter into work programs.

- It was expected that individuals with low levels of human capital would be more likely to participate in the work program because they have more to gain from the experience.

1.2 Background:

Work Incentives and Policy Approaches

The reality of increased reliance on social assistance by single mothers is viewed in different ways. For example, Britain does not view single mothers presence on the social assistance caseload as a "problem" (Evans, 1992). They value and believe in the importance of mothers staying at home to raise their children. Canada and the United States tend to focus on the importance of working by all its societal members. These values form the single mother context as a "problem" for society, as they depend on the system for help (Evans, 1992).

Historically, poor members in society have been treated badly. Poverty was considered "the result of some personal failing or character flaw" (Blouin,1989;p2).

Thus, impoverished people were rarely treated with compassion or with respect for their rights as human beings. Concerns about the poor started to emerge in the eighteenth and nineteenth centuries, with organized measures called Poor Relief. These measures were the result of a shift in ideology which categorized the poor into two categories, the deserving and the undeserving poor. When welfare in the form of financial assistance first appeared, it was limited to the "deserving poor". It took until approximately 1970 for single mothers to be included in the deserving poor category in Nova Scotia (Blouin,1989). These notions shape the current government approaches to caring for single mothers.

According to Evans (1992), both Canada and the U.S. have centered their policies around three main approaches to work initiatives. These strategies can be organized in combination or on their own. The first approach is called the Financial Strategy. This strategy increases the monetary rewards of low-wage employment by increasing the amount of earned income that is allowed before deductions from assistance, altering the tax-back rate on earnings, or supplementing the wage of low-income workers. The second strategy is called the Service Strategy. It's aim is to remove perceived barriers to employment by offering child care, educational upgrading, employment training, and work placements. The third strategy is Enforcement, which relies on explicit regulatory measures and administrative practices to ensure that individuals do not choose welfare over work. Examples of this strategy include lowering benefit levels and increasing monitoring for purpose of disentitlement.

Over the years Canada has tried all of these strategies, and is now in the position of combining all three to some degree. The federal government's popular 1994 document titled Agenda: Jobs and Growth: Improving Social Security in Canada clearly demonstrated that unemployment is Canada's greatest issue. The most important social security programs in Canada were sighted as being Unemployment Insurance, Child Benefits (in April 1998 becomes the Child Tax Benefit), Student Loans program, Canada Assistance Plan (provinces are reimbursed for half of the cost of social assistance programs), Vocational Rehabilitation of Disabled Persons program, and Federal support for employment strategies. It is clear within this document that the federal government's approach to fight poverty lies within the belief that the "best way to fight poverty is for parents of poor families to have jobs" (Human Resources Development Canada, 1994;p70). They emphasized the creation of a program to create new jobs as well as provide access to education and training in order to facilitate hiring.

Assistance given to single mothers in NS before April 1, 1998

Prior to April 1, 1998 the province of Nova Scotia was formed by 66 municipal units, and each of these units had different criteria for deciding the level of financial assistance offered to recipients. Each unit offered different services to single mothers, with different work-incentive strategies (Blouin, 1989). Once long-term need had been established for single mothers, they were transferred to the provincial Family Benefits (FB) caseload (Department of Community Services, 1999). This program provided

standard transfer payments to all single mothers without any enforced work strategies. Single mothers on FB are encouraged, not enforced, to find jobs until their youngest child is 18 years old.

The theory of the earlier multi-tiered system was based on the notion that local communities are different, and thus have different needs. The Federal and Provincial governments would insure that basic rights are given to everyone in Canada, but it was felt that municipal governments could do a better job of understanding the particular needs of their populations. This ultimately led to different rules for eligibility for social assistance at the municipal level. Eleven of 66 municipal units had work enforcement strategies, which only allowed women who were either in school, in an approved training program, or working to get aid (Blouin, 1989). Furthermore, five municipal units only gave assistance for two months before and two months after the birth of a child. Several municipalities (13 in total) made single mothers live with their parents (Blouin, 1989). This diversity lead provincial governments to move towards a central social security program as of April 1, 1998 which resembles the FB model.

Changes to the system began in February 1995 when the Federal government indicated their intent to change the manner in which they contributed to the cost of health services, post-secondary education, welfare and social services through the Budget Implementation Act (Health Canada, 1999). The new mechanism to transfer funds from Federal to Provincial governments is called the Canada Health and Social Transfer (CHST). With this new funding mechanism, the federal government's contribution will be significantly reduced compared to the combined commitment to the Canada

Assistance Plan (CAP) and the Established Programs Financing (EPF). Under CAP, "federal money was earmarked for social assistance: now it can be spent on whatever priorities cabinets decide upon. The needs of single mothers and people with disabilities will now be pitted against those of every other provincial expenditures" (Dodson, 1996;p5). The national standards put in place for social support programs by CAP have been eliminated.

The Maritimes was hardest hit in the new adjustment period. The amount of funding given to each province was established with a formula that included a per capita calculation. Therefore, the Maritimes faced a further cut in funding compared to all other provinces, because they have a proportionately higher percentage of the population benefiting from CAP money. Unlike CAP, this new formula does not include adjustments for the greater need for welfare and social service programs in the Maritimes. According to this new sharing formula, the Maritimes get even less than their traditional share. The overall cut is in the vicinity of 40% (Dodson, 1996). Provinces have had to raise taxes and find ways to cope with these changes. Despite these new challenges, a recent publication in the Globe and Mail (January 11,1999) identified Nova Scotia as the only province which did not reduce its rates to social services and programs.

The Compass Employment Program

The Compass Employment Program represents a collaborative effort between Human Resources Development Canada and the Nova Scotia Department of Community Services (Government of Nova Scotia, 1997). The program was designed to compliment and build on existing training and employment services for social assistance recipients

(SAR), which ran from October 1994 to December 1996. It took a service approach to remove barriers to employment by offering employment opportunities and/or work experience to job-ready clients from both the provincial and municipal social assistance caseload. Single parents, able-bodied municipal clients and youth were the specific targets of the Compass Program.

There were four components to the Compass Program: the Work Experience Option, the Transitional Training Option, the Enterprise Development Option, and the Opportunity Fund (Government of Nova Scotia, 1997). The Work Experience Option was designed to provide youth (18 to 30 years of age) in receipt of municipal assistance with an opportunity to gain work experience to enhance their employability (max. $160 a week). The Enterprise Development Option was designed to assist social assistance recipients to establish and operate a small business. The Opportunity Fund was designed to enable the purchase of items/services for employable clients, such as textbooks, manuals, course fees, work boots, etc.

The Transitional Training Option (TTO) of the Compass program attracted the most participation from single mothers in Nova Scotia. This component of the program provided job placement with private sector employers by providing wage subsidies for up to six months for full-time work with a wage subsidy of up to $5.62 an hour (Government of Nova Scotia, 1997). The wage subsidy was conditional on private sector employers contribution of a minimum 25 percent of the total hourly wage, as well as upon full-time employment being offered to the client upon termination of the placement.

The evaluation of the Nova Scotia Compass initiative was conducted by Martell Consulting Services, in association with Collins Management Consulting and Research, under the direction of the Nova Scotia Community Services and Human Resources Development Canada. They found that the project had a difficult time reaching the primary designated groups (Government of Nova Scotia, 1997). This had to do with the lack of other service strategy approaches that could have complemented the program, such as offering child care (Government of Nova Scotia, 1997).

The influence of prescription utilization on the decision to enter employment initiatives founded the basis for this study. Evaluators of the Compass program identified the loss of prescription drug utilization as one of the main reasons that impeded their ability to participate in the work program (Government of Nova Scotia, 1997). Although it is unclear whether participants expected their drug benefits to be withdrawn once they started participating in the work program, it is fair to assume that they expected changes in their drug benefits once they returned to the labour force full-time. Examining the role of prescription utilization in terms of a basic need to single-parent families has never been examined in the literature as a potential barrier to participation in employment programs.

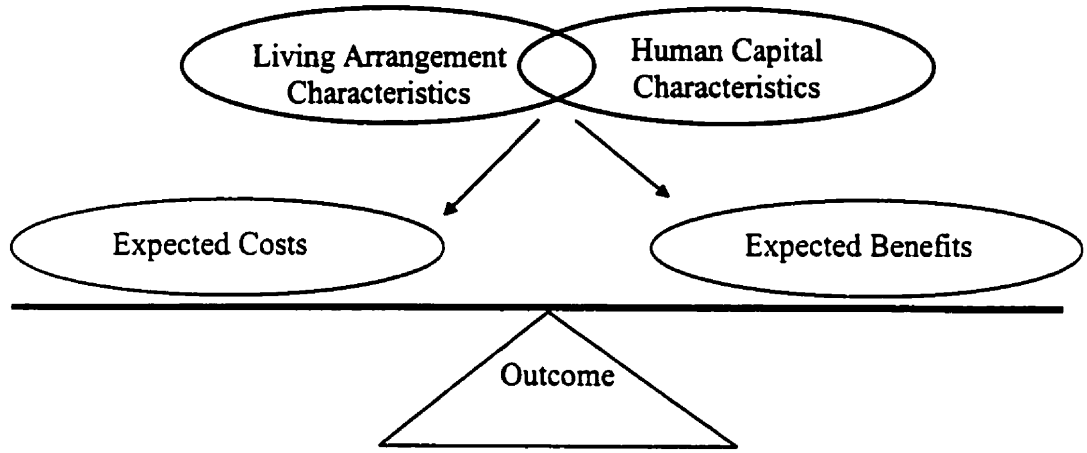
Theoretical Framework

Understanding the processes involved in a single mother's decision to enter into employment programs and ultimately the labour force is complex. Academics from various disciplines have approached this question from many different angles. The theoretical framework used within this study is represented in Figure 1. The figure is grounded in neoclassical economics, concerned with decision making under conditions of

scarcity. The framework begins with the assumption that limited resources are available to satisfy everyone's wants, and choices ultimately need to be made regarding their use. Determining the best way to allocate scarce resources to maximize well-being is the central economic question within this framework. Economists approach this question by determining the real cost of having more of one good relative to foregoing the opportunity of having more of another good (Blau, Ferber,1986; Drummond, O'Brien, Stoddart, & Torrance, 1997; Gold, Siegel et al., 1996). Weighing opportunity costs is important in order to understand the decision making process involved in entering employment programs. As scarce resources such as time and money are limited, it is important to be aware of how much satisfaction is lost by giving up desirable alternatives.

Figure 1 demonstrates a balance between expected costs and expected benefits which goes into the decision making process to enter into work programs. Both expected costs and expected benefits are influenced by a large number of variables including living arrangement and human capital variables. Each variable or combination of variables influences the perception of expected costs and benefits of the work program. For instance, someone with little or no previous work experience (a component of human capital) might expect the skills and training received in the work program to be essential for their future employment. The perceived marginal increase in their human capital would then be large. On the other hand, someone with an extensive employment history might expect that the work program would result in minimal improvements to their human capital.

Figure 1 Theoretical Framework.



Expected Costs:	Living Arrangements Characteristics:	Human Capital Characteristics:	Expected Benefits:
Loss of Drug Benefits, Transportation, Work Clothes, Child Care, Emotional.	Marital Status, Age and Number of Dependents, Health region lived in.	Age, Education, Assets, Expenses, Non-social Assistance Income, Social Transfer Payment, End of Month Financial Situation.	Increased Human Capital (work experience, increased income, skills, training), Psycho-social Improvements.

The relationship between the variables in Figure 1 are complex, and represent only a limited perspective on what might influence a single mothers decision to enter into a work program due to data limitations available for this study. Previous research into the use of work and welfare, almost exclusively from the U.S., generally adopted either a "human-capital" or "work-leisure" approaches. The human-capital perspective emphasizes the significance of individual characteristics such as education and training in determining work and welfare outcomes, while the work-leisure framework pays particular attention to addressing features of income support and employment programs (Evans,1984). Although this study can only examine the role of certain living arrangement and human-capital characteristics, it provides insight into both of these

approaches by examining the relationship between expected prescription utilization (a potential feature of employment programs) and employment (based on education, training, and experience) for single mothers on social assistance.

CHAPTER 2: LITERATURE REVIEW

2.1: Introduction

Insight into the needs of female-headed lone-parent families must be understood within the larger social, political, and economic system in order to improve social policy in Canada. The system represented in Figure 2 demonstrates a set of interacting forces that become available to the family unit as a social-safety net. It begins with the basic needs of the family unit, which must be met for survival. Once the this unit cannot provide adequately for itself, it turns to the next level of assistance available to them which in most cases is their social-support networks. If the needs of the single-mother family unit are not met there, they turn to the next level of support available, and so on.

It is important to realize the influence each level of support has on one another. Societal norms, values, and morals are the foundation of social policies. The way single mothers are viewed greatly affects the way governments approach supporting them and ultimately how they view themselves (self-fulfilling prophecy). If single mothers view themselves as burdens to society, they are likely to internalize those feelings and behave the way they have been labeled, thus contributing to a cycle of poverty. Basic human rights/standards are set at the federal government levels which provincial governments must uphold in order to secure shared-cost benefits. Provincial governments must have an understanding of municipal needs in order to distribute funds appropriately. Last but not least, municipalities must establish and support community organizations that supplement social support networks of community members. These influences will be discussed in relation to the literature review.

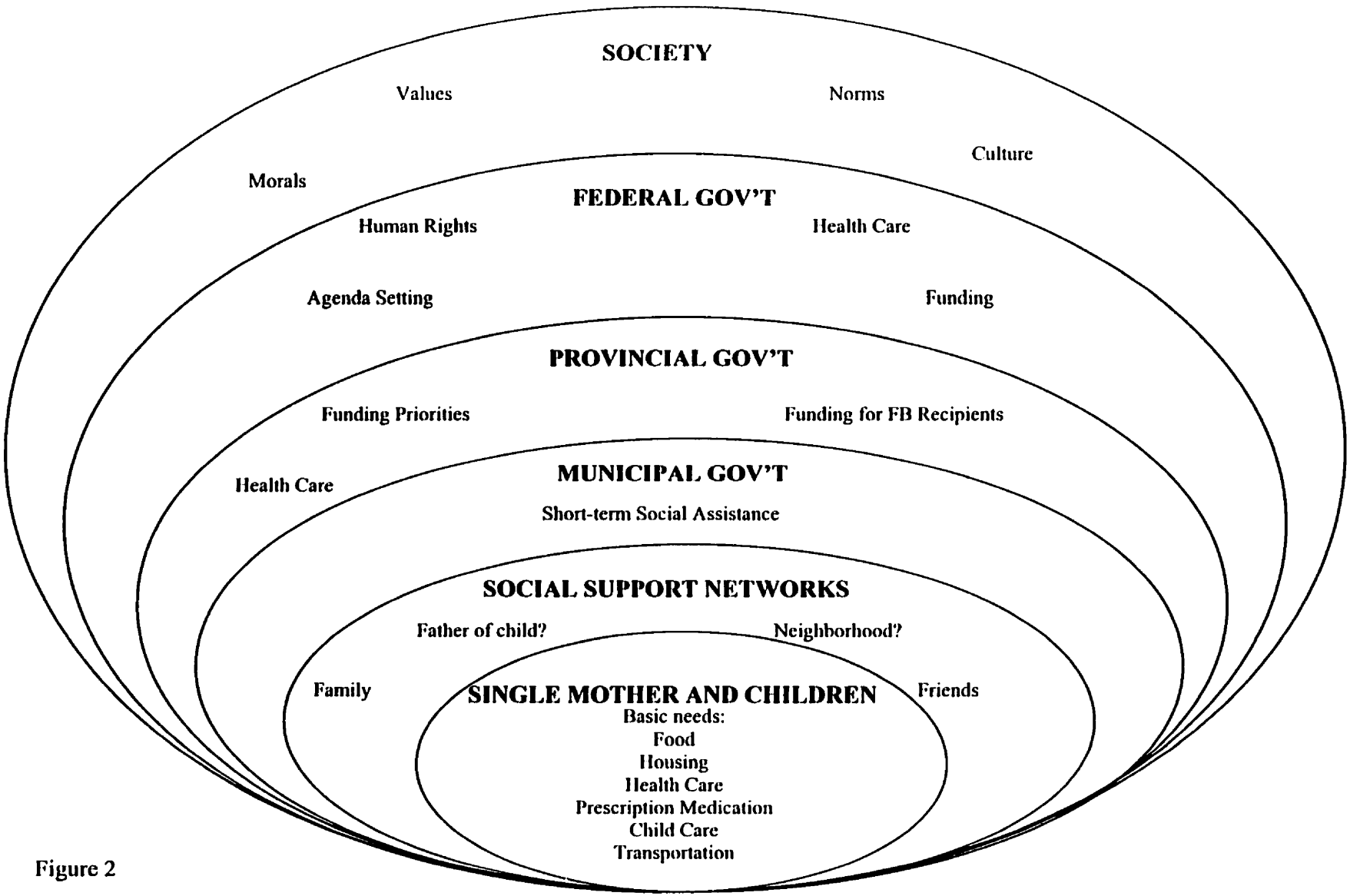

SOCIETY
Values
Norms
Culture
Morals
FEDERAL GOV'T
Human Rights
Health Care
Agenda Setting
Funding
PROVINCIAL GOV'T
Funding Priorities
Funding for FB Recipients
Health Care
MUNICIPAL GOV'T
Short-term Social Assistance
SOCIAL SUPPORT NETWORKS
Father of child?
Neighborhood?
Family
Friends
SINGLE MOTHER AND CHILDREN
Basic needs:
Food
Housing
Health Care
Prescription Medication
Child Care
Transportation

Figure 2

Most of the literature available in Canada takes a human capital perspective to understanding the realities of single mothers and their children by highlighting their individual characteristics. Understanding who single mothers are in Canada is an important starting point for insight into the magnitude of the issues present in this project. Information on women and employment in Canada sheds light on the single mother's ability to provide for her family, as well as social policy which hinders her ability to improve the situation. Socioeconomic differences in the utilization of physician services in Nova Scotia bring medical needs of single mothers and their children into perspective. These needs indirectly touch on the expected importance of prescription medication for single-mother families.

2.2: Lone-parent families in Canada

National trends from Statistics Canada (1995) indicate that female-headed lone-parent families have been increasing steadily in the past 15 years from 10% in 1971, to 16% of all families with children under 18 in 1991. This change in family structure increases the urgency to improve social and economic policies that affect these women. This urgency is especially present for single mothers in Nova Scotia, as they have the second highest rate of lone parent families in Canada (Statistics Canada, 1995). In 1991, 9% of women aged 25-44 and 8% of those aged 45-64 were parenting on their own, in comparison to 6% of senior women and 3% of those between the ages of 15-24.

The overall growth in the number of women parenting on their own is partially a reflection of the increase of the divorce rate (Statistics Canada, 1995). In 1991, 57% of all female lone-parents were either separated or divorced. The high number of female

lone-parents can be attributed to the social value that mothers are better equipped to receive custody of their child when parent unions end. Mothers for instance, were awarded custody of the children in 47% of all custody decisions settled in court in 1991, whereas custody was awarded to the father in 12% of these cases (Statistics Canada, 1995). This transition has not been easy for single mothers. Social policy does not insure that fathers provide reliable and adequate financial assistance in the form of child support and alimony payments. Nor do political institutions take responsibility for the lack of appropriate policy, by securing financial stability for single mothers in the interim of payments provided by fathers/ex-partners.

A large portion of female lone-parents are single, never-married women raising children on their own. This has an important significance to social policy as this situation makes it particularly difficult for single mothers to receive support from the father of their child. It is up to the mother to locate the father and prove his paternity status, and then set up proceedings for receiving child support. There are many socially debated issues within these situations that ultimately influence the way policies are formed. In 1991, 20% of female lone parents were single, up from 11% in 1981 (Statistics Canada, 1995). Demographically, the largest proportion of never-married mothers is between the ages of 25-34. They represented 47% of single mothers in 1991, which is an increase of 7% from the 1981 figure. The share of never-married female lone parents between the ages of 15-24 declined from 38% in 1981 to 26% in 1991 (Statistics Canada, 1995).

The increase in single mother status in Canada is also directly linked to increases in poverty levels (Statistics Canada, 1995; Lipman, Offord & Boyle, 1997). Almost 60%

of lone-parent families survive on low incomes (Corbeil, 1992). In 1990, 12.1% of all Canadian families lived on incomes below the poverty line, of which 47% were headed by women (Statistics Canada, 1995). In 1995, 21% of Canadian children aged eighteen or less were living in families with incomes below the Statistics Canada Low-Income Cut-off Point (LICO) (Péron et al. 1999). The similar statistic for children of lone-parent families was 61.9% (Péron et al. 1999). These statistics mean that there are reduced choices/possibilities for single mothers. For this reason alone, it is not surprising that paid employment for single mothers has fallen since 1987 (The Government of Canada, 1994).

Government initiatives clearly see the need to target single mothers for employment, as they are in great risk of not only becoming poor, but of being poor as well. They are one of the largest segments of the population which depend on government assistance (Dechman, 1995). On average, "transfer payments make up 30% of the income of these families, compared to 13% of lone-parent families headed by men and just 7% of two-parent families with children" (Statistics Canada, 1992). In addition, Dooley (1995) demonstrated that the younger the single mother, the larger the percent of her income will come from welfare.

2.3: Women and Employment in Canada

The Canadian economy is in the process of responding to social and demographic changes in the work force, global technological and economic trends, as well as the rapid influx of women into the work force in the past few decades. Encouraging full participation of significant segments of society (including women) is an essential step in

promoting equity as well as economic growth. Statistics Canada (1995) demonstrated that women represent 45% of all paid work in 1994, which is up from 37% in 1976. This rate is expected to reach 66% by the turn of the century (Canadian Labour Market and Productivity Centre, 1994). Women between the ages of 24-54 have the highest employment rates in Canada (Statistics Canada, 1995). In 1994, 70% of women aged 25-44 and 66% of those aged 45-54 had jobs, compared with 52% of women aged 15-24 and 34% of those aged 54-65. However, it is important to note that women aged 24-54 are still considerably less likely than their male counterparts to be part of the employed work force.

The increase of women's participation in the work force has particularly been due to the sharp growth in the employment rate of women with children in the last decade or so. Between 1981 and 1994, the employment rate of women with children less than age 16 living at home rose from 50% to 63% (Statistics Canada, 1995). During the same time frame, 50% of female lone parents with children in the same age group were employed. This demonstrates that female lone parents are considerably less likely than women in two-parent families with children to be employed. The interesting dynamic occurring here is that the proportion of female lone parents with jobs in 1994 was lower than the 1981 statistic of 55% (Statistics Canada, 1995). This decline has been traced largely to substantial drops in employment levels among lone mothers during the recessions in both the early 1980's and 1990's. This trend is contrary to that found among women in two-parent families. In 1994, over half (56%) of all married women with children under the age of 3 were employed (up from 39% in 1981), compared to 27% of female lone parents

(Statistics Canada, 1995). The employment rate of women whose youngest child was aged 3-5 also increased during this period, rising from 47% in 1981 to 59% in 1994. The rate for female lone parents in 1994 was 47%, which is substantially lower than their married counterparts (Statistics Canada, 1995). However, women with pre-school-aged children are still less likely than those with school-aged children to be employed.

The shift in employment levels of female lone parents and married mothers is deserving of further research as it represents a shift in societal values. Crompton (1994) discusses the vulnerability that lone mothers currently encounter in the labour market. One measure of this vulnerability is reflected in women's most recent work experiences. "Until the early 1980's, lone mothers were more likely to have a recent work history than married mothers, but the subsequent influx of wives into the job market significantly increased this group's work experience" (Crompton 1994). Statistics Canada (1995) illustrate that in 1993, 87% of married mothers had recent work experiences, compared with 81% of separated or divorced mothers and 78% of those who had never married. The proportion of married mothers who had never worked fell steadily to 3% in 1993. In addition, those who had last worked more than five years before, dropped by half from 19% to 9%. Separated or divorced mothers also recorded declines, but these were not as pronounced. However, 10% of never married lone mothers had never worked, and 12% had not worked for more than five years in 1993.

Married mothers are more likely to have higher-paying jobs than their single mother counterparts. In 1993, 30% of married mothers with recent employment experience worked in managerial, administrative or professional occupations, compared

with 20% of separated or divorced and 14% of never-married mothers (Crompton, 1994). Increased levels of work experience (seniority) by married mothers is a large factor in their ability to have better-paid jobs. Married mothers were found to be substantially more likely to have over five years work experience with the same employer. For instance, in 1993, 44% of wives had more than five years job tenure compared to 32% of lone mothers. However, average job tenure improved considerably for all mothers in Canada.

Educational disparity aids in explaining differences between married and lone mothers' ability to find good jobs. Lone mothers, particularly those who never married, have considerably less education than married mothers do. Although the proportion of all mothers with higher education doubled between 1976-1993 (mirroring rising levels of schooling in the general population) lone mothers did not reach the level of married mothers (Crompton, 1994). In 1993, 19% of never-married mothers with preschoolers had a college diploma or university degree, compared with 29% of separated or divorced mothers and 46% of married mothers (Crompton, 1994).

Labour force trends indicate that employment gains since 1989 were mostly found within the part-time work sector and that most earnings did not keep pace with inflation (Statistics Canada, 1995). This trend influences women's employment prospects as they represent the majority of part-time workers (69%) in Canada. These types of jobs are generally associated with low wages and little to no benefits. In 1994, 34% of all female part-time workers (over 500,000 women) indicated that they wanted full-time employment but could only find part-time work. This has increased from 22% in 1989.

These employment prospects coupled with reductions in average incomes create an atmosphere of despair for most lone parents. Péron et al., (1999) state that in 1990, husband-wife average family income was $55,000. Lone-parent families headed by men earned only three-quarters of this amount, and those headed by women received only half as much.

The economic prospects for single mothers is very discouraging. Social policies have not kept pace with changes in societal values. Single women need to earn a breadwinner's wage, and all the benefits associated with it, to work outside the home and raise families. Unfortunately, women in today's society earn 65% of what their male counterparts earn (1995 average, StatsCan), which contributes to the increasing income gap between dual-earner and single-earner families.

Economic prospects are even more discouraging for women in Atlantic provinces and Quebec as they have higher unemployment rates than those in Ontario and the Western provinces (Statistics Canada, 1995). In 1994, 19.3% of female labour force participants in Newfoundland were unemployed, along with 16.5% of those in PEI, 13% in Nova Scotia, 11.3% in Quebec, and 11.2% in New Brunswick. In the remaining provinces, the unemployment rate of women was approximately 9% in Ontario, Alberta, Manitoba, British Columbia, and 7.1% in Saskatchewan. While the official unemployment rate in Canada for the year 1994 was recorded at 11.4% when "discouraged workers" are added, such as those involuntarily working part-time, and the "margins of the labour force" (those who want to work, are available to work, but did not

otherwise meet the criteria for the unemployed figures), the real unemployment figure for that time was closer to 20.2% (Mason & Boutilier, 1995).

2.4: Socioeconomic Status, Health, and Utilization of Physician Services

The relationship between health status, health service utilization and socio-economic status is well documented in the literature in both the Canadian and international context. Studies linking poverty and health status in Canada date back to the initial Canadian Sickness Survey of 1951 which found that high income groups had consistently fewer days of disability than medium and lower income groups (Canadian Sickness Survey 1960). Other Canadian studies support this type of inquiry, and demonstrate that individuals with higher incomes live longer and have better health status than others in the community (Hay, 1988; Mustard et al., 1997; Wigle & Mao, 1980; Wilkins & Adams, 1983).

An emerging body of evidence indicates that the most substantial SES-related differences in health status are present in childhood (Aber, Bennett, Conley, & Li, 1997; Baydar, Brooks-Gunn, & Furstenberg, 1993; Duncan, Yeung, Brooks-Gunn, & Smith, 1996; Ernst, P., Demissie, K. et al., 1995; Huston, McLoyd, & Coll, 1994; Mare, 1982; McGaughey, Staarfield, Alexandre, & Ensminger, 1991; Olafsson & Svenson, 1986). Studies demonstrate that family income and low-income status are powerful correlates of increased neonatal and post-neonatal mortality rates, greater risks of asthma, spina bifida, epilepsy, and cognitive development problems. In addition to the aforementioned physical effects, there is evidence that low-income status can adversely influence a child's normal development. In fact, children raised in families experiencing both

persistent and occasional poverty demonstrate lower IQs and more internalizing behavioral problems than children who never experience poverty (Duncan, Brooks-Gunn, & Klebanov, 1994). These developmental problems become increasingly more pronounced over the years in children raised in persistent poverty (Smith, & Dixon, 1995).

There is considerable debate regarding the etiology of these developmental problems. Some evidence suggests that while the duration of poverty matters, its timing in childhood is probably less significant (Duncan, Brooks-Gunn, & Klebanov, 1994). Nevertheless, recent research suggests that "extreme poverty", especially if it occurs early in life (under five years of age), has especially detrimental effects on children's future life chances (Duncan, Yeung, Brooks-Gunn, Smith, 1996).

The relationship between these variables and utilization of health services is less clear. A study by Mustard et al., (1977) which linked physician billing records to individual census records found relatively weak but generally inverse relationships between income, education and physician utilization across a number of condition-specific causes. Other studies have reported significant inverse relationships between SES and physician health service utilization (Beland, 1996, Katz et al., 1996; Broyles et al., 1993; Kephart et al., 1998; Siemiatycki, 1980).

One of the potential explanations for the SES gradient lies in the well-documented tendency for lower SES individuals to smoke, be overweight and lead sedentary lifestyles (Cullen et al., 1987; Osler, 1992; Wagenknecht et al., 1990; Winkleby et al., 1990). This has led some analysts to conclude that the SES differential in health status is primarily a

function of differential levels of health risk behaviours between social classes. However, a number of investigators have found substantial variation in health status between socio-economic groups even after controlling for lifestyle factors. (Haan et al., 1987; Lantz et al., 1998; Lynch et al., 1996; Rose & Marmot, 1981).

Lone-parent families on social-assistance appear to represent an important sub-group within the low socio-economic status group but there is relatively little literature available on the relationship between social assistance dependency, health status and health-service utilization.

Lipman, Offord & Boyle (1997) analyzed data from the Ontario Health Supplement Survey to examine the relationship between parental status, poverty and mental health characteristics. They concluded that single mothers were more likely to be poor, to have an affective disorder and to use mental health services than were mothers in two-parent families. Poor single-parents were at highest risk of mental health problems.

In an earlier analysis of the Ontario Child Health Survey, results by Offord, Boyle, Fleming, Blum & Grant (1989) indicated that living in a single parent family and living on social assistance were strong predictors of increased rates of psychiatric disorders, poor school performance and substance abuse in children. Living on social assistance was also a significant predictor of chronic health problems. Offord, Boyle & Jones (1987) reported that living on social assistance was a strong indicator of psychiatric disorders in young boys and poor school performance in young girls. Their analysis of the Ontario Child Health Survey data indicated that living on social assistance was an

important predictor of psychiatric disorders among children even after controlling for the effects of low income and family dysfunction.

Although there is no information available regarding the use of prescription medication for this population, it is fair to estimate that their need for prescription drugs is higher than the general population due to their increased levels of health problems and use of physician services. As a result, it was estimated that female lone-parent families with high prescription drug needs would be less likely to participate in the work program. The financial burden of prescription costs could not be supported on a single income.

CHAPTER 3: METHODS

3.1: General Overview

The first objective of this study was to explore a facet of the decision making process to enter into an employment program. The facet of interest was the utilization of prescription medication in relation to participating in an employment program from social assistance. A case-control design was used to distinguish single mothers who participated in the employment program (cases) and those who remained on social assistance (controls). Their level and type of prescription utilization was compared in relation to the outcome of entering into the employment program. The second objective of this study examined the influence of living arrangement and human-capital characteristics in the decision to enter into employment programs. This was done by fitting a model with all living arrangement and human-capital variables, and observing differences in pseudo R^2 when each of these types variables were dropped as a group.

3.2: Sources of data

The data used in this study was selected from the Nova Scotia Community Services Family Benefits Database, the Nova Scotia Compass Evaluation Database, and the Nova Scotia Family Benefits Pharmacare Database.

The Nova Scotia Community Services Family Benefits Database contained information on individuals on the provincial welfare caseload. These individuals were considered to need long-term assistance, such as the disabled and single parents. The variables of interest which were included in this database were: file number, social insurance number, date of entry into the system, assistance type, marital status, age,

gender, county lived in, age of dependents, education level, assets, monthly income (child support, alimony, part-time work), monthly expenses, monthly deficit (outstanding loans and bills), and monthly social transfer payment.

The Nova Scotia Compass Evaluation Database contained information on a provincial employment initiative funded by Human Resources Development Canada as well as the Nova Scotia Department of Community Services. The following variables of interest were included in this database: file number, social insurance number, marital status, gender, wage, subsidy from Compass, date of employment through Compass, education level, reason for leaving employment, and outcome of Compass, and information on individuals on their participants waiting list.

The Nova Scotia Family Benefits Pharmacare Database contained information on all prescription drug claims made by Family Benefits recipients. Individuals on Family Benefits were eligible for drug benefits with a maximum annual copayment of $150.00. The following variables of interest were included in the database: FB file number, social insurance number, number of drug claims, date of drug claims, drug identity (DIN), and quantity disposed, the days supply, the cost of the prescription which was the actual amount paid to the dispensing pharmacy (the professional fees vary across pharmacies and years) and the drug acquisition cost.

The data in this study were accessed through the Population Health Research Unit (PHRU), Department of Community Health and Epidemiology at Dalhousie University. PHRU was established under an agreement between the Nova Scotia Department of Health and Dalhousie University to permit access to provincial claims databases for

research purposes. The linkage of data was done using social insurance number and the Family Benefits file number. Once the data was merged, identifiers were deleted.

3.3: Identification of study subjects

All participants in this study were single mothers on Family Benefits who lived in Nova Scotia between 1991-1996. During that time, they were all targeted to participated in the Compass employment program. Cases were selected from the Nova Scotia Compass Evaluation Database, based on their participation in the Transitional Training Option of the Compass employment program. This option of the employment program specifically targeted single mothers on FB. One hundred and sixty single mothers on FB participated in this option of the employment program. Thirty-eight women were excluded as cases in this study because they didn't have children prior to entering into the employment program. Forty-three single mothers were then excluded as cases because they did not have at least three months of pharmacare records to base our exposure variables on. Seventy-nine single mothers met our inclusion criteria, and were considered cases in this case control study.

Having been offered this option, controls were selected from the Nova Scotia Community Services Family Benefits Database, based on their non-participation in the employment program. Single mothers on FB who had placed themselves on the waiting list for the Compass program were excluded from the eligible pool of controls. Approximately 6 controls for every case were explored as potential controls based on similar time frames (i.e. controls had to be on FB during the same months cases were participating in the work program). These controls were not matched on any key

variables, as all candidate matching variables were variables that were important to explore. Approximately 3.5 controls for every case met the inclusion criteria of having at least 3 months of pharmacare data (total of 289).

3.4: Exposure measures

The exposure of expected drug utilization was determined in two ways. First, a measure of expected prescription costs was tabulated for each family unit. This measure was calculated based on the participants pre-employment program drug use found within the Family Benefits Pharmacare database. In most cases six months worth of pharmacare data (between 3-7 months) was examined to calculate an average monthly prescription drug cost for the family unit. Therefore, the expected prescription drug cost measure used in this study is in fact based on the family units prior prescription drug use. This measure should be highly accurate, as most medications are covered in full. A limitation of the data available for this study involves the lack of true cost of Maximum Allowable Cost drugs (MAC). The full cost of MAC drugs was not covered under the drug program. Instead, the program covered the cost of an equivalent alternative which in most cases was generic. In addition, because of copayments (user fees) and other non-financial barriers to use, the use of previous prescription drug use might not be proportional to perceived need.

In order to examine types of medications that might influence the decision to enter into a work program, a second prescription utilization exposure variable was calculated based on five drug categories. These categories include gastrointestinal drugs, antidepressants, antibiotics, stimulants (methylphenidate), and everything else was

categorized as "other". These drug classes were determined by matching drug identification numbers (DIN) and anatomical therapeutic classification (ATC) with PHRU's Augmented Drug Product Database (DPD).

3.5 Potential confouders

Information on confounding variables were found within the Compass Evaluation Database and the Community Services Family Benefits Database. These confounding variables were divided into two groups, living arrangement characteristics (table 1.0) and human capital characteristics (table 2.0) which focus directly on financial situation of participants. Living arrangement variables represented characteristics of each family prior to their entry into the employment program. Human-capital variables based on direct financial values such as expenses or income, were averages of between 3-7 months worth of data. All information on confounding variables was collected by social workers. These measures should be accurate, as changes in a participants personal situation greatly affected the amount of transfer payments allotted to each recipient. Penalties exist to punish recipients for incorrect or misleading information provided to FB case workers.

Table 1.0 Living arrangement characteristic definitions.

Living Arrangement Characteristics	**Definition**
Marital Status	All participants in this study are female lone parents who lived in Nova Scotia in the early 1990s. Marital Status is broken down into three categorical categories: never married, divorced or widowed, and separated single mothers.
Dependents	All participants in this study have at least one dependent child under the age of 18 years of age prior to the start of the employment program. Dummy variables were created to separate dependents into two mutually exclusive groups: single mothers with children less than or equal to 5 years of age living in the household, and those who do not have any children less than or equal to five years of age in the household.
Health Region	Four categorical variables were created to capture which NS health region participants lived in during the time of the study: western, central, northern, and eastern health regions.

Table 2.0 Human capital characteristics definitions.

Variable	Definition
Age	Age of participants at the beginning of the work program was calculated.
Education	Education of participants was divided into 3 levels: less than high school, high school, and more than high school.
Assets	Assets include any cash or liquid assets received or available to an applicant or recipient of FB and/or their dependents irrespective of its source except when the source is an income source. Most assets are required to be sold in order to help support the social assistance recipient. Certain assets were not expected to be sold such as life insurance, a principal family residence, and in most instances a motor vehicle (NS Dept. of Community Services, reference 05-05-01, 05-05-03). Four categories were developed, individuals with no assets were placed into one category while actual asset levels were divided into three equal categories for all participants (low $1.00-$100.00, moderate $101.00-$850.00, and high $900.00-$11,4000).
Expenses	Expenses represent the average monthly expenses each family requires to live. This variable was divided into three equal categories for all participants (low $418.00-$869.00, moderate $870.00-$1011.00, and high $1015.00-$1386.00).
Income	Income represents the average monthly non-social assistance income received by recipients from part-time employment, alimony, and child benefits. Four categories were developed, individuals with no income were placed into one category while income levels were divided into three equal levels for all participants (low $0.03-$50.00, moderate $51.00-$200.00, and high $201.00-992.00).
Social Transfer	Social transfer is the average monthly social transfer payment given to recipients. It is based on the deficit between monthly expenses and income.
Finances	A finance variable was created to understand the average financial situation of families at the end of each month. This variables was divided into three levels: extra money at the end of the month (average monthly expenses<monthly income and social transfer payment), breaking even at the end of the month (on average monthly income and social transfer payment =expenses monthly), and out of pocket (on average monthly expenses>monthly income and social transfer payment).

3.6 Statistical analysis

Data analysis was conducted using STATA version 5.0. Statistical analysis included descriptive analyses, followed by univariate and multivariate models. All tests of significance were two-sided and the level of significance was set at $p<0.05$. Univariate and bivariate analyses were performed to measure the strength of the association and assess the potential for confounding. Odds ratios (OR) and 95% confidence intervals (CI) were used to estimate the relative risk (RR) of participating in a work program in association with prescription drug utilization in single mothers on social assistance. Single mothers on social assistance during the same time frame who chose not to participate in the work program were used as controls.

Multiple logistic regression was used to predict the outcome of participating in the employment program. All potential confounding variables in the data were included in these models based on the literature and their impact on human capital. A backward elimination approach using multiple regression was used. This involved running the model and subsequently identifying and removing the variable that showed the least significant p-value for the Wald test. In order to assess whether a variable should stay out of the model, the difference in -2 log likelihoods was assessed. A variable was considered to have contributed to the model if the difference in the -2 log likelihood produced a p-value of ≤ 0.10 or if the odds ratio for the exposure of prescription drug utilization changed by $\geq 15\%$. Additional models were fitted in this manner until all that remained in the model were variables that met the above criteria or were included due to the relevance of the variable. In order to assess the impact of human capital versus living

arrangement variables, a series of models were estimated. First, living arrangement variables were dropped as a group in order to observe the difference in the Pseudo R^2 from the final model. Second, this was done for human capital variables as a whole.

CHAPTER 4: RESULTS

4.1 Living arrangement characteristics

The distribution of living arrangement characteristics are presented in Table 3. Nearly three quarters of all single mother participants in this study were never married single mothers, 20% were separated, and 10% were divorced or widowed single mothers. Cases were likely to be separated ($p<0.001$), have older children (>5) living in the household ($p<0.0001$), and were less likely to have lived within the Central health region ($p<0.0001$) prior to the employment initiative.

4.2 Human capital characteristics

The distribution of human capital characteristics among study participants is presented in Table 4. As can be seen from the table, cases were significantly older ($p<0.001$), they had higher levels of education ($p<0.001$), more assets ($p<0.001$), more non-social support income ($p<0.001$), more disposable income ($p<0.001$), as well as had lower social assistance transfer payments ($p<0.001$) than their non-case counterparts. Mean monthly expense, however, did not vary substantially among participants in this study.

It is worthwhile to also point out that as a whole, participants had quite low education levels, with most participants (90%) either having a high school education or less. Asset levels were also quite low for the entire group, with over fifty percent of participants having no assets whatsoever. Non-social support income (alimony,

child support, part-time employment) followed the same trend with a large segment of participants receiving little no income of this sort at all.

4.3 Distribution of prescription drug utilization

The descriptive analysis of prescription drug utilization characteristics are presented in Table 5. Although no statistically significant difference in drug utilization was observed between cases and non-cases, use of specific drug categories demonstrated some interesting findings. The use of stimulants in this sample was almost non-existent. By contrast, the use of both GI drugs and antibiotics were quite prevalent at 54%, and 79% respectively, while 17% of participants used antidepressants.

Monthly costs of selected drug types were also statistically insignificant between cases and non-cases. As drug use for stimulants was quite low, the mean monthly cost was minuscule. The cost of GI drugs, antidepressants, and antibiotics were relatively higher between $3.00 to $7.00 a month. Cost of all other types of drugs were represented by a mean monthly cost of $15.16 ±0.97, while the mean monthly cost of all prescription drugs was $28.98 ±1.37 (range between $1.61 and $164.83).

4.4 Crude odds ratio of living arrangement characteristics.

The results of the unadjusted analysis of the association between living arrangement characteristics and the outcome of participating in a work program are presented in Table 6. Separated single mothers were substantially more likely (three

times) to have participated in the work program ($p<0.001$) compared to never married single mothers. The presence of young children (≤5) living in the household demonstrated an 81% reduction in participation rates in the work program ($p<0.001$). In addition, families who lived in the Northern health region more likely to participate in the work program ($p<0.01$), while those living in the Central health region were substantially less likely to participate in the work program compared to families living in the Western region $P<0.001$).

4.5 Crude odds ratio of human capital characteristics.

The results of the unadjusted analysis of the association between human capital characteristics and the outcome of participating in a work program are presented in Table 7. In contrast to expectations, women with higher human capital were more likely to participate in the employment program. Women were more likely to participate in the program if they were older ($p=0.001$), had more than a high school education ($p=0.001$), had more assets ($p=0.01$), had higher monthly income ($p=0.001$), and had better financial status ($p=0.05$).

4.6 Crude odds ratios for the exposures of prescription drug utilization.

Among the prescription drug utilization exposures presented in Table 8, none of the variables were found to have statistically significant effects on participation in the work program.

4.7 Adjusted odds ratios using multiple logistic regression.

A separate model was fitted for the primary exposure of total monthly prescription cost as well as for prescription drug cost broken down by drug categories. The result of both Models are found in Table 9. Model 1 was fitted for the exposure of total monthly prescription cost. As can be seen from the results, adjustments did not alter the effect of monthly prescription drug cost. In contrast, living arrangement characteristics such as the presence of a young child (≤5) in the household, and living in certain health regions significantly affected the outcome of participating in the work program. Model 1 demonstrated that mothers with young children were 71% less likely to participate in the work program. In addition, mothers who lived within the Central health region were 88% less likely to participate in the work program than individuals who lived within the Western health region. Human capital variables which remained significant in this model were non-social assistance income and end of month financial situation. Mothers with out of pocket expenses were 72% less likely to participate. As a whole, human capital characteristics explained the majority of the variance between cases and non-cases. The pseudo R^2 for model 1 drops from 32% to only 12% when human capital variables were dropped from the model. In contrast, the pseudo-R2 only drops to 23% when living arrangement variables are dropped from the analysis.

4.8 Full logistic model examining living arrangement and human capital characteristics in relation to the outcome of participating in a work program.

Table 10, was created to demonstrate a full model fitted to interpret the role of both living arrangement and human capital variables in relation to the outcome of participating in the work program. Living arrangement characteristics as a whole significantly influenced the outcome of participating in the employment program ($p=0.0007$). Both the presence of young children (≤ 5) in the household, and living within the Central health region demonstrate statistically significant results ($p<0.01$ and $p<0.00$ respectively). When this block of variables is dropped from the full model, the pseudo R^2 drops from 32% to 25%, suggesting that they explain about 7% of the variation in program participation.

Human capital variables that significantly influenced the model were non-social assistance income and end of month finances ($p<0.00$). However, high colinearity between the variables makes separation of their effects difficult. It is interesting that there are few significant variables here, yet the block of variables explains the bulk of variance. When human capital variables are excluded from the model, the pseudo R^2 drops from 32% to 12%, suggesting that human capital variables explain approximately 20% of the variance in program participation. This is substantially higher than the 7% explained by living arrangement variables.

Table 3. Distribution of Living Arrangement characteristics among study participants.

Living arrangement Characteristic	**Cases** (n 79) n (%)	**Non-Cases** (n 289) n (%)	**Totals** (n 368) n (%)
Marital Status **			
Single	43 (54%)	216 (75%)	259 (70%)
Divorced/widowed	9 (11%)	26 (9%)	35 (10%)
Separated	27 (34%)	47 (16%)	74 (20%)
Dependents			
Number of Dependents	1.67 ±0.95	1.62 ±0.05	1.63±0.04
Young children (≤5)***	37 (47%)	238 (82%)	275 (75%)
No young children***	42 (53%)	51 (18%)	93 (25%)
Health Region ***	*n=63*	*n=289*	*n=352*
Western Region	20 (32%)	61 (21%)	81 (23%)
Central Region	5 (8%)	100 (35%)	105 (30%)
Northern Region	22 (35%)	55 (19%)	77 (22%)
Eastern Region	16 (25%)	73 (25%)	89 (25%)

Significance: * $p<0.01$, ** $p<0.001$, *** $p<0.0001$
Proportions may not add up to 100% due to rounding.

Table 4. Distribution of Human Capital Characteristics among study participants.

Characteristic	Cases (n 79) n (%)	Non-Cases (n 289) n (%)	Totals (n 368) n (%)
Age ***	30.53 ±0.73	25.82 ±0.27	26.83 ±5.36
Education ***			
Less than High School	15 (19%)	104 (36%)	119 (32%)
High School	48 (61%)	167 (58%)	215 (58%)
More than High School	16 (20%)	18 (6%)	34 (9%)
Mean Asset §	2549.47±1326.34	1722.63±629.37	1900.13±569.82
Assets ***			
None	35 (44%)	157 (54%)	192 (52%)
Low ($1.00-100.00)	6 (8%)	57 (20%)	63 (17%)
Moderate ($101.00-850.00)	16 (20%)	39 (13%)	55 (15%)
High ($900.00-11,4000)	22 (28%)	36 (12%)	58 (16%)
Mean Expenses §	914.50±17.86	922.95±10.63	921.14±9.22
Expenses §			
Low ($418.00-870.00)	28 (35%)	95 (33%)	123 (33%)
Moderate ($871.00-1012.00)	29 (37%)	94 (33%)	123 (33%)
High ($1015.00-1386.00)	22 (28%)	100 (35%)	123 (33%)
Mean Income § ***	300.25±22.42	103.23±8.53	145.53±9.25
Income § ****			
None	2 (3%)	57 (20%)	59 (16%)
Low ($0.03-50.00)	6 (8%)	97 (34%)	103 (28%)
Moderate ($51.00-200.00)	18 (23%)	87 (30%)	105 (29%)
High (201.00-992.00)	53 (67%)	48 (17%)	101 (27%)
Transfer Payment § ***	624.80 ±24.97	807.63 ±13.67	768.39 ±12.56
Finances § ***			
Extra money	49 (62%)	107 (37%)	156 (42%)
Break even	6 (8%)	53 (18%)	59 (16%)
Out of pocket	24 (30%)	129 (45%)	153 (42%)

Significance: ***p<0.001, ****p<0.0001
Proportions may not add up to 100% due to rounding.
§ Calculated based on average monthly situation
Income= non-social assistance income (alimony, child support, part-time work)

Table 5. Comparison of mean measurements of prescription utilization.

Exposure Variable	Cases (n79) n(%) or Mean (SD)	Non-Cases (n289) n(%) or Mean (SD)	Total (n368) n(%) or Mean (SD)
Prescription Drug Use:			
GI drugs	45 (57%)	155 (54%)	200 (54%)
Antidepressants	14 (18%)	50 (17%)	64 (17%)
Stimulants	0 (0%)	5 (2%)	5 (1%)
Antibiotics	64 (82%)	226 (78%)	290 (79%)
"Other" drugs	64 (82%)	230 (80%)	294 (80%)
Cost of GI drugs [§]	2.49 ±0.39	3.46 ±0.38	3.25 ±0.31
Cost of Antidepressants [§]	4.64 ±1.73	3.01 ±0.61	3.36 ±0.61
Cost of stimulants [§]	0	0.14 ±0.07	0.11 ±0.06
Cost of Antibiotics [§]	6.90 ±1.02	7.16 ±0.47	7.11 ±0.43
Cost of "other" drugs [§]	14.65 ±1.88	15.29 ±1.13	15.16 ±0.97
Average RX Cost [§]	28.68 ±3.08	29.06 ±1.54	28.98 ±1.37

No significant differences at $p<0.05$ level.
Proportions may not add up to 100% due to rounding.
[§] Calculated based on average monthly situation

Table 6. Crude odds ratios (OR) and 95% confidence intervals (CI) for living arrangement characteristics.

Living arrangement characteristics	Cases (n 79)	Non-Cases (n 289)	OR	95% CI
Marital Status (ref. single)				
Divorced/widowed	9	26	1.30	0.59-2.86
Separated ***	27	47	2.67	1.53-4.67
Dependents (ref. children >5)				
Young children (≤5)	37	238	0.19	0.11-0.32
Health Region (ref. Western)	*n=63*	*n=289*		
Central Region ***	5	100	0.16	0.07-0.41
Northern Region **	22	55	2.28	1.26-4.12
Eastern Region	16	73	1.01	0.54-1.87

Significance: *p<0.05, **p<0.01, ***p<0.001.
Proportions may not add up to 100% due to rounding.

Table 7. Crude odds ratios (OR) and 95% confidence intervals (CI) for human capital characteristics.

Human Capital Variables	Cases (n 79)	Non-Cases (n 289)	OR	95% CI
Age	30.53±0.64	25.82±0.27	1.18***	1.12-1.25
Education (ref.<high school)				
High School	48	167	1.13	0.68-1.88
More than High School	16	18	3.82***	1.87-7.83
Assets (ref. None)				
Low ($1.00-100.00)	6	57	0.33**	0.14-0.79
Moderate ($101.00-850.00)	16	39	1.63	0.86-3.08
High ($900.00-11,4000)	22	36	2.71***	1.49-4.94
Expenses (ref. low ($418-870.00)				
Moderate ($871.00-1012.00)	29	94	1.20	0.72-2.02
High ($1015.00-1386.00)	22	100	0.73	0.42-1.26
Income (ref. None)				
Low ($0.03-50.00)	6	97	0.16***	0.07-0.38
Moderate ($51.00-200.00)	18	87	0.69	0.38-1.22
High (201.00-992.00)	53	48	10.23***	5.85-17.91
Transfer Payment	624.80 ±24.97	807.63 ±13.67	1.00	1.00-1.00
Finances (ref. extra money)				
Break even	6	53	0.37*	0.16-0.87
Out of pocket	24	129	0.54*	0.32-0.92

Significance: *p<0.05, **p<0.01, ***p<0.001.
Proportions may not add up to 100% due to rounding.

Table 8. Crude odds ratios (OR) and 95% confidence intervals (CI) measures of prescription drug utilization.

Monthly Prescription Drug Cost (Quartiles)	Cases (n 79)	Non-Cases (n 289)	OR	95% CI
Total (ref. Low$1.60-21.50))				
High Cost ($22.00-165.00)	40	144	1.03	0.63-1.69
GI drugs (ref. None)				
Low ($1.50-4.00)	28	72	1.65	0.97-2.81
High ($4.10-59.00)	17	83	0.68	0.38-1.23
Antidepressants (ref. None)				
Low ($2.00-9.00)	7	25	1.03	0.44-2.42
High ($10.00-77.00)	7	25	1.03	0.44-2.42
Antibiotics (ref. None)				
Low ($1.00-5.00)	37	109	1.45	0.88-2.40
High ($6.00-128.00)	27	117	0.76	0.45-1.28
"Other" drugs (ref. None)				
Low ($1.50-14.00)	33	114	1.10	0.67-1.82
High ($14.50-160.00)	31	116	0.96	0.58-1.60

Proportions may not add up to 100% due to rounding.
No significant differences at $p<0.05$ level.

Table 9. Multiple regression for prescription drug utilization and the decision to enter into employment programs.

LIVING ARRANGEMENTS:	MODEL 1		MODEL 2	
1. **Dependents** *(referent :No young children)*				
Young children (≤5)	0.29	0.12-0.73	0.28	0.11-0.72
2. **Health Region** *(referent: Western)*				
Central	0.12	0.04-0.42	0.12	0.03-0.41
Northern	0.61	0.24-1.56	0.60	0.23-1.57
Eastern	0.69	0.27-1.78	0.62	0.23-1.66
HUMAN CAPITAL:				
3. **Age**	1.0	0.90-1.10	0.99	0.89-1.10
4. **Income** [§] *(referent High (201-992.00)*				
Low ($0.03-50.00)	0.14	0.06-0.33	0.13	0.05-0.30
Moderate ($51.00-200.00)	0.06	0.02-0.17	0.05	0.02-0.16
5. **Finances** [§] *(referent Extra Money)*				
Break even	0.70	0.21-2.35	0.83	0.24-2.83
Out of pocket	0.28	0.13-0.61	0.26	0.11-0.58
6. **Total Cost** [§] *(referent Low $1.60-21.50)*				
High ($21.80-164.83)	1.03	0.51-2.06	n\a	
7. **Drug Categories:**				
GI drugs [§] *(referent $0.00)*	n/a			
Low ($1.50-4.00)			1.54	0.59-4.07
High ($4.10-59.00)			0.77	0.27-2.17
Antidepressants [§] *(referent $0.00)*	n/a			
Low ($2.00-9.00)			0.97	0.26-3.63
High ($10.00-77.00)			1.78	0.45-6.96
Antibiotics [§] *(referent $0.00)*	n/a			
Low ($1.00-5.00)			0.89	0.28-2.81
High ($6.00-128.00)			1.43	0.47-4.37
"Other" [§] *(referent $0.00)*	n/a			
Low ($1.50-14.00)			1.67	0.58-4.80
High ($14.50-160.00)			1.31	0.45-3.83

[§] Calculated based on average monthly situation

Income = non-social assistance income (alimony, child support, part-time work)

Table 10. Full logistic model (without prescription drug utilization variables) in relation to the outcome of participating in a work program.

VARIABLES:	O.R.	95%C.I.	P-VALUE
LIVING ARRANGEMENTS	(p=0.0007)		
1. **Marital Status** *(referent Single)*			p=0.9959
Divorced/Widowed	1.03	0.28-3.74	
Separated	0.97	0.36-2.58	
2. **Dependents** *(referent children >5)*			p=0.0106
Young children (≤5)	0.30	0.12-0.77	
3. **Health Region** *(referent Western)*			p=0.0022
Central	0.09	0.02-0.36	
Northern	0.49	0.18-1.35	
Eastern	0.57	0.21-1.59	
HUMAN CAPITAL	(p=0.0000)		
1. **Age**	1.02	0.91-1.14	p=0.7478
2. **Education** *(referent <High School)*			p=0.1943
High School	2.21	0.87-5.66	
More than High School	2.63	0.73-9.47	
3. **Assets** *(referent $0.00)*			p=0.6959
Low ($1.00-100.00)	1.13	0.28-4.60	
Moderate ($101.00-850.00)	0.59	0.21-1.66	
High ($900.00-11,4000)	1.09	0.41-2.91	
4. **Expenses** [§] *(referent $418.00-869.00)*			p=0.8238
Moderate ($870.00-1011.00)	1.09	0.41-2.90	
High ($1015.00-1385.00)	0.80	0.23-2.78	
5. **Income** [§] *(referent High $201-992.00)*			p=0.0000
Low ($0.03-50.00)	0.07	0.02-0.31	
Moderate ($51.00-200.00)	0.15	0.05-0.46	
6. **Social Transfer** [§]	1.00	0.98-1.00	p=0.9744
7. **Finances** [§] *(referent Extra Money)*			p=0.0026
Break Even	0.68	0.19-2.42	
Out of Pocket	0.25	0.11-0.77	

[§] Calculated based on average monthly situation
Pseudo R^2 do not add up to the total 33% due to colinearity
Income = non-social assistance income (alimony, child support, part-time work

CHAPTER 5: DISCUSSION

5.1 Overview

Understanding the relationship between expected prescription drug utilization and the decision to enter into work programs is very complex. This study demonstrates that there is little relationship between prescription utilization and employment program entry for the single mothers in this study. On the whole, these female headed lone-parent families did not use very much prescription medication, with a total mean cost of $28.98 a month. Just over half of participants used GI drugs, 17% used antidepressants, 1% used stimulants, 79% used antibiotics, and 80% used other types of drugs. The expected cost of GI drugs was $3.25 a month, that of antidepressants was $3.36 a month, that of stimulants was $0.11 a month, antibiotics was $7.11 a month, and that of all other types of drugs was $15.16 a month.

The complexity associated with entering into a work program is related to the interplay of living arrangement and human-capital characteristics. Both the univariate and multiple regression analyses demonstrated that single mothers who participated in the work program (cases) were substantially less likely to have children under the age of 5 years, and to lived within the Central health region. In addition, they were substantially more likely to have higher levels of income, and were more likely to have extra money at the end of the month once their expenses were paid. The adjusted pseudo R^2 confirm that prescription drug utilization measures do not significantly influence the outcome of participating in a work program. When living arrangement and human capital characteristics are examined in a full logistic model, the importance of young children

(≤5), health region, income and end of month finances emerge as statistically significant. The pseudo R^2 for both living arrangement and human capital characteristics demonstrated that human capital variables as a whole explained a larger proportion of the variance between employment program participation than did living arrangement characteristics. In conclusion, it appears that this program did not meet the needs of single mothers on social assistance who have the greatest need for such programs.

5.2 Impact of results

This study attempts to understand aspects of the decision making process which are involved in entering work programs for single mothers on social assistance. Our theoretical framework takes us back to the importance of weighing expected costs and expected benefits to determine the best way to allocate scarce resources in order to maximize well-being. Both expected costs and expected benefits are influenced by a large number of variables. Variables available for this study were divided into two groups: living arrangement characteristics and human capital characteristics. Our primary exposure of prescription drug utilization, living arrangement characteristics, and human capital characteristics will now be discussed in relation to their influence on the decision making process at hand.

Measures of prescription drug utilization were found to have no statistically significant impact on the decision to enter into work programs for single mothers on social assistance. Although no previous work has been done in this particular area of research, much is known about the relationship between health status, health service utilization, and SES. Our findings lead to further questions because the existing related

literature would suggest that individuals with low SES (Hay, 1988; Mustard et al., 1997; Wigle & Mao, 1980; Wilkins & Adams, 1983), individuals on social assistance (Offord, Boyle, Fleming, Blum & Grant, 1989; Offord, Boyle & Jones, 1987), and either living in a single-parent family and/or being a single parent would result in poorer health status than others in society (Lipman, Offord & Boyle, 1997; Offord, Boyle, Fleming, Blum & Grant, 1989; Offord, Boyle & Jones, 1987), and thus higher demand for prescription drugs. The combined effect of these risk factors was expected to lead to a high prevalence of prescription drug needs for all participants. In addition, as poor health status has also been associated with difficulties finding and keeping employment (Bartley, 1994; Murphy, Athanasou, 1999), we had also anticipated finding differences in prescription drug use for individuals who participated in the work program.

Interpreting the role of prescription drug utilization is extremely difficult. Part of the difficulty in interpreting this role lies within the difficulty of defining, or even estimating the value of high prescription drug costs. Our findings demonstrate that within our 368 female headed lone-parent families, the total mean monthly prescription cost was $28.92 ±1.37 with a range between $1.60 and $164.80. Only ten single mother family units spent more than $100.00 a month on prescription drug utilization, and they were evenly distributed between cases and controls. The only other comparison figure that can be made is for seniors within the NS Seniors Pharmacare Plan (1994/95), who used a total of $55.09 worth of prescriptions per month. As a result, these findings are subject to many interpretations which can only be completely evaluated with further research into prescription drug utilization.

Part of the difficulty in interpreting the role of prescription drug utilization relates to the way most existing research was designed with regards to inquiries on lone-parent families. Although cross-sectional data on the prevalence of certain risk factors is necessary, additional inquiries which examine actual diagnoses of particular problems, and treatments need to follow in order to assess whether there are need or access issues to both health-care and prescription utilization. Literature exists to support both of these issues, however a conclusion is far from apparent. Studies demonstrate that individuals with mental health needs are under serviced (Langner, Gersten, Greene, et. al, 1974; Offord, Boyle, Fleming, Blum, et al., 1989; Rutter, Tizard, Whitmore, 1970), however, understanding how that finding relates to the Limpan, Offord, & Boyles (1997) finding that single mothers use more likely to use mental health services than mothers in two-parent families is not clear.

The prescribing of stimulants (ritalin) has increased sharply in recent years (Robinson, Sclar, Skaer, Gallin, 1999), and serves is an interesting example to discuss needs versus access issues for this study. Just over 1% of children within this study used stimulants, demonstrating unexpectedly low levels of stimulant use for this population (Robinson, Sclar, Skaer, Gallin, 1999). The interpretation of this finding is quite difficult. A logical interpretation could be that the small sample size of this study does not clearly represent the stimulant drug needs of children who live in single-mother families on social assistance. On the other hand, one could hypothesize that single mothers on social assistance spend more time with their children than most other single mothers or even mothers of two-parent families, thus providing their children with higher

levels of emotional support and ultimately resulting in more adjusted children. To some extent, research supports this hypothesis, as extended work schedules for the working poor can lead to family isolation from neighbours and friends and from each other, ultimately resulting in poor health status (Keating, 1996; Ward, 1994).

It is unclear if single mothers on social assistance and their families should have displayed greater prescription use. It is however, clear that prescription drug utilization was not associated with the decision to participate in the work program, while both living arrangement and human capital characteristics for single mothers on social assistance were associated with program participation. Although these two types of characteristics have been divided into two distinct categories, clearly these variables are interrelated to some degree.

Living arrangements characteristics explored in this study were marital status, aspects relating to age of dependents, and health region lived in. Although marital status did not significantly affect the final model, it's indirect impact on other variables is likely significant. Separated single mothers were more likely to participate in the employment program. They had older children, and had higher levels of non-social assistance income (alimony or child support) than other single mothers, which allowed them greater flexibility to participate in the work program. Had there been other information on things such as the availability of social support networks, we might have found clearer results.

The influence of having young children has always been a barrier to women participating in the work force (Statistics Canada, 1994). Lero and Brockman (1993) found that in particular, single mothers in the work force are mostly concerned with

"managing the cost of high quality child care, concerns about child safety and well-being, and concerns about care giver or care arrangements breaking down or no longer being available". Clearly the monthly costs of prescription drug utilization of $28.98, does not compare to full-time child care arrangements which are necessary for full-time employment.

The importance of health region lived in is also unclear. The Compass Evaluation demonstrated that there were problems in attracting individuals on FB (provincial caseload) for the work program (Government of NS, 1997). In regions where linkages between were strong between the provincial counseling staff and municipal employment resource counselors, the appropriate number of FB referrals were made (Government of NS, 1997). Further research on risk factors associated with living in NS health regions would also be valuable in assessing this finding.

Human capital characteristics explained much more of the variance than living arrangement variables between single mothers who participated in the work program and those who decided to remain on social assistance. Although only two human capital characteristics remained significant in the final model (income, finances), they capture some very interesting aspects of human capital. Counter to the original hypothesis that individuals with low human capital would have more to gain from a work program, increased human-capital levels resulted in increased participation rates in the work program. This finding yields a greater understanding of expected costs of joining a work program than previously anticipated.

Providing employment opportunities to single mothers on social assistance has

been found to be a good way of promoting labour force participation for single mothers with stable non-social support income. The most stable form of non-social support income is in the form of alimony and child support payments. This form of income is directly linked to the future financial security of female headed lone parent families, as they can depend on the availability of this support while they participate in the work force. In this study we were unable to determine where most single mothers received the majority of their non-social support income from. The data was not stable enough to examine the full effect of part-time employment on the outcome of participating in the work program from social assistance. Future research is needed to examine aspects of non-social support income on the outcome of leaving social assistance. In particular, the role of part-time employment would be interesting to examine.

The impact of end of month financial situation for single mothers on social assistance was also a statistically significant measure of work-program participation. To some extent this measure captures an aspect of pre-employment program part-time work, as FB work incentives serve as a good way to increase non-social assistance income. The work incentive used in NS at the time of the study allows recipients to keep the first $200.00 of their wages per month without reducing their social transfer payment (NS Dept. Community Services, ref: 05-06-15). The remaining income from gross wages and training allowances (before deductions) are charged against the provincial social assistance budget at 75%. This type of incentive allows social assistance recipients to equip themselves with recent job experience and training, which has been found to increase employment opportunities in the near future (Statistics Canada, 1995). As a

result, this incentive works to raise participants non-social support income, equip them with recent work experience, increase their self-esteem as they are contributing more readily to supporting themselves, potentially exposing them to greater social support network, as well as ultimately saving the welfare system money.

Both non-social support income and end of month financial situation in effect represent different aspects of income which increase the likelihood of participating in the employment program. Labour force trends in Canada suggest that the strategy to increase employment opportunities to single mothers is effective as full-time work is harder and harder to find (Statistics Canada , 1995). These trends demonstrate that large segment of the female work force settle for working part-time, because they can't find full-time employment (Statistics Canada, 1992 and 1995). Single mothers in the work force are not excluded from this group by any means, in fact, they are twice as likely to want full-time employment than mothers in two-parent families (Statistics Canada, 1992).

When human capital and living arrangement characteristics are examined as a whole, potential structural barriers within the social security system in Canada emerge which affect participation in work force for both single and two-parent family mothers. Facilitating the integration of both home and work obligations is needed to improve health outcomes for both mothers and children, and improve their capacity to join the paid work force (Vanier Institute on the Family, 1996). Governments must not see these problems as personal responsibilities, they need to take an active role in sharing the responsibility for these families. This study supports previous work in the area of welfare reform, which demonstrates that a disproportionate share of program expenditures is

devoted to long-term recipients (Lacroix, 1997). If governments want to help long-term recipients, such as single mothers, they need to start taking a different approach to their programs.

Improvements in efforts to increase potential employment opportunities for single mothers and others in society still needs to continue. Creating policies that increase the minimum wage rate and reduce unemployment rates has been proven to have a strong impact on welfare duration (Lacroix, 1997). Encouraging and facilitating employers to implement of job-sharing programs to increase employment can also be explored. Establishing high-quality child-care structures that are flexible and affordable, is yet another way to increase work force participation.

In general, further research is needed to explore various aspects of social-assistance dependency. Until recently there have been no nationwide surveys which follow families and their income over time. As a result, social assistance policy is one of the least well-researched areas in Canadian labour and family economics (Watson, 1995). Clear empirical evidence is needed to understand welfare dependency, and interpret whether long or multiple spells can be considered problems for the system. This type of research is necessary to identify future directions for social policy.

5.3 Conclusions

Contrary to expectations, the potential loss of prescription drug benefits was not associated with program participation. Both financial and non-financial barriers were found to influence women's participation in the work program. Women most likely to participate in the program were those who were better off financially, and who did not

have young children. The employment program failed to reach single mothers on social assistance who needed the skills and training the most.

APPENDIX A

FAMILY BENEFITS PROGRAM:

The family benefits program provides financial assistance to individuals and families in need where the need is likely to be of a prolonged nature. The individuals and families who may be eligible for the program are:

* persons 18 years and over who have a major physical or mental impairment that is likely to last at least one year and prevents participation in the regular labour market, and who are not eligible for Old Age Security.
* sole-support parents who have the care and custody of at least one dependent child (under the age of 18 and dependent on his or her parent(s) for support, or between the ages of 18 and 21 and pursuing an educational program) and are either:
  * widowed
  * deserted
  * divorced
  * the husband or wife of a spouse sentenced to two years or longer in a federal penitentiary
  * unmarried and have reached the age of majority
  * the husband or wife of a disabled spouse who is in hospital or similar institution
  * disabled parents who have a dependent child, or children, in their care
  * persons 65 years of age and over who are not eligible for federal Old Age Security benefits
  * foster parents having in their care and custody a dependent child who is not being maintained by the natural parent

To determine eligibility, an applicant must qualify for one of the categories outlined above and have asset and income levels within allowable limits. A needs test is used to compare an applicants actual shelter expenses (e.g., rent or mortgage, electricity, and fuel) up to a maximum level plus allowances for food, clothing, and miscellaneous personal essentials against the income available.

Training and employment incentives are intended to encourage and assist family benefits recipients to obtain and maintain employment. Clients with no dependants may earn from employment or training up to $100 per month without affecting the family benefits entitlement. When gross wages or training exceed $100 per month, 75 per cent of the excess is taken into account when calculating the monthly entitlement. The basic $100 exemption is increased to $200 if the recipient lives with his or her spouse. Single-parent recipients employed or in training may earn up to $200 per month without a reduction in monthly entitlement. Gross wages or training income in excess of the $200 are taken into

account at 75 percent when determining the monthly entitlement. Disabled persons participating in an approved education program may earn $275 per month without any reduction in entitlement.

An additional incentive is provided to recipients in the first four weeks of full-time employment. If the recipient works at least 100 hours, he or she is entitled to have the gross wages earned during these four weeks exempted at 100 per cent for family benefits purposes. This incentive is also provided to recipients participating in a vocational training program. Providing the recipient attends a minimum of 100 hours in the first four weeks of the training course, he or she is entitled to have the training allowance exempted at 100 per cent for family benefits purposes.

To complement the career planning and vocational rehabilitation programs administered by the Rehabilitation and Community Services Division, the family benefits program provides for additional benefits of up to $200 per month to cover actual costs incurred by clients who participate in one of these programs. In 1993-94, a total of 2,926 family benefits clients participated in career planning and vocational rehabilitation programs. A job search allowance of up to $130 may also be provided to cover actual costs incurred by clients actively seeking full-time employment or involved in a job finding program.

PHARMACARE PROGRAM:

Since 1981 the pharmacare program has provided free prescription drugs, diabetic supplies such as disposable needles and testing materials, and prescribed ostomy equipment for all disabled family benefits recipients. In September 1991 the program was expanded to provide, with a maximum annual $150 co-pay, the same services to single-parent family benefits recipients and their families. As a result of this program expansion, in March 1994, 44,464 more recipients were eligible for pharmacare benefits than had been eligible prior to 1991.

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