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Differences in Labour Force Participation, Earnings and Welfare Participation Among Canadian Lone Mothers

A Longitudinal Data Analysis

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by
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Abstract

This paper uses data from a large sample of linked income tax files from 1982 through 1997 to analyse labour force and welfare participation of Canadian lone mothers. It compares trends in the likelihood of being in the labour force and on welfare both within cohorts (distinguished by previous marital status) and between cohorts of lone mothers. The study exploits the longitudinal aspect of the data by following women from the last full year prior to a spell of lone motherhood through the first five years in the spell. The most consistent finding is that of decreasing labour force participation and increasing welfare participation across cohorts of previously single lone mothers – both in absolute terms and relative to the trends for the previously married. The trends, furthermore, appear to reflect the pre-existing characteristics of these women rather than any changes in the effects of entering lone motherhood.

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Table of Contents

1. Introduction

Social policy researchers in Canada have devoted considerable attention to lone mother families during the past decade. One reason for this is that such families are among the most vulnerable members of Canadian society, as is true of most countries; no group, save for the disabled, is at greater risk of poverty. A second reason is that all levels of government have been strongly interested in reform of the welfare system; again no group, save for the disabled, has a higher rate of welfare participation than lone mothers.

There are, however, few Canadian longitudinal studies of welfare and labor force participation among lone mothers due to paucity of data. The principal exceptions use non-random samples from provincial administrative welfare data. Most existing studies with a random sample of Canadian lone mothers use one or more cross-sectional surveys. Such analyses do provide valuable insights into the condition of love mothers, but are incapable of answering many of the most important questions facing policy makers. What are the observed changes in labour force and welfare participation as women enter lone motherhood? How do labour force and welfare participation change during a spell of lone motherhood? To what extent are changes in participation due to changes in sample composition (exits from lone motherhood) as opposed to changes in the behaviour of surviving lone mothers? How do the answers to any of the foregoing questions vary by such characteristics as the age and previous marital status of the lone mother, and the age and number of her children? What are the impacts of the unemployment rate and the available level of welfare benefits on these outcomes?

We provide answers to some of these and other questions in this paper using the Canadian Longitudinal Administrative Databank (LAD) which is a large sample of linked income tax records from 1982 through 1997 that has already successfully been used to study the economic consequences of marital dissolution, low-income dynamics, and other topics. The LAD contains relatively few socioeconomic variables, but its longitudinal nature, accurate income information and large sample size provide substantial advantages for studying this topic. Specifically, the LAD data allow us to construct a series of lone mother cohorts which include all women starting a spell of lone motherhood in a given calendar year. We then analyze the likelihood of labour force and welfare participation in each year (as measured

by the presence of any earned or welfare income), as well as the annual level of earned income among those with earnings, during the year prior to the start of a spell of lone motherhood and in each of the first full five years of lone motherhood.

One of the more robust findings from studies of lone mothers in Canada (and other countries) concerns differences as defined by family status prior to lone motherhood. Specifically, never-married lone mothers typically have lower labour force participation and greater welfare participation than do previously-married lone mothers even when one controls for the age and education of the mother and the number and ages of her children. The status of "never-married" thus appears to be more than just a proxy for youth, low levels of schooling and the presence of young children. All such studies of which we are aware, however, have been provided by cross-sectional data and, hence, are not able either to observe the woman's situation (labour force and welfare participation) prior to entering lone motherhood or to control for the length of the lone mother spell. In this study, we are able to compare a woman's situation with her pre-lone motherhood outcomes and to track outcomes on a year-by-year basis over the course of a spell of single parenthood. We also check for shifts in these outcomes across cohorts which might have been caused by changes in a variety of factors including labour market conditions and welfare policy.

Section 2 provides a brief review of the literature. Section 3 introduces the LAD, describes the sample and variables used, and provides descriptive statistics. Multivariate estimates of the probability of earned income, the level of earnings among those with earned income, and the probability of welfare income are presented in Section 4. The final section provides a summary and plans for future work.

2. Review of the Literature

Most Canadian studies of lone mothers, as indicated above, rely on a single cross-section or time series of cross-sections. Dooley (1999) used data from the Survey of Consumer Finances, which is similar to the March U.S. Current Population Survey, from 1973 through 1991. He finds that Canadian lone mothers under age 35 have exhibited an increasing reliance on welfare income, stagnant wages and declining levels of market work. In contrast, lone mothers age 35 and over are characterized by a decreasing reliance on welfare income and rising levels of market work, wages and earnings. Key factors accounting for rising welfare use among younger lone mothers are a decline in wages relative to welfare benefits accompanied by a mixed pattern of demographic change (falling family size offset by growing proportions of lone mothers who are never-married.) Much of the declining welfare use among older lone mothers can be explained by decreasing family size and increasing education accompanied by market wages which grew at the same rate as welfare benefits. He also finds that never-married lone mothers have lower levels of labour force participation and higher levels of welfare participation than do previously married lone mothers controlling for personal characteristics, labour market conditions and welfare benefits. Similar results concerning previous family type were found with single cross-sections from the Labour Market Activity Survey and the 1986 Census Public Use sample by Allen (1993), Charette and Meng (1994), and Christofides et al. (1997).

The principal Canadian longitudinal studies related to this topic are Stewart and Dooley (1999) and Barrett (1996). These authors use administrative welfare data from Ontario and British Columbia respectively to find that never-married lone mothers tend to have longer welfare spells than do previously-married lone mothers. Such administrative data, however, provide scant information about welfare clients for periods outside the welfare spell and no information for persons who are not welfare clients during the data sample period.

Longer panels have been available to study these questions in other countries, especially the United States. The related studies which we have found thus far, however, focus on the length of welfare spells for lone mothers rather than the evolution of labour force and welfare participation during spells of lone motherhood. For example, Boisjoly, Harris, and Duncan (1998) use the Panel Study of Income

Dynamics and find that never-married lone mother have lower exit rates (longer spells) from welfare spells than do previously-married lone mothers. Harris (1993) also uses the PSID to find that never-married women are less likely to work their way off welfare by combining paid work and welfare than are previously-married women, but there is no such difference in the likelihood of leaving welfare by finding a job. We have as yet to encounter a U.S. study which focuses specifically on the questions raised in this paper.

3. The Data

3.1 General Introduction to the LAD

The Longitudinal Administrative Databank (LAD) is a ten-percent representative sample of Canadian tax filers who are followed as individuals over time and matched into family units on an annual basis. This provides longitudinal individual and family information on incomes, taxes, and basic demographic characteristics. Individuals are selected from Revenue Canada tax files into the LAD according to randomly selected social insurance numbers. This same identifier is used to link records across years. The data available for this paper run from 1982 through 1997.[1]

The rate of tax filing in Canada and, therefore, the LAD's coverage of the adult population are very high. Filing is, of course, mandatory for persons who owe tax. Low income individuals have strong incentives to file in order to recover income and payroll tax deductions, and to receive refundable tax credits, especially the federal sales tax credit which started in 1986. New filers, mainly youth and immigrants, automatically refresh the database on the same one-in-ten basis.[2] The LAD is drawn from files which are estimated to cover from 91 to 95 percent of the target (non-institutional, non-reserve) adult population. This is comparable to the Census and compares very favourably with survey data.

The representativeness and low attrition of the LAD are especially significant for a study of the income dynamics of a low income population such as lone mothers. Longitudinal surveys often have problems in locating and following low income individuals. An additional virtue of the LAD is that the income information is based on tax declarations which are generally thought to be superior to survey responses. Both Atkinson *et al.* [1992] and OECD [1998], for example, find that administrative databases, such as the LAD, provide better population coverage and income reporting than do surveys. The principal

1 In general, there is no imputation either for persons who never file or for individual years in which persons in the LAD do not file. Imputed records are created for non-filers if they are implicitly (or explicitly) identified by a filer, typically through tax deductions or credits claimed, but such imputed records are generally not used in this study. For an (unavoidable) exception, see the discussion of married and common-law couples in the next section.

2 In some longitudinal databases, leavers are replaced on an exact one-to-one basis by replacement observations and there may even be an explicit character matching between leavers and replacements. This is not the case with the LAD in which all replacement is accomplished via the simple one-in-ten sampling scheme as it draws from the full, representative population of new tax filers who are then followed over time.

shortcoming of the LAD with regards to income, and a key one for this paper, is that social assistance income (which is the common term for welfare in Canada) was not well reported before 1992.[3] The other principal drawback of the LAD is that few socioeconomic variables are available. We return to both of these shortcomings below.

3.2 The Identification of Family Status and Spells of Lone Motherhood

The basic unit of analysis in this paper is a spell of lone motherhood. In order to identify such spells, one must first identify the type of family to which each woman belongs. Family composition in the LAD is determined by matching individuals according to their tax file information. A family unit in the LAD corresponds to a "census family" in the terminology of Statistics Canada, namely, a family of at most two generations consisting only of one or two parents and their children. This concept is narrower than that of an "economic family," which includes all related persons residing jointly and a "household," which includes all persons residing jointly. The women in our sample were placed in each year into one of the following family types: lone parent (LP), married with children (MC), common law with children (CLC), married or common law without children (MCLNC), unattached (U), and "filing child" (FC). In the foregoing definitions, "children" refers to children under 18 and a "filing child" is an unattached individual age 18 or more who lives with one or both parents.

A key issue is the identification of common-law unions. The definition of this family status is imprecise, both in administrative data and in survey data (and not infrequently in life itself) and the identification of partners in the LAD can be problematic. The first step in our identification procedure is based on the declared marital status (DMS) on the tax form. This status refers to the end of the tax year and, prior to 1992, offered five possible categories: married, widowed, divorced, separated and single with the Income Tax Guide making it clear that "married" refers to registered marriages and not common-law

[3] Social assistance has been a separate item on individuals' general T-1 tax return forms (where it enters various calculations) and the corresponding "T-5 SA" forms have been sent out to individuals by the relevant province (social assistance is under provincial control) only since 1992. From 1986 to 1991, social assistance was included on T-1 forms (and affected tax credit calculations), but was itemised jointly with certain other non-taxable government transfers (including workers' compensation and GIS) and T-5 forms were not sent out, so that the coverage is not generally quite as good as over the post-1992 period. Before 1986, social assistance was not included in any manner on individuals' tax forms. The social assistance data on the LAD would appear to cover 80 to 90 percent of all such payments which is much better than the Survey of Consumer Finances on which only about 60% of social assistance income is reported.

unions. For example, the deduction which may be claimed for a spouse with very low individual income is expressly prohibited for common law partners in 1991 and earlier years. Starting in 1992, however, the DMS category of "common-law" was added and all other category names remained unchanged.

Statistics Canada's practice in assembling the LAD is to first find a partner, or to impute one if necessary, for all persons with a DMS of "married" or, since 1992, "common law." The LAD then uses a record matching process to identify persons in undeclared CL unions, both prior to and subsequent to 1992, and "filing children." The matching of couples and of parents with adult children is based on algorithms which have been developed at Statistics Canada over many years and which use address matches, individuals' names and ages, and the identification of other individuals resident at the same address (if any). Matching errors are a problem in any research context, but are especially important in longitudinal analysis, such as ours, in which the identification of changes in family status is crucial. For example, if a common-law couple with children were correctly matched in year t, erroneously missed in year t+1, and correctly matched in year t+2, then one of the parents, most likely the wife, would be judged (erroneously) to have experienced a one-year spell of lone-parenthood.

The LAD algorithms appear to be quite successful based on the inspection of micro records and checks of totals with other data sources. However, Type I and Type II errors are inevitable. Some true matches of spouses with each other and/or with their children are missed, and some erroneous matches are made. In particular, the LAD has more lone-parent families than do other official estimates, especially in the early years of our sample.[4] Of course, the problem of identifying common law unions (which also plagues the identification of those who are "separated") is not confined to the LAD or administrative data more generally. The LAD errors in this regard likely differ in kind from the identification errors encountered in survey data, but it is not obvious that they differ in severity.

Our goal was to identify all spells of lone motherhood in which the woman was age 18 through 54 in the first year of the spell.[5] In general, we deem a spell of lone motherhood to have started when a woman is

4 The coverage of husband-wife families (with or without children) in the LAD ranges from 94 to 99 percent of the official population estimates, while the coverage of single-parent families varies between 102 and 110 percent.

5 These age limits reflect the fact that in survey data, such as the Survey of Consumer Finances, there are very few lone mothers who are under age 18 or over age 54.

a lone parent (LP) in year t but not in year t-1. We use "t" to refer to the "transition" year, that is, the year in which the woman changed family status from non-LP to LP. Hence, t+1 is the first full year in which we observe the woman as a lone mother. We use T to refer to the last year of a LP spell. A spell of lone motherhood is deemed to end, therefore, when a woman is a LP in year T but not in year T+1.

We have imposed the following additional rules in order to limit the impact on our results of the inevitable errors in the identification of family status. The basis for these rules is a 5-year data-window centered on the transition year (t). The spell is rejected if any of the following was true during this 5-year window.

1. The woman did NOT file taxes in any year (t-2 through t+2).
2. The family type of the woman changed more than three times.
3. The woman changed spouses more than two times.
4. The woman separated from and then reunited with the same spouse during the window **and** failed to declare a marital status of "separated" or "divorced" in the interim.
5. The woman was a LP in year t-2 (but not so, of course, in t-1).
6. The woman was not a LP in t+1 but was a LP in t+2.
7. The woman was in a common-law union in either t-1 or t-2 but not both.
8. The woman has children age 18 + and only children age 18+ in year t-1. This applies regardless of her marital status in year t-1.
9. The woman was childless in year t-1 AND had a child (of any age) in year t-2.

We impose Rule 1 because of our focus on earnings and social assistance income. Rules 2 through 7 reflect our skepticism concerning the accuracy of information or the actual situation for individuals with very frequent changes in family status. Rules 8 and 9 reflect the same skepticism for individuals with seemingly unusual changes in child status and our wish to focus on women with non-adult children only.

We allow a woman to have multiples spells of lone motherhood (a rare event) but do not use this information in the analysis in this paper.

We also imposed the following series of censoring rules for our analysis of spell durations.

1. A spell is censored at the end of any year t if the woman is in a common-law union in year t+1 AND is unattached or filing child in year t+2.
2. A record is censored at the end of year t+1 if the woman is in a common-law union in year t+2 AND is unattached or filing child in year t+3 (which we check under these circumstances).
3. A record is censored at the end of year t+1 if the woman is NOT a LP in year t+2 AND is a LP in year t+3.

The above rules again reflect our skepticism concerning the accuracy of family status information or the woman's actual situation and our particular concern with the identification of common-law unions. They (the rules) reflect the substantial experience which one of the authors (Finnie 1999) has had in working with these data and with the issue of family status in particular.

3.3 Variables Included in the Multivariate Analysis

We use the information on family status both to indicate the start (and termination) of lone mother spells and to identify the "type of lone mother" of each woman. There are five types of lone mother, each of which refers to the woman's family type in t-1 (i.e., immediately before becoming a lone mother): married with children (MC), common law with children (CLC), married (or common law) with no children (MCLNC), unattached (U), and filing child (FC).[6]

The dependent variables are indicators of annual labour force and welfare participation, namely, dummy variables for positive values of earned income and social assistance income respectively. We also analyze the level of earnings given positive earnings. Several other control variables are also included in the analysis: mother's age, number of children under 18, age of youngest child, the provincial unemployment rate, the provincial level of welfare benefits (for varying numbers of adults and children),[7] the size of area of residence (identified by postal code), calendar year, a dummy variable for each province,[8] and language (as indicated by the tax form used) which we use to create a "minority language" indicator (anglophones in Québec, francophones in the rest of Canada).

6 Previous studies using Canadian survey data can typically distinguish only between "never-married" versus "previously married" lone mothers. This distinction is difficult to make for older lone mothers in the LAD because the tax records go back only to 1982.

7 We are very grateful to Pierre Lefebvre and Philip Merrigan of UQAM for these data.

8 We include a dummy variable for each province to capture those features of the provincial labour market or policy environment which are not measured by the other independent variables.

The brevity of the foregoing list of control variables reflects a major shortcoming of the LAD. Missing is even the most common indicator of human capital, the level of schooling. The LAD also contains no information on detailed job characteristics such as wage rates, hours of work, occupation and industry. Offsetting these nontrivial shortcomings are the LAD's distinct advantages of providing a very large longitudinal sample of lone mother spells with accurate income data.

3.4 Descriptive Statistics

Table 1-A in the Appendix contains the number of new lone mother spells in each year of our sample. These are, to the best of our knowledge, the first estimates of the annual number of new lone mother spells in Canada.[9] Given the five-year data-window which we use to construct and select these spells, 1984 is the earliest year and 1995 is the latest year in which we can observe the start of a spell. The annual number of new spells increases from 9,370 to 16,540 over our sample period. What rate of entry into lone motherhood is implied by these figures? The LAD is a one-in-ten sample which implies that there were about 141,200 new spells which meet our sample inclusion criteria in 1992. According to the Survey of Consumer Finances (SCF), there were approximately 6,225,000 woman age 20 through 54 who were not lone mothers in 1992 which means that a little over 2% of the eligible women *started* a spell of lone motherhood in that year. Table 1-A also illustrates the sample size advantages of the LAD. We observe 14,120 ***new*** spells of lone motherhood in 1992 whereas the 1992 SCF contains a total of only 2,000 lone mothers with children under 18 regardless of spell length.

Table 1 provides the relative frequencies of starting spells in our sample. The first panel shows the distribution by type of lone mother in each year. Three-fifths to three-quarters of our spells were started by women who are MC (previously married with children) although this proportion decreased over time. The proportion of new lone mothers who were CLC (previously common law with children rose markedly from 10% to over 20%. The proportions of lone mothers who were U (unattached) or FC (filing children) rose somewhat in the late 1980's, but then fell and had similar values of 9% and 4% respectively at the start and end of our sample period. A constant and very small fraction (1-2%) of our sample are women who were MCLNC (married or common law without children) just prior to the spell of lone motherhood.

[9] Statistics Canada confidentiality guidelines require that the sample size be rounded to the nearest 10 observations.

The lower panel of Table 1 shows the age distribution of our sample. The median age is in the early thirties and has a slight upwards trend, which confirms that lone mothers are aging just like the rest of Canadian society. In 1984, only 36% of new lone mothers were age 35 to 54 but this fraction had increased to 44% by 1995. The age distribution does vary considerably, however, by type of lone mother. As one would expect, the previously childless lone mothers are much younger. The U and FC types constitute 62% of new lone mothers under age 25 but less than 1% of new lone mothers age 35 and over.

Table 2 provides trends in earnings and income by type of lone mother and year. All of these figures refer to spell year t+1, which is the first year in which we observe the woman as a lone mother for a full calendar year. (For example, the 1985 earnings and income figures are for women who started a spell of lone motherhood in 1984.)[10] The top two panels of Table 2 provide the proportion of lone mothers with positive earned income and mean earned income (1997$) among those with positive earnings. The trends in most rows reflect the economic growth of the late 1980's, followed by the recession of the early 1990's for all types of lone mothers.

Differences in trends around these cyclical effects are, however, also apparent. Among the MC, both the proportion with positive earnings and mean earnings among paid workers are higher at the end of the sample period than at the start. This is consistent with the upward trends in labour force participation and earnings among married women with children in the Survey of Consumer Finances (Dooley 1994). For lone mothers who were CLC, U or FC, in contrast, the non-cyclical trends appear to be negative for both the proportion with earnings and mean earnings among those with earnings. The situation for the MCLNC is less easy to interpret, as the big jumps for this group at the start and end of the sample period may reflect its relatively small sample size. The trends in mean total income in the third panel of Table 2 are generally upwards. The strongest increases, however, are for the MC which likely reflects this group's increases in earnings.

The panel at the bottom of Table 2 provides both the proportion with social assistance income and mean social assistance income among those with such income. As indicated above, these data are only

available and reliable starting in the 1992. Previously unmarried lone mothers (U and FC) are more likely to have welfare income than the previously married (MC, CLC and MCLNC), which may reflect many factors: they all have very young children, are younger themselves, and are less likely to have support payments from the father of the children. Among welfare income recipients, however, the MC mothers generally have the highest mean welfare income, which likely reflects the fact that they have the largest number of children. It is difficult to discern non-cyclical trends over a five year period of economic recovery, but welfare participation would appear to be falling a bit among the MC and FC and rising slightly among the CLC and U. Mean welfare income among clients is quite stable except for the drop in 1996, which probably reflects the benefit cuts instituted in October 1995 in Ontario.

[10] Lone mothers who do not spend at least one full calendar year in lone motherhood are excluded from Table 2 and, indeed, from all the analyses of earnings and income in this paper.

Table 1

Relative Frequencies of Starting Spells by Type and Age of Lone Mother

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Total
By Type													
Married, Children (MC)	0.78	0.70	0.68	0.73	0.72	0.67	0.68	0.65	0.68	0.65	0.61	0.61	0.67
Common Law, Children (CL)	0.09	0.10	0.10	0.05	0.06	0.11	0.11	0.13	0.13	0.17	0.22	0.24	0.14
Unattached (U)	0.09	0.13	0.14	0.14	0.14	0.13	0.13	0.13	0.12	0.12	0.11	0.09	0.12
Filing Child (FC)	0.04	0.05	0.06	0.06	0.07	0.07	0.07	0.07	0.06	0.05	0.04	0.04	0.05
Married or CL, No Children (MCLNC)	0.01	0.02	0.02	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02
By Age													
<20	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01
20-24	0.18	0.18	0.17	0.17	0.17	0.16	0.16	0.16	0.14	0.14	0.14	0.13	0.16
25-29	0.22	0.25	0.24	0.24	0.23	0.23	0.22	0.21	0.20	0.19	0.18	0.18	0.21
30-34	0.22	0.22	0.22	0.22	0.23	0.23	0.23	0.24	0.24	0.24	0.25	0.24	0.23
35-39	0.19	0.18	0.18	0.18	0.19	0.19	0.20	0.19	0.21	0.22	0.22	0.22	0.20
40-44	0.10	0.10	0.11	0.12	0.11	0.12	0.12	0.12	0.13	0.14	0.13	0.15	0.12
45-54	0.07	0.05	0.06	0.06	0.05	0.05	0.05	0.06	0.06	0.07	0.07	0.07	0.06

Table 2

Earnings, Total Income and Social Assistance Income in Spell Year t+1 (1997$)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
% with Earnings												
Married, Children	68	71	74	73	76	77	72	70	70	71	72	73
Common Law, Children	66	74	82	83	76	75	70	66	65	62	59	61
Unattached	66	69	73	70	66	67	62	54	50	48	51	54
Filing Child	71	72	74	71	64	60	53	52	47	55	57	61
Married or Common Law, No Children	68	78	84	76	75	76	61	66	56	60	73	60
Mean Earnings Among Mothers With Earned Income												
Married, Children	18,900	19,600	19,900	20,000	21,400	21,400	20,900	21,800	21,800	21,700	22,300	22,200
Common Law, Children	21,100	19,800	22,700	21,600	20,500	19,300	20,100	21,200	21,400	20,500	19,300	19,200
Unattached	15,000	16,400	16,000	16,000	15,300	15,800	15,700	16,000	14,400	14,700	14,200	14,400
Filing Child	12,500	11,400	12,500	11,000	11,700	10,100	10,700	10,700	10,900	10,000	93,000	10,400
Married or Common Law, No Children	12,100	17,400	17,900	18,400	17,900	16,800	17,900	18,100	18,800	18,400	21,100	16,700
Mean Total Income												
Married, Children	19,300	24,100	23,900	24,800	26,700	26,700	26,300	27,000	27,000	26,900	27,300	26,800
Common Law, Children	18,100	22,000	24,500	24,400	23,100	22,300	23,000	23,700	24,200	23,000	21,700	21,200
Unattached	12,800	17,700	17,200	17,700	16,900	17,700	18,000	18,300	17,800	17,700	17,300	17,000
Filing Child	11,400	14,100	14,100	14,300	13,900	13,600	13,800	14,900	14,800	14,400	13,800	14,000
Married or Common Law, No Children	11,500	19,900	20,900	21,200	21,000	20,900	20,000	21,300	21,000	20,300	22,700	18,600

	Proportion with Welfare Income						Mean Welfare Income Among Mothers Welfare on				
Year	**1992**	**1993**	**1994**	**1995**	**1996**		**1992**	**1993**	**1994**	**1995**	**1996**
Married, Children	41	42	40	38	35		10,000	1,000	9,800	9,200	8,200
Common Law, Children	43	44	47	53	48		9,800	1,010	1,000	9,600	8,700
Unattached	58	68	67	66	63		9,600	9,600	9,900	9,600	8,400
Filing Child	62	68	60	59	56		8,700	8,800	8,700	8,400	7,100
Married or Common Law, No Children	49	55	50	43	48		9,800	9,500	9,700	8,100	8,700

4. Multivariate Analysis

4.1 Introductory Comments

We now present the results of our multivariate analysis of the earnings and social assistance income of the lone mothers in our sample during the first (full) five years of the lone motherhood spell (t+1 through t+5) and during the year prior to the start of the spell (year t-1). Our approach was to estimate a logit model for the conditional probability of receiving any earned income, a linear regression model for the level of earned income among those with paid work, and a logit model for the probability of receiving any welfare income. The purpose of the logits is to provide indicators of the extent of labour force and welfare participation while the earnings regression model reflects the common practice in labour economics of focusing separately on labour supply (hours or weeks worked) and earnings capacity (hourly wage or weekly earnings among full-time workers) with the LAD providing only total earnings in this regard.

The multivariate results presented below come from logit and regression models estimated by spell year. We present the full set of estimates for spell years t-1 and t+1 in Tables 4 through 6. Figures 1 through 6 provide the predicted probabilities of earned and welfare income, and predicted earnings (among those who received any earned income) for the full set of spell years t-1 through t+5. We restricted the sample in spell year t-1 to those women whom we observed in t+1 (those who "survived" at least one year of lone motherhood), but did permit the sample size to decline from spell years t+1 through t+5. The annual exit rate from lone motherhood in our sample is 20% to 30% per year and the resulting change in sample composition may influence our estimates. We undertook two steps to check this possibility. One was to re-estimate our models for each spell year up through t+3 using the sample of lone mothers that survived until at least the end of t+4. Our second check was to re-estimate our models using a sample of completed spells (of lone motherhood) only and including a dummy variable for each spell duration. We discuss these results in more detail below but comment here that none of our basic inferences were altered by these checks.

We also comment below on estimates of an alternative specification which combined all spell years into a single logit or regression. In all of our specifications, we drop the very small category of married or

common law without children and combine the Unattached and Filing Children into one Single (S) group. Neither step had a noticeable effect on our results. Table 3 contains the sample proportions and means in 1985 and 1996 for our control variables.

Table 3
Relative Frequencies for Regression and Logit Control Variables

	1985	1996
Youngest Child Age 0-2	0.28	0.28
Youngest Child Age 3-5	0.24	0.25
Youngest Child Age 6 plus	0.48	0.47
One Child	0.42	0.44
Two Children	0.39	0.38
Three or More Children	0.20	0.18
Newfoundland	0.02	0.02
Prince Edward Island	0.00	0.00
Nova Scotia	0.04	0.04
New Brunswick	0.03	0.03
Quebec	0.29	0.26
Ontario	0.32	0.36
Manitoba	0.05	0.04
Saskatchewan	0.03	0.03
Alberta	0.10	0.09
British Columbia	0.12	0.13
Population 500,000 plus	0.46	0.47
Population 100,000-499,999	0.16	0.18
Population 30,000-99,999	0.12	0.11
Population 15,000-29,999	0.03	0.03
Population <15,000	0.13	0.11
Rural	0.10	0.09
Unemployment Rate (Ontario)	8.1	9.0
Annual Welfare Benefits for Lone Mother and Two Children (Ontario – 1997$)	13,862	13,815

4.2 Logit Estimates for the Presence of Earned Income

Table 4 contains the logit estimates for the presence (or not) of any earnings which is our indicator of annual labour force participation.[1] The logit for spell year t-1 on the left hand side uses earnings from the last full calendar year prior to the start of a spell of lone motherhood. The logit for spell year t+1 on the right hand side uses earnings from the first full year in which we observe the woman as a lone mother.

[1] In the Survey of Consumer Finances, the few lone mothers with negative earnings (self-employment income) have high weeks of work indicating participation in the labour market. Hence, we combined the LAD mothers with either positive or negative earnings into the non-zero group. Some of the SCF mothers with zero earnings also have positive weeks worked but the levels tend to be quite low. In any event, the LAD contains no information on weeks or hours worked.

We use the same sample in both logits, but note that the estimates for t-1 change little if we use the larger sample of all women who started a spell of lone motherhood.

The omitted category in spell year t-1 is a woman age 25 to 34, with one child age 2 or less who lived in a city of 500,000 or more in Ontario in 1984. She also did not belong to either of the two "minority language" categories which are Francophone outside of Quebec and Anglophone in Quebec. The same is true for spell year t+1 except that the calendar year is 1986. Note that the labels for the calendar year dummies refer to spell year t+1 and, hence, two years should be subtracted to get the correct calendar year for spell year t-1.

The specification for Table 4 also includes a large set of interactions of calendar year with both type of lone mother and age group. The interactions with lone mother reflect our substantive interest in how different types of lone mothers have fared in terms of labour force and welfare participation over the sample period. The interactions with age had a different motivation. We know from previous literature that type of lone mother is strongly correlated with age (the previously single are the youngest) and that earnings differences by age have grown larger in the general population over our sample period (Beach and Slotsve 1996). Hence, we included the interactions of calendar year with age group to make sure that our estimated trends by type of lone mother were not confounded by age trends. The result was a very large number of estimated coefficients with many possible combinations. We present and discuss below the predicted probabilities by spell year, cohort and type of lone mother. For interpreting the other estimates in Table 4, the approximate effect of the logit coefficients on the probability is equal to the coefficient times P(1-P) where P is some starting probability. The value of P for both omitted cases in Table 4 (evaluated at mean values of unemployment and welfare for a lone mother with two children in Ontario) is 0.70. Hence, the value of P(1-P) is 0.21 and the impact of a unit change in a control variable on the likelihood of receiving any earned income is approximately one-fifth of the logit coefficient.

Table 4
Logits for Presence of Earned Income

	Spell Year t-1			Spell Year t+1		
	Last Full Year Before Lone Motherhood			First Full Year Of Lone Motherhood		
	Coeff	*St Error*	*p-value*	*Coeff*	*St Error*	*p-value*
Constant	1.89	0.09	0.00	1.28	0.08	0.00
Previously Common Law	0.05	0.09	0.57	-0.24	0.09	0.01
Previously Single	1.89	0.14	0.00	0.40	0.09	0.00
Age < 25	-0.54	0.09	0.00	-0.34	0.08	0.00
Age 35-44	0.37	0.06	0.00	0.45	0.06	0.00
Age 45-54	-0.17	0.10	0.09	-0.37	0.10	0.00
Youngest Child Age 6+	0.52	0.02	0.00	0.68	0.02	0.00
Youngest Child Age 3-5	0.23	0.02	0.00	0.41	0.02	0.00
Two Children	-0.22	0.02	0.00	-0.37	0.02	0.00
Three or More Children	-0.66	0.02	0.00	-0.99	0.02	0.00
Welfare Benefits (000)	-0.050	0.004	0.000	-0.003	0.002	0.132
Unemployment Rate	-0.04	0.01	0.00	-0.06	0.01	0.00
English in Quebec	-0.09	0.05	0.05	-0.11	0.04	0.01
French Outside Quebec	-0.06	0.07	0.40	-0.17	0.07	0.02
Newfoundland	-0.08	0.10	0.40	0.62	0.08	0.00
Prince Edward Island	0.84	0.12	0.00	1.03	0.11	0.00
Nova Scotia	-0.17	0.05	0.00	0.21	0.04	0.00
New Brunswick	-0.27	0.07	0.00	0.40	0.05	0.00
Quebec	-0.31	0.04	0.00	0.09	0.03	0.00
Manitoba	-0.45	0.03	0.00	-0.01	0.03	0.79
Saskatchewan	-0.13	0.04	0.00	0.27	0.04	0.00
Alberta	0.04	0.03	0.17	0.47	0.03	0.00
British Columbia	-0.21	0.03	0.00	0.12	0.02	0.00
Population 100,000-499,999	-0.10	0.02	0.00	-0.16	0.02	0.00
Population 30,000-99,999	-0.13	0.02	0.00	-0.11	0.02	0.00
Population 15,000-29,999	-0.15	0.04	0.00	0.02	0.04	0.51
Population <15,000	-0.13	0.02	0.00	-0.01	0.02	0.51
Rural	-0.38	0.02	0.00	-0.27	0.02	0.00
1986 (spell year t+1)	0.13	0.05	0.01	0.12	0.06	0.04
1987	0.27	0.06	0.00	0.15	0.06	0.01
1988	0.39	0.06	0.00	0.08	0.06	0.17
1989	0.49	0.06	0.00	0.24	0.06	0.00
1990	0.55	0.06	0.00	0.22	0.06	0.00
1991	0.49	0.06	0.00	0.12	0.05	0.03
1992	0.48	0.06	0.00	0.03	0.05	0.62
1993	0.54	0.06	0.00	0.07	0.05	0.22
1994	0.48	0.05	0.00	-0.01	0.05	0.87
1995	0.45	0.05	0.00	0.06	0.05	0.26
1996	0.26	0.05	0.00	0.15	0.05	0.01
Common Law x 1986	0.01	0.11	0.92	0.28	0.12	0.02
Common Law x 1987	0.59	0.12	0.00	0.55	0.12	0.00
Common Law x 1988	0.71	0.16	0.00	0.70	0.16	0.00
Common Law x 1989	-0.03	0.13	0.83	0.16	0.13	0.23
Common Law x 1990	-0.13	0.11	0.27	0.15	0.12	0.19
Common Law x 1991	-0.13	0.11	0.24	0.10	0.11	0.38

Table 4 (Continued)

	Coeff	*St Error*	*p-value*	*Coeff*	*St Error*	*p-value*
Common Law x 1992	-0.20	0.11	0.06	0.00	0.10	0.99
Common Law x 1993	-0.30	0.11	0.00	-0.01	0.10	0.89
Common Law x 1994	-0.27	0.10	0.01	-0.06	0.10	0.56
Common Law x 1995	-0.53	0.10	0.00	-0.31	0.10	0.00
Common Law x 1996	-0.31	0.10	0.00	-0.22	0.10	0.02
Single x 1986	-0.59	0.16	0.00	-0.10	0.11	0.38
Single x 1987	-0.24	0.18	0.17	0.03	0.12	0.78
Single x 1988	-0.30	0.18	0.10	-0.17	0.12	0.14
Single x 1989	-1.13	0.16	0.00	-0.39	0.11	0.00
Single x 1990	-0.80	0.17	0.00	-0.43	0.11	0.00
Single x 1991	-0.89	0.16	0.00	-0.35	0.11	0.00
Single x 1992	-0.98	0.16	0.00	-0.50	0.11	0.00
Single x 1993	-1.57	0.16	0.00	-0.71	0.11	0.00
Single x 1994	-1.61	0.15	0.00	-0.66	0.11	0.00
Single x 1995	-1.61	0.15	0.00	-0.76	0.11	0.00
Single x 1996	-1.45	0.15	0.00	-0.69	0.11	0.00
Age < 25 x 1986	0.03	0.12	0.82	-0.19	0.11	0.08
Age < 25 x 1987	0.09	0.13	0.51	-0.21	0.11	0.06
Age < 25 x 1988	-0.20	0.14	0.13	-0.15	0.12	0.21
Age < 25 x 1989	0.07	0.13	0.58	-0.39	0.11	0.00
Age < 25 x 1990	-0.01	0.13	0.91	-0.29	0.11	0.01
Age < 25 x 1991	0.10	0.13	0.42	-0.46	0.11	0.00
Age < 25 x 1992	0.17	0.12	0.16	-0.34	0.11	0.00
Age < 25 x 1993	-0.03	0.12	0.83	-0.31	0.11	0.00
Age < 25 x 1994	-0.06	0.12	0.63	-0.35	0.11	0.00
Age < 25 x 1995	-0.23	0.12	0.05	-0.22	0.11	0.03
Age < 25 x 1996	-0.16	0.11	0.15	-0.24	0.10	0.02
Age 35-44 x 1986	0.04	0.08	0.63	-0.06	0.09	0.51
Age 35-44 x 1987	-0.10	0.09	0.24	-0.07	0.09	0.44
Age 35-44 x 1988	-0.15	0.09	0.08	-0.02	0.09	0.79
Age 35-44 x 1989	-0.11	0.09	0.22	-0.03	0.09	0.74
Age 35-44 x 1990	-0.11	0.08	0.17	0.09	0.09	0.28
Age 35-44 x 1991	0.02	0.08	0.83	0.14	0.08	0.09
Age 35-44 x 1992	0.07	0.08	0.36	0.13	0.08	0.10
Age 35-44 x 1993	-0.12	0.08	0.13	-0.06	0.08	0.41
Age 35-44 x 1994	0.01	0.08	0.91	0.00	0.08	0.97
Age 35-44 x 1995	-0.09	0.08	0.25	-0.11	0.08	0.17
Age 35-44 x 1996	-0.10	0.07	0.19	-0.16	0.08	0.03
Age 45-54 x 1986	0.06	0.14	0.69	0.04	0.14	0.79
Age 45-54 x 1987	-0.02	0.14	0.90	0.23	0.15	0.12
Age 45-54 x 1988	-0.08	0.15	0.57	0.19	0.15	0.21
Age 45-54 x 1989	-0.12	0.14	0.39	0.24	0.15	0.11
Age 45-54 x 1990	-0.08	0.15	0.57	0.34	0.15	0.02
Age 45-54 x 1991	0.07	0.14	0.60	0.56	0.14	0.00
Age 45-54 x 1992	0.40	0.14	0.00	0.81	0.14	0.00
Age 45-54 x 1993	0.18	0.13	0.17	0.52	0.13	0.00
Age 45-54 x 1994	0.26	0.13	0.05	0.62	0.13	0.00
Age 45-54 x 1995	0.21	0.13	0.10	0.48	0.13	0.00
Age 45-54 x 1996	0.36	0.12	0.00	0.45	0.13	0.00

Notes: Sample size: 122,390 for t-1 and t+1. Earnings in 1997 dollars. Omitted category is age 25 to 34, with one child age 0-2, not of a minority language, living in a city of 500,000 or more in Ontario in 1984.

We begin with a discussion of the effects of various control variables before turning to the trends both within and between cohorts of different types of lone mothers. In general, labour force participation is significantly and positively correlated with age. The coefficients imply a likelihood of earned income which is about 10 percentage points less than the omitted category for the youngest lone mothers and about 7 percentage points higher for the 35-44 age group. The oldest age category has a negative coefficient (though a non-significant one in t-1), but the interaction (with year) coefficients are positive and often statistically significant for these women. During the 1990's, the 45-54 age group has predicted probabilities of earned income which are higher than those for the omitted category (25-34) and similar to those for the 35-44 category. Our estimated interaction effects between age group and year generally indicate negative trends for the youngest woman and positive trends for the oldest age group both in Table 4 and in the logit estimates for spell years t+2 through t+5. The implied increase in earnings inequality by age is consistent with that which, as indicated above, has been reported in other studies.

Younger children and more children are associated with a lower likelihood of paid work. The statistical significance of the coefficient for welfare benefits varies across spell years but the magnitude of the coefficient is always small. Even in t-1, a $1,000 increase in annual welfare benefits, which is a 10% increase in many provinces for a lone mother with one child, yields only a 1 percentage point decrease in the likelihood of earned income which is a very small (1-2%) proportionate change. The impact in spell year t+1 through t+5 is even smaller. Dooley (1994) estimated a larger impact of welfare benefits on labour force participation using a (selected) time-series of cross-sections from the Survey of Consumer Finances from 1971 through 1991. The possible reasons for these different findings include distinct data periods, the more extensive personal characteristics in the SCF, and the superior controls for spell year and previous marital status in the LAD. We return to this topic in Section 4.4 below.

The unemployment coefficients are invariably statistically significant. In Table 4, a one percentage point increase in the unemployment rate implies a 1 percentage point decrease in the likelihood of earned income. Minority language status generally has very weak effects in all of the logits and regressions reported in this paper. Provincial differences tend to be small an exception being the positive coefficient

for Prince Edward Island. Differences by size of area of residence are also modest save for the noticeably lower probability of paid work in rural areas.

As mentioned, logit models for the likelihood of earned income were also estimated for spell years t+2 through t+5. The coefficient estimates for the demographic control variables are similar in sign, magnitude and statistical significance to those in years t-1 and t+1. The complete set of coefficient estimates are available upon request from the author.

Figure 1.1
Predicted Probability of Earned Income, Previously Married with Children

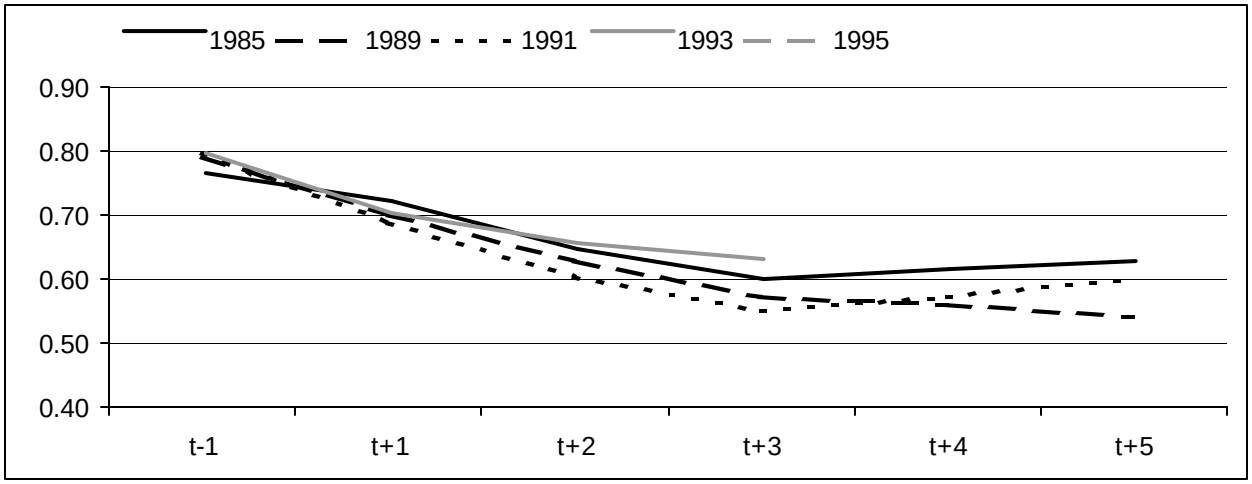


Figure 1.2
Predicted Probability of Earned Income, Previously Common Law with Children

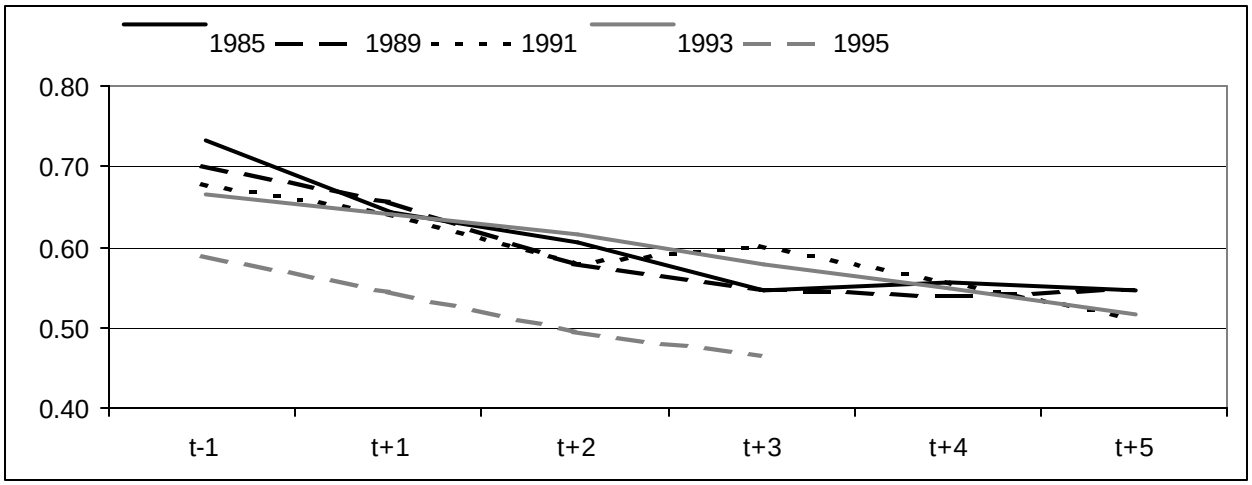
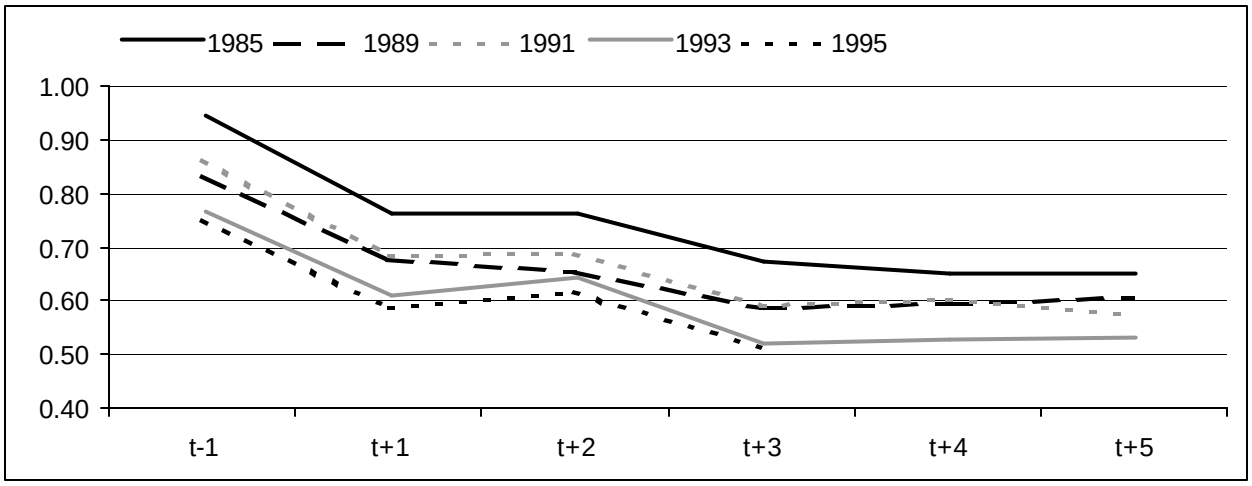


Figure 1.3
Predicted Probability of Earned Income, Previously Single with Children



Figures 1.1 through 1.3 present the within-cohort trends in the predicted probability of any earned income for each type of lone mother and for selected cohorts as identified by the calendar year of spell year t+1. The set of probabilities for all cohorts is contained in Table 2-A. These predicted probabilities are for the omitted group evaluated at an unemployment rate of 8.1% and annual welfare benefits of $15,000 which are the mean values for a lone mother with two children in Ontario. The trends are similar if other characteristics are selected as is true of all of the figures presented in this section.

There is a decline in the likelihood of earned income between t-1 and t+1 as women enter lone motherhood regardless of the state from which they are exiting. This decline is most marked for the S group, who are moving from being childless to being lone mothers. The declines for MC and CLC groups are less pronounced, but also less expected given that these women already had children and had a partner before entering lone motherhood. The common pattern of change during this transitional period (i.e., declining labour force participation) reflects the similar (and high) level of paid work before lone motherhood. In Figures 1.1 through 1.3, the vast majority of women report earned income in t-1 regardless of marital and child status. Of course, our sample of women in t-1 is not a random sample of all women with and without children, but rather confined to those who are on the verge of a spell of lone motherhood. Still, we take this as evidence of the diminishing impact of the presence of children on patterns of paid work among women.

Figures 1.1 through 1.3 generally indicate either slightly declining or stable probabilities from spell years t+1 through t+5. In results not shown here, we tested for the statistical significance of such changes by estimating a specification of our model which combined all spell years. Even those changes which are statistically significant, such as t+1 through t+3 for the MC group and t+2 to t+3 for the S group, tend to be modest in size. Specifically, they are always less, and usually much less, than ten percentage points.

Figure 2.1
Predicted Probability of Earned Income, Spell Year t-1

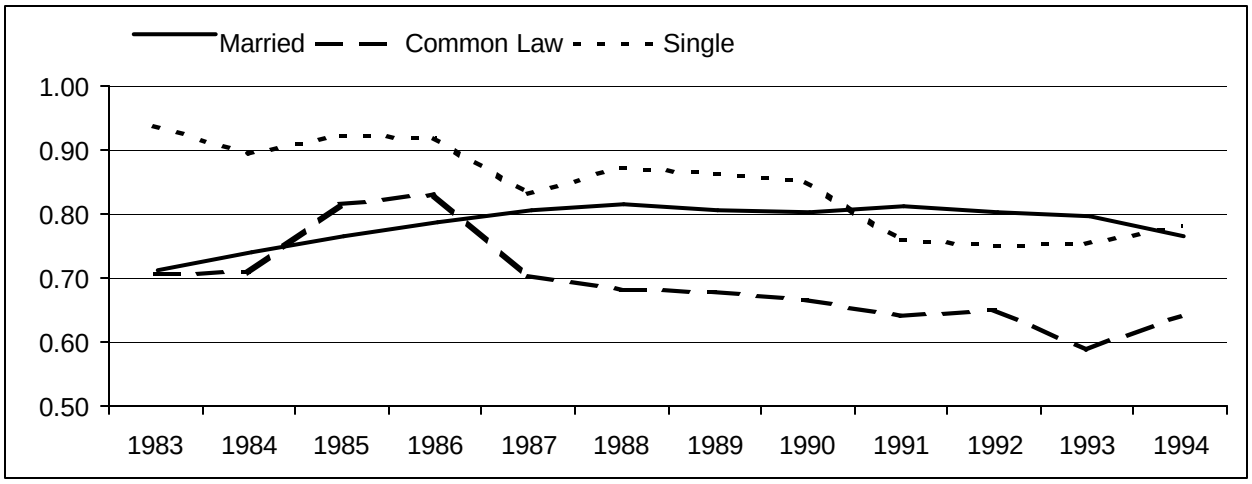


Figure 2.2
Predicted Probability of Earned Income, Spell Year t+1

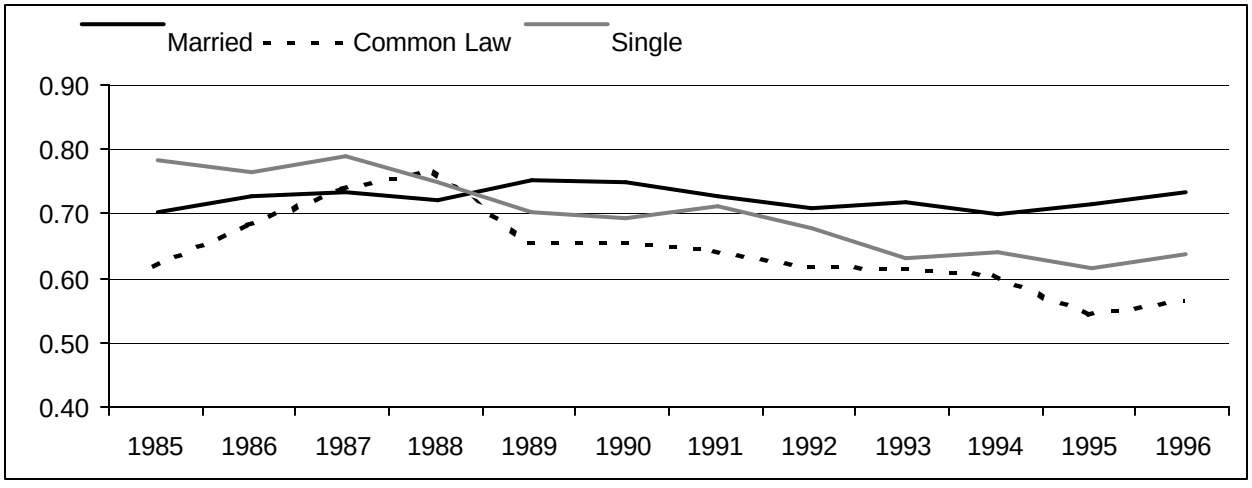


Figure 2.3
Predicted Probability of Earned Income, Spell Year t+2

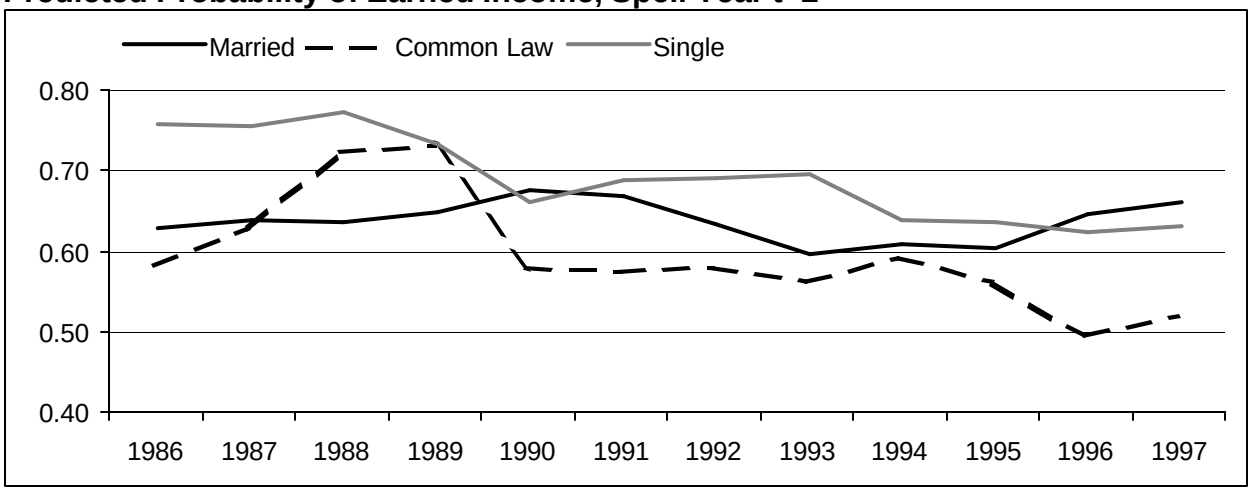


Figure 2.4
Predicted Probability of Earned Income, Spell Year t+3

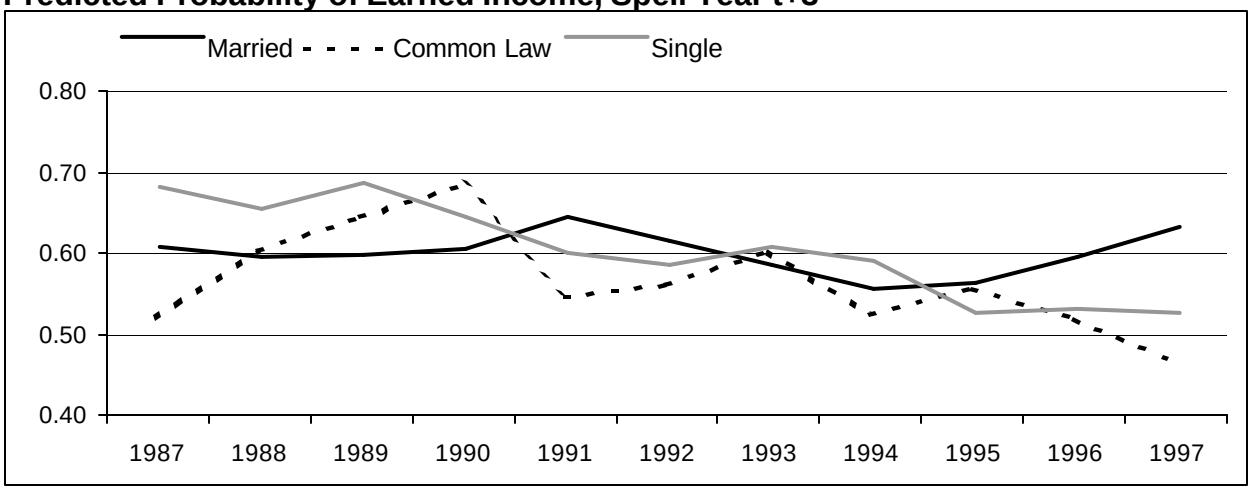


Figure 2.5
Predicted Probability of Earned Income, Spell Year t+4

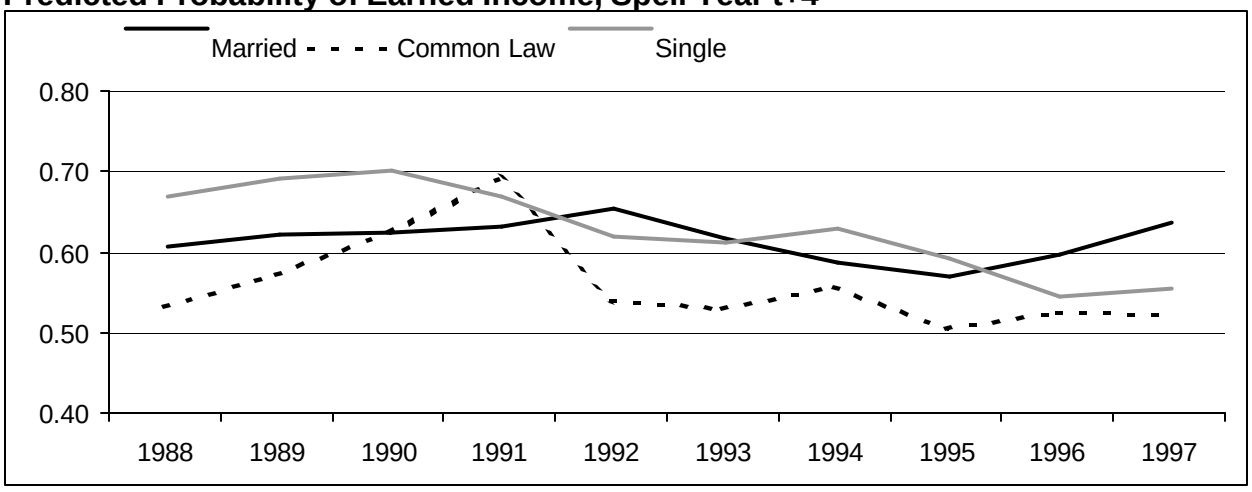
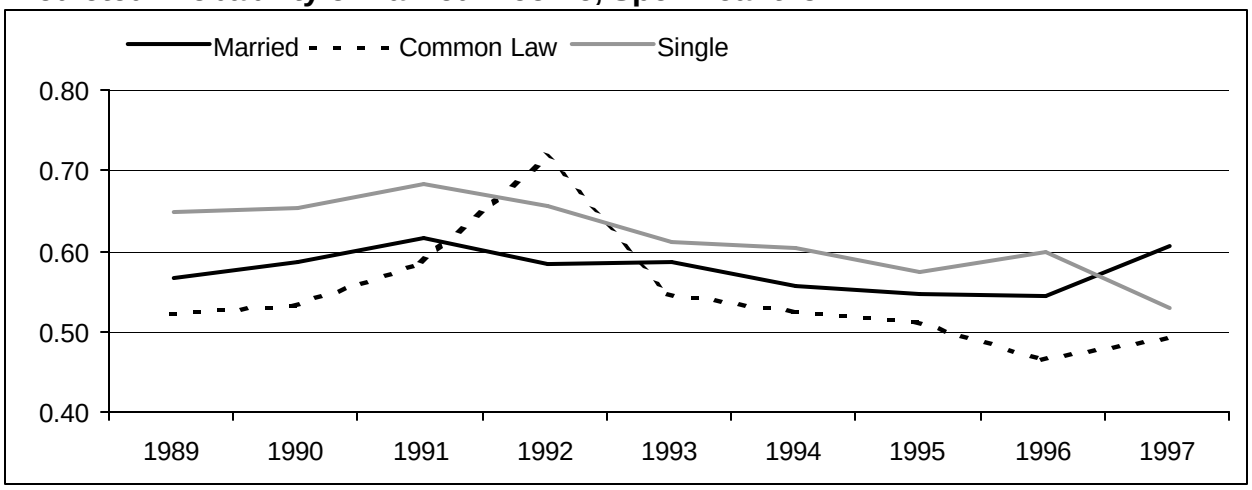


Figure 2.6
Predicted Probability of Earned Income, Spell Year t+5



Figures 1.1 through 1.3 also provide some indication of between-cohort changes. For both the CLC and S groups, more recent cohorts tend to have a lower likelihood of earned income. These between-cohort changes, however, can be more readily discerned from Figures 2.1 through 2.6 (and Table 3-A), which contain the predicted probabilities of labour force participation by calendar year and lone mother type for each of the six spell years. Figure 2.1 shows a convergence between the previously married and the previously single in spell year t-1. The probability of earned income for the MC group increased slightly over the sample period and that for the S group declined from 94% to 78%. This change in the relative levels of the MC and S groups constitutes one of the most consistent findings of this paper regardless of spell year. The predicted level of labour force participation for the CLC group varies substantially over the sample period and shows a slight decline on balance.

Figure 2.2 shows that, by 1989, the MC came to be the group with the highest likelihood of labour force participation in the first full year of lone motherhood due largely to declines for the other two groups. Figures 2.3 through 2.6 all show a similar pattern. The previously single start the data period with the highest probability of earned income, but this declines to converge with the values of the other two groups especially the previously married.

An important feature of the logit results thus far is that we use the full sample available in each spell year. The only exception is that the logit for spell year t-1 was estimated with those women who survived as lone mothers until the end of t+1. Hence, the estimation sample is declining across spell years and there

may be composition effects on the coefficient estimates. We undertook several checks for this possibility. The first was to estimate the logits for each spell year (including t-1) using the sample of women who remained lone mothers until at least the end of t+4. Our second check was to estimate the models for each spell year using only a sample of completed spells and including a series of dummy variables for actual spell length (up to eleven years) as a control for unobserved heterogeneity.

The coefficients for spell length were often but not invariably significant and indicated that longer spells are associated with a lower probability of earned income in any spell year. For example, lone mothers with spells lasting five years or more had a likelihood of earned income in t-1 and t+1 which was approximately two to six percentage points below that of mother with spells lasting under five years. However, the basic inferences which we have made from Table 4 and Figures 1 and 2 are unchanged. The estimated coefficients for demographic characteristics, unemployment and welfare benefits were, in essence, unaffected. The calendar year (between-cohort) trends in predicted probabilities especially for the S (previously single) group were slightly flatter but our basic conclusions as to changes over spell years, cohorts (calendar years) and between types of lone mothers remain the same.

4.3 Earnings Regressions

Table 5 contain the regression estimates for annual earnings (1997$) among women with earned income in spell years t-1 and t+1. The sample sizes from these two sample years are not the same, unlike the case in Table 4. The reason for this is that the samples for Table 5 include all women who had positive earnings in t-1 and t+1 respectively (given that they were a lone mother for at least one full calendar year).

The coefficients for the demographic control variables are generally similar to those which we observed for the probability of any earned income. One exception is that having a youngest child of school age is associated with slightly lower earnings (given positive earnings) among the MC and no different earnings among the other two groups. One possible reason for this finding among the previously married is that the fixed costs of day care selects for higher earners (hours or wages) among mothers of preschoolers. Note, however, that larger numbers of children are associated with lower earnings, which would imply

Table 5
Annual Earnings Regression Among Positive Earners

	Spell Year t-1			Spell Year t+1		
	Last Full Year Before Lone Motherhood			First Full Year Of Lone Motherhood		
	Coeff	*St Error*	*p-value*	*Coeff*	*St Error*	*p-value*
Constant	14,568	673	0.00	20,822	691	0.00
Previously Common Law	1,030	705	0.14	1,582	772	0.04
Previously Single	4,745	718	0.00	1,374	796	0.08
Age < 25	-8,314	691	0.00	-7,854	776	0.00
Age 35-44	5,385	487	0.00	5,136	519	0.00
Age 45-54	4,721	889	0.00	4,150	959	0.00
Youngest Child Age 6+	947	127	0.00	181	203	0.37
Youngest Child Age 3-5	1,893	149	0.00	1,703	203	0.00
Two Children	-1,855	131	0.00	-1,716	134	0.00
Three or More Children	-4,714	167	0.00	-5,036	179	0.00
Welfare Benefits (000)	189	32	0.00	-15	15	0.30
Unemployment Rate	72	52	0.16	152	55	0.01
English in Quebec	420	329	0.20	264	385	0.49
French Outside Quebec	198	500	0.69	719	604	0.23
Newfoundland	-3,402	695	0.00	-6,444	709	0.00
Prince Edward Island	-3,533	727	0.00	-4,761	827	0.00
Nova Scotia	-2,467	376	0.00	-4,402	385	0.00
New Brunswick	-2,585	486	0.00	-5,446	429	0.00
Quebec	-1,243	283	0.00	-2,836	244	0.00
Manitoba	-1,251	257	0.00	-2,543	296	0.00
Saskatchewan	-506	283	0.07	-1,752	318	0.00
Alberta	-1,200	184	0.00	-2,271	205	0.00
British Columbia	-1,647	228	0.00	-2,432	212	0.00
Population 100,000-499,999	-2,164	152	0.00	-2,784	170	0.00
Population 30,000-99,999	-3,338	160	0.00	-4,144	179	0.00
Population 15,000-29,999	-2,722	285	0.00	-4,361	313	0.00
Population <15,000	-3,914	153	0.00	-4,906	175	0.00
Rural	-4,791	178	0.00	-6,380	215	0.00
1986 (spell year t+1)	211	462	0.65	256	493	0.60
1987	267	473	0.57	614	510	0.23
1988	-465	488	0.34	1,101	536	0.04
1989	332	485	0.49	1,861	521	0.00
1990	380	500	0.45	1,665	507	0.00
1991	-96	502	0.85	553	487	0.26
1992	-493	494	0.32	354	488	0.47
1993	-168	454	0.71	265	487	0.59
1994	37	452	0.94	810	488	0.10
1995	263	452	0.56	1,092	488	0.03
1996	452	458	0.32	580	479	0.23
Common Law x 1986	-236	912	0.80	-2,004	988	0.04
Common Law x 1987	1,044	902	0.25	125	987	0.90
Common Law x 1988	1,291	1,055	0.22	-331	1,162	0.78
Common Law x 1989	74	993	0.94	-2,216	1,086	0.04
Common Law x 1990	-1,145	882	0.19	-3,266	967	0.00
Common Law x 1991	-828	879	0.35	-2,347	976	0.02
Common Law x 1992	-670	836	0.42	-1,585	932	0.09
Common Law x 1993	-1,399	844	0.10	-1,880	936	0.04

Table 5 (Continued)

	Coeff	*St Error*	*p-value*	*Coeff*	*St Error*	*p-value*
Common Law x 1994	-1,606	820	0.05	-2,126	909	0.02
Common Law x 1995	-2,385	808	0.00	-3,594	887	0.00
Common Law x 1996	-2,274	796	0.00	-2,934	872	0.00
Single x 1986	-853	838	0.31	-1,135	979	0.25
Single x 1987	-998	845	0.24	-1,232	985	0.21
Single x 1988	-791	857	0.36	-1,581	1,009	0.12
Single x 1989	-1,507	840	0.07	-3,245	991	0.00
Single x 1990	-837	823	0.31	-2,766	978	0.00
Single x 1991	-642	818	0.43	-2,390	985	0.02
Single x 1992	-573	829	0.49	-2,269	1,006	0.02
Single x 1993	-2,264	836	0.01	-3,213	1,016	0.00
Single x 1994	-2,393	837	0.00	-3,780	1,013	0.00
Single x 1995	-3,013	843	0.00	-4,261	1,009	0.00
Single x 1996	-2,429	839	0.00	-3,608	998	0.00
Age < 25 x 1986	32	906	0.97	-172	1,028	0.87
Age < 25 x 1987	872	916	0.34	69	1,050	0.95
Age < 25 x 1988	382	937	0.68	-523	1,079	0.63
Age < 25 x 1989	135	910	0.88	74	1,066	0.94
Age < 25 x 1990	-190	888	0.83	-621	1,046	0.55
Age < 25 x 1991	352	881	0.69	-399	1,072	0.71
Age < 25 x 1992	116	877	0.90	-825	1,061	0.44
Age < 25 x 1993	362	907	0.69	-573	1,100	0.60
Age < 25 x 1994	62	911	0.95	-734	1,105	0.51
Age < 25 x 1995	523	922	0.57	-599	1,075	0.58
Age < 25 x 1996	-266	905	0.77	-664	1,040	0.52
Age 35-44 x 1986	1,182	645	0.07	1,064	687	0.12
Age 35-44 x 1987	743	649	0.25	530	693	0.44
Age 35-44 x 1988	1,054	658	0.11	303	710	0.67
Age 35-44 x 1989	1,109	635	0.08	1,291	683	0.06
Age 35-44 x 1990	1,982	617	0.00	1,058	667	0.11
Age 35-44 x 1991	2,618	609	0.00	1,987	663	0.00
Age 35-44 x 1992	2,266	600	0.00	2,313	658	0.00
Age 35-44 x 1993	2,176	599	0.00	2,136	656	0.00
Age 35-44 x 1994	1,867	596	0.00	1,032	650	0.11
Age 35-44 x 1995	2,336	596	0.00	1,661	644	0.01
Age 35-44 x 1996	2,468	591	0.00	1,934	633	0.00
Age 45-54 x 1986	760	1,198	0.53	1,301	1,294	0.31
Age 45-54 x 1987	1,917	1,191	0.11	1,012	1,275	0.43
Age 45-54 x 1988	3,939	1,221	0.00	2,681	1,319	0.04
Age 45-54 x 1989	2,233	1,189	0.06	1,954	1,276	0.13
Age 45-54 x 1990	6,540	1,161	0.00	4,630	1,256	0.00
Age 45-54 x 1991	4,966	1,140	0.00	3,709	1,240	0.00
Age 45-54 x 1992	7,769	1,088	0.00	7,934	1,191	0.00
Age 45-54 x 1993	8,362	1,083	0.00	7,202	1,186	0.00
Age 45-54 x 1994	7,189	1,063	0.00	4,834	1,157	0.00
Age 45-54 x 1995	7,903	1,060	0.00	6,592	1,149	0.00
Age 45-54 x 1996	6,927	1,043	0.00	6,357	1,129	0.00

Notes Sample size: 90,825 for t-1 and 84,805 for t+1. Earnings in 1997 dollars. Omitted category is age 25 to 34, with one child age 0-2, not of a minority language, living in a city of 500,000 or more in Ontario in 1984. The estimates in Table 5 are not corrected for selection bias due to the lack (in the LAD) of good identifying restrictions needed for this procedure.

that the fixed cost explanation, if valid, refers to the fixed costs of day care per se rather than fixed cost per child. With the exception of welfare benefits in t-1, both the unemployment rate and welfare benefits have coefficients which are very small in magnitude and/or lack statistical significance in all spell years (up through t+5). This result is less surprising when one bears in mind that these regressions are estimated with a sample of women with earned income.

Figures 3.1 through 3.3 and the right side of Table 2-A present the trends in predicted earnings over the spell of lone motherhood (within-cohort trends) for each type of lone mother. Figures 3.1 and 3.2 indicate that annual earnings among the MC and CLC groups increased by about $2,000 during the transition to lone motherhood. This increase in earnings could be caused by rising earnings among given women (a switch from from part-time to a full-time paid work), but it could also be a selection phenomenon caused by the decline in the proportion of both groups (MC and CLC) with earned income as shown in Figures 1.1 and 1.2. From t+1 on, the pattern for the MC and CLC groups is less clear. In an alternative specification with all spell years combined (not shown here), we find that there is an increase (statistically significant) in predicted earnings of about $800 ($500) per year for the MC (CLC) group as one moves from spell year t+1 through t+5.

Figure 3.3 and Table 2-A shows predicted earnings among earners are fairly stable from t-1 to t+1 for the previously single despite the large decline in labour force participation for this group indicated by Figure 1.3. The trend in predicted earnings for this group from t+1 through t+5 is not monotonic. However, in a specification which combined all spell years, we find that there is an increase (statistically significant) in predicted earnings of on average about $800 per year for the S group except between t+2 and t+3 . In summary, Figures 3.1 through 3.3 indicate that average earnings among those with earned income rises or is stable during the transition to lone motherhood. During the spell of lone motherhood, the tendency is also for predicted earnings to increase.

Figure 3.1
Predicted Annual Earnings Among Positive Earners Previously Married with Children

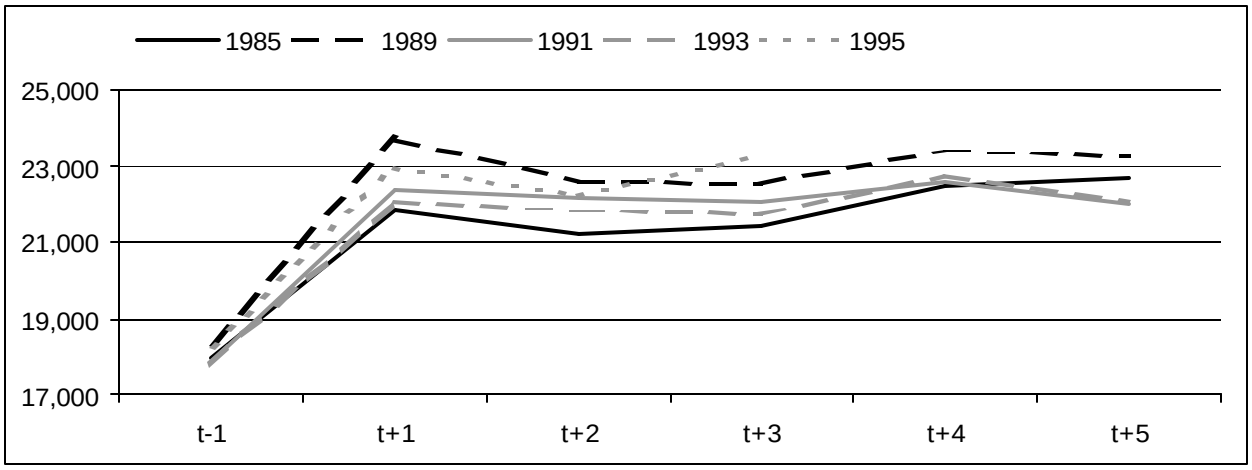


Figure 3.2
Predicted Annual Earnings Among Positive Earners Previously Common Law with Children

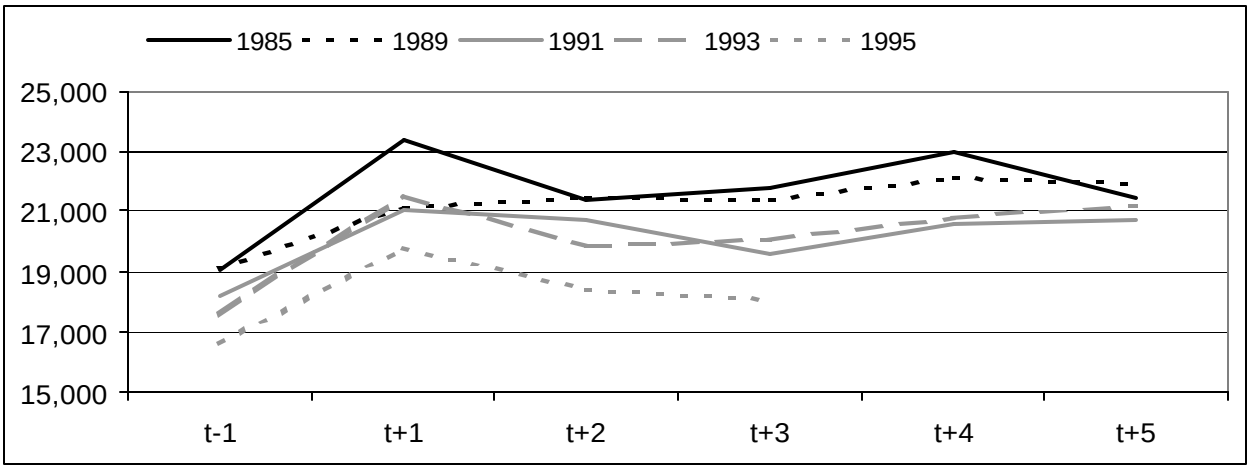


Figure 3.3
Predicted Annual Earnings Among Positive Earners Previously Single

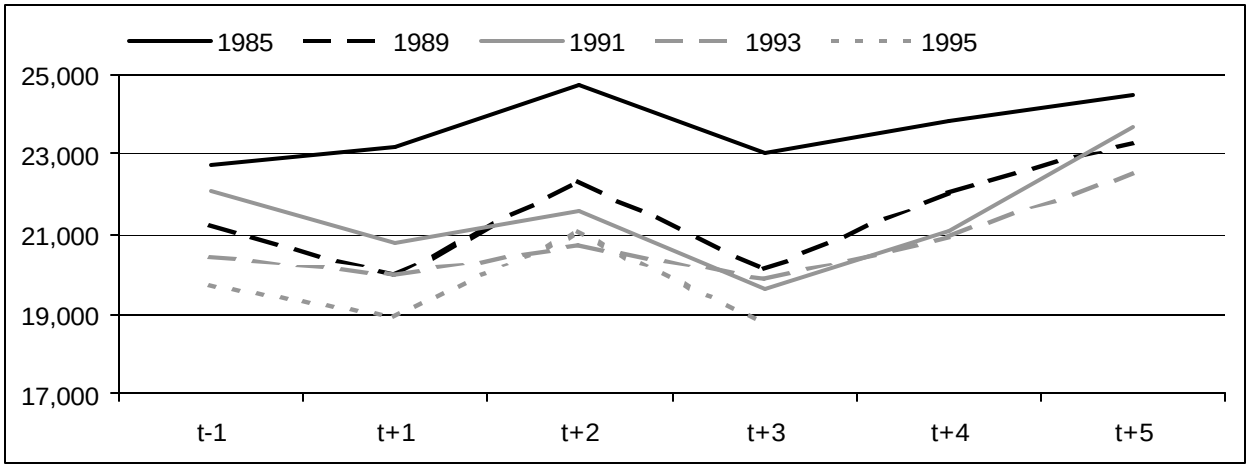


Figure 3.3 also indicates a declining trend in earnings between cohorts of the CLC and S groups, but these between cohort changes are shown more clearly in Figures 4.1 through 4.6 and in Table 3-A. Our most consistent finding across calendar years is the decrease in predicted earnings among the previously single both in real dollar term and relative to the previously married. Figures 3.1 through 3.6 indicate that in each spell year, the S group has the same or higher earnings at the start of our sample period. Over calendar time, however, the predicted earnings for the MC group are stable or rise slightly and the earnings of the S group decline. By the end of the sample period, the previously married have earnings which are the same or higher than the earnings of the previously single regardless of spell year. The pattern for the CLC group is also generally downwards but is less pronounced than for the previously single (S).

Figure 4.1
Predicted Annual Earnings, Positive Earners, Spell Year t-1

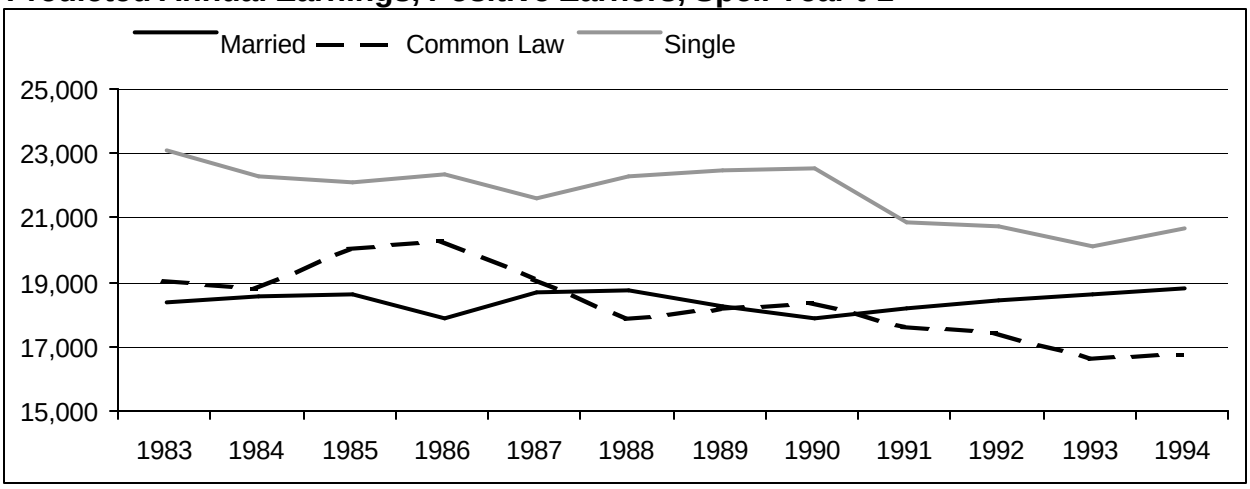


Figure 4.2
Predicted Annual Earnings, Positive Earners, Spell Year t+1

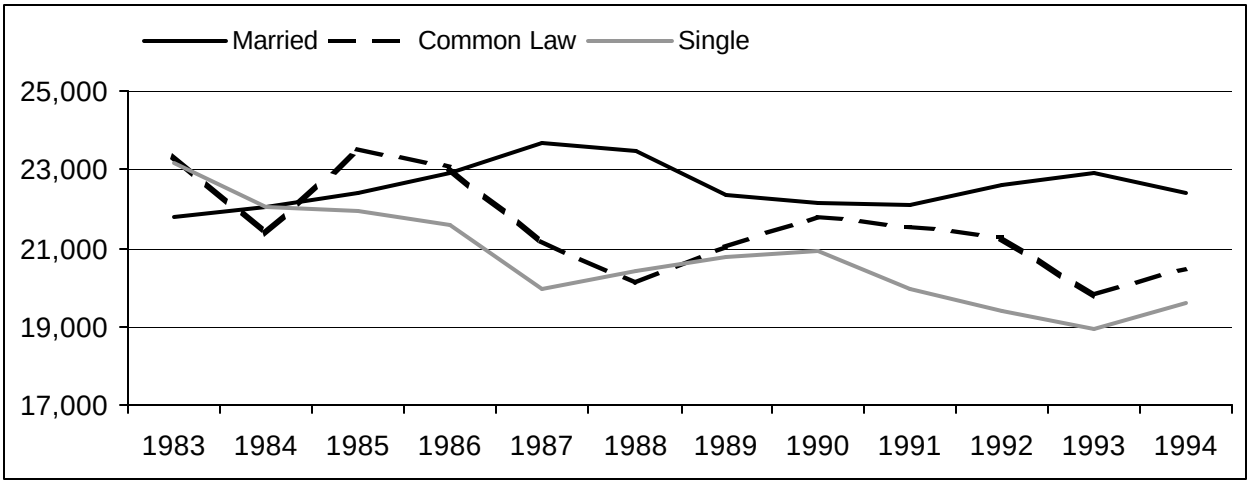


Figure 4.3
Predicted Annual Earnings, Positive Earners, Spell Year t+2

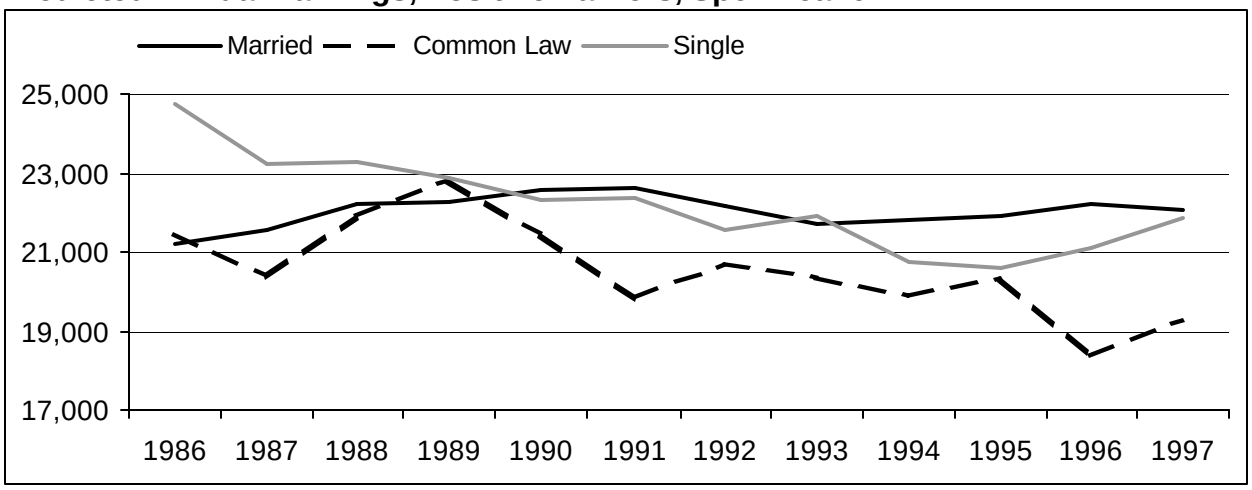


Figure 4.4
Predicted Annual Earnings, Positive Earners, Spell Year t+3

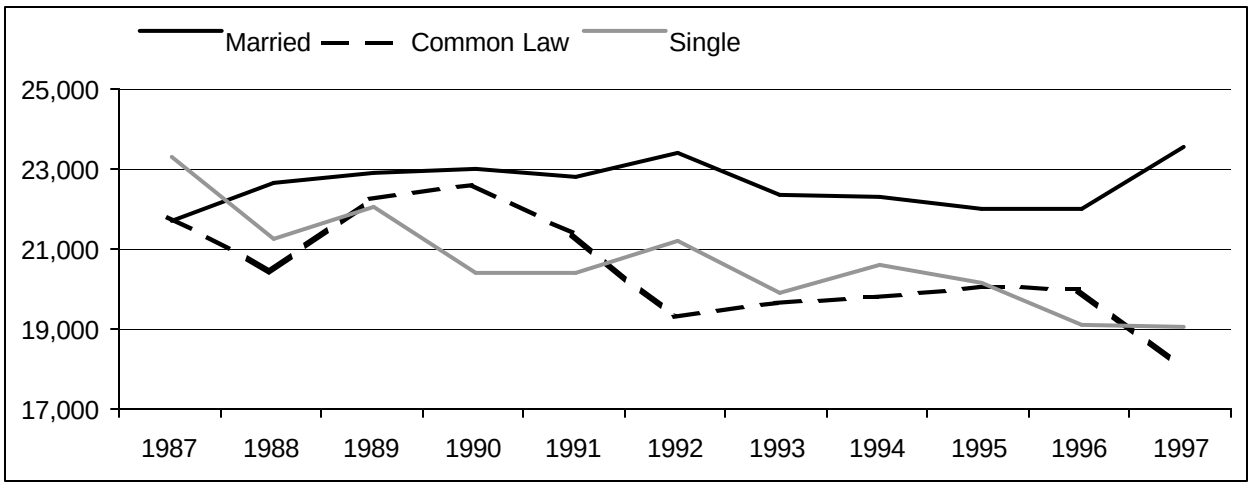


Figure 4.5
Predicted Annual Earnings, Positive Earners, Spell Year t+4

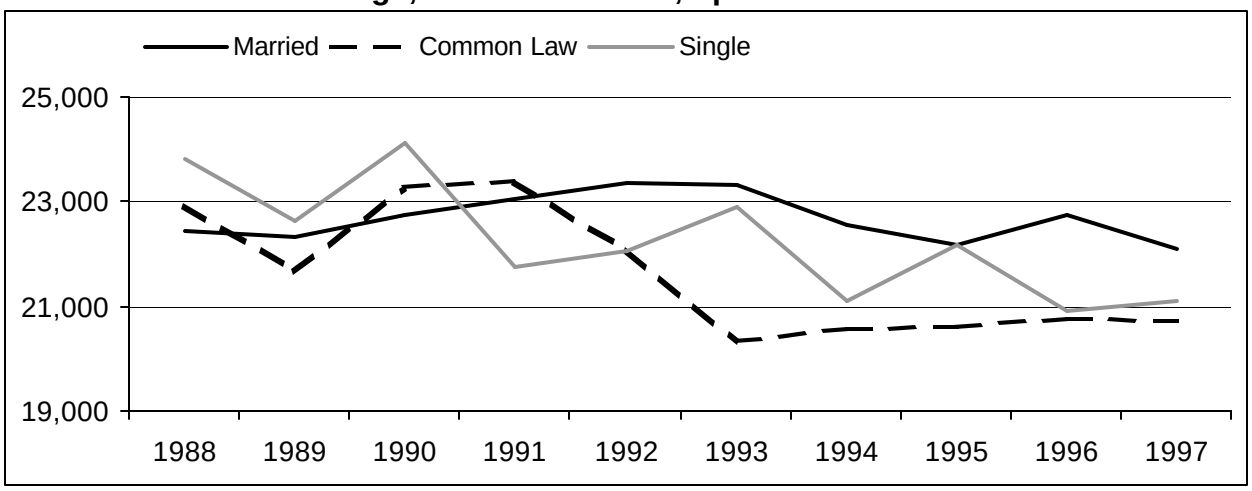
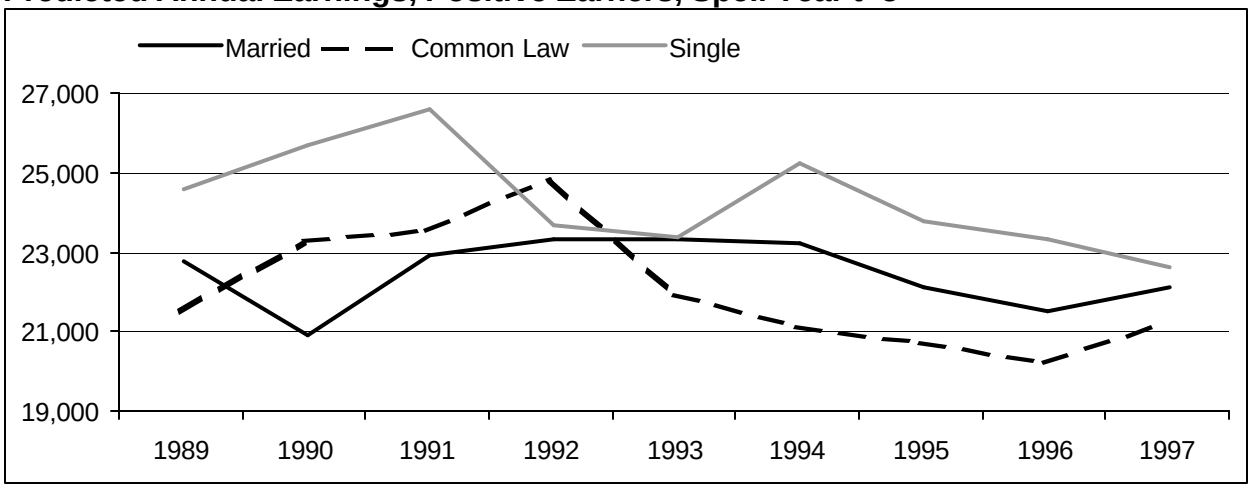


Figure 4.6
Predicted Annual Earnings, Positive Earners, Spell Year t+5



In the case of the earnings regressions, we conducted the same two checks for the impact of changes in the sample composition over spell years. The support for the presence of unobserved heterogeneity was weaker than that found in the earnings logits (Table 4) in that the dummy coefficients for spell length were usually not statistically significant in the earnings regressions. Our main conclusion, however, is that both checks did little to change the other coefficient estimates and, hence, our inferences from Table 5 and Figures 3 and 4.

4.4 Logit Estimates for the Presence of Social Assistance Income

This section presents our logit estimates for the presence of social assistance income, our indicator of welfare participation. Tables 6 contains the estimates for spell years t-1 and t+1. The predicted probabilities by spell year, cohort and type of lone mother are presented in Tables 4-A and 5-A. Welfare income data are only available from 1992 on and there are correspondingly smaller sample sizes and fewer calendar year dummies. Based on a probability of welfare of 0.50, which is a common value in t+1 in Table 4-A, the P(1-P) formula implies that the approximate effect of a unit change in a control variable is equal to one-quarter [0.5 x 0.5] of the coefficient.

The coefficients for the demographic control variables generally have the opposite sign of those which we observed for the probability of any earned income. The age coefficients imply differences of fifty percentage points between the youngest and oldest groups in the likelihood of welfare participation. The likelihood of welfare income is also distinctly greater among women with younger children and more

Table 6
Logits for Presence of Welfare Income

	Spell Year t-1			Spell Year t+1		
	Last Full Year Before Lone Motherhood			First Full Year Of Lone Motherhood		
	Coeff	*St Error*	*p-value*	*Coeff*	*St Error*	*p-value*
Constant	-3.52	0.75	0.00	-1.38	0.37	0.00
Previously Common Law	1.60	0.07	0.00	0.12	0.06	0.03
Previously Single	1.54	0.12	0.00	-0.13	0.07	0.05
Age < 25	0.48	0.08	0.00	1.00	0.07	0.00
Age 35-44	-0.48	0.07	0.00	-0.90	0.05	0.00
Age 45-54	-0.58	0.13	0.00	-1.36	0.10	0.00
Youngest Child Age 6+	-0.31	0.04	0.00	-0.57	0.03	0.00
Youngest Child Age 3-5	-0.10	0.04	0.03	-0.33	0.03	0.00
Two Children	-0.04	0.04	0.38	0.31	0.02	0.00
Three or More Children	0.41	0.05	0.00	0.91	0.03	0.00
Welfare Benefits (000)	0.067	0.110	0.000	0.001	0.002	0.478
Unemployment Rate	0.03	0.07	0.69	0.15	0.03	0.00
English in Quebec	0.13	0.10	0.16	-0.03	0.06	0.62
French Outside Quebec	-0.56	0.17	0.00	-0.07	0.09	0.43
Newfoundland	-0.13	0.69	0.86	-1.86	0.35	0.00
Prince Edward Island	-0.60	0.54	0.27	-1.61	0.27	0.00
Nova Scotia	-0.44	0.25	0.08	-0.85	0.13	0.00
New Brunswick	0.15	0.21	0.48	-0.92	0.10	0.00
Quebec	0.01	0.18	0.95	-0.88	0.09	0.00
Manitoba	-0.34	0.12	0.01	-0.52	0.07	0.00
Saskatchewan	-0.09	0.21	0.66	-0.32	0.10	0.00
Alberta	-0.43	0.11	0.00	-0.65	0.06	0.00
British Columbia	0.23	0.08	0.00	-0.07	0.03	0.04
Population 100,000-499,999	0.05	0.04	0.26	0.32	0.03	0.00
Population 30,000-99,999	0.02	0.05	0.62	0.37	0.03	0.00
Population 15,000-29,999	-0.09	0.09	0.32	0.15	0.05	0.00
Population <15,000	-0.18	0.05	0.00	0.28	0.03	0.00
Rural	-0.11	0.05	0.05	0.15	0.03	0.00
1993	-0.01	0.07	0.91	-0.01	0.05	0.84
1994	0.10	0.09	0.28	0.09	0.06	0.10
1995				0.14	0.08	0.07
1996				-0.05	0.07	0.48
Common Law x 1993	0.08	0.09	0.36	0.03	0.08	0.69
Common Law x 1994	-0.06	0.09	0.45	0.16	0.08	0.05
Common Law x 1995				0.45	0.08	0.00
Common Law x 1996				0.35	0.07	0.00
Single x 1993	0.44	0.11	0.00	0.33	0.09	0.00
Single x 1994	0.40	0.11	0.00	0.31	0.09	0.00
Single x 1995				0.34	0.09	0.00
Single x 1996				0.40	0.09	0.00
Age < 25 x 1993	-0.04	0.11	0.73	0.14	0.11	0.19
Age < 25 x 1994	-0.08	0.11	0.44	0.02	0.11	0.86
Age < 25 x 1995				0.11	0.11	0.31
Age < 25 x 1996				-0.05	0.10	0.63
Age 35-44 x 1993	0.11	0.09	0.21	0.12	0.07	0.06
Age 35-44 x 1994	0.07	0.09	0.43	0.12	0.06	0.06
Age 35-44 x 1995				0.16	0.06	0.01
Age 35-44 x 1996				0.13	0.06	0.04
Age 45-54 x 1993	0.14	0.17	0.42	0.41	0.13	0.00
Age 45-54 x 1994	-0.00	0.17	1.00	0.34	0.13	0.01
Age 45-54 x 1995				0.23	0.13	0.07
Age 45-54 x 1996				0.43	0.13	0.00

Notes: Sample size: 38,775 for t-1 and 61,745 for t+1. Earnings in 1997 dollars. Omitted category is age 25 to 34, with one child age 0-2, not of a minority language, living in a city of 500,000 or more in Ontario in 1984.

children. The estimated effect of welfare benefits in t-1 is substantial. A $1,000 increase in annual welfare benefits, which as indicated above is a 10% increase in many provinces for a lone mother with one child, yields about a 16 percentage point increase in the likelihood of welfare income which is a proportionate change of almost one-third starting from a value of 0.50. In spell years t+1 through t+5, however, this coefficient is much smaller in magnitude and usually not significant. Dooley (1999) estimated a statistically significant and substantial impact of welfare benefits (elasticity = 0.75) on the probability of welfare using a sample of lone mothers from a time-series of cross-sections in the Survey of Consumer Finances. What might account for these different findings? The SCF sample started in 1971 and ended in 1991 whereas our LAD sample extends from 1983 through 1997. The SCF provides more individual characteristics, in particular, education. The LAD, however, provides better information concerning spell year and previous marital status, and more accurate income data especially in the case of welfare income. As indicated above, social assistance income on the LAD covers 80 to 90 percent of all such payments made by the provinces but coverage is only 60% on the Survey of Consumer Finances.

The results for the unemployment coefficients are the opposite of those for welfare benefits. This coefficient is not significant in t-1 but is significant and of substantial magnitude in years t+1 through t+5. After the start of the lone motherhood spell, a one percentage point increase in the unemployment rate implies a 4-5 percentage point increase in the likelihood of welfare income. The provincial dummies estimates in t+1 imply that the likelihood of welfare use is much greater in Ontario controlling for other observed characteristics in particular welfare benefits and the unemployment rate. We find the same in spell years t+2 through t+5, but not prior to the status of lone motherhood in t-1. In spell years t+1 through t+5, the probability of welfare income is higher in areas of residence other than the omitted category (500,000 or more) but there is no clear ordering of the coefficients among these areas.

The within-cohort trends in the predicted probabilities of welfare income are presented in Figures 5.1 through 5.3 and Table 4-A. The initial (1992) likelihood of welfare income in spell year t-1 is, despite the recession, quite low (9-10%) for the women in a registered marriage with children. However, those in common law relationships with children have probabilities in t-1 of 30-35% which are similar to those

for single women. There is a sharp increase in welfare use during the transition to lone motherhood (from spell year t-1 to t+1) and this is particularly marked for the MC group. The increase in welfare use for all groups is consistent with Figures 1.1 through 1.3 which indicate a decline in the probability of earned income for all types of lone mothers during the transition to lone motherhood. For the MC group, of course, the especially sharp rise in welfare use reflects the especially sharp decline in income from other family members, namely that of the former husband.

Figure 5.1
Predicted Probability of Welfare Income, Previously Married with Children

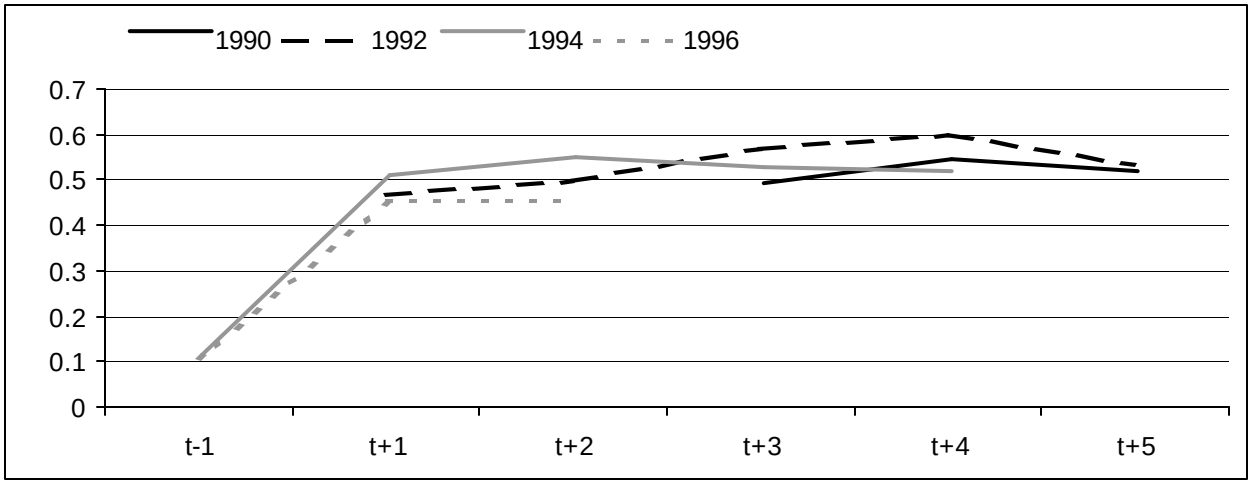


Figure 5.2
Predicted Probability of Welfare Income, Previously Common Law with Children

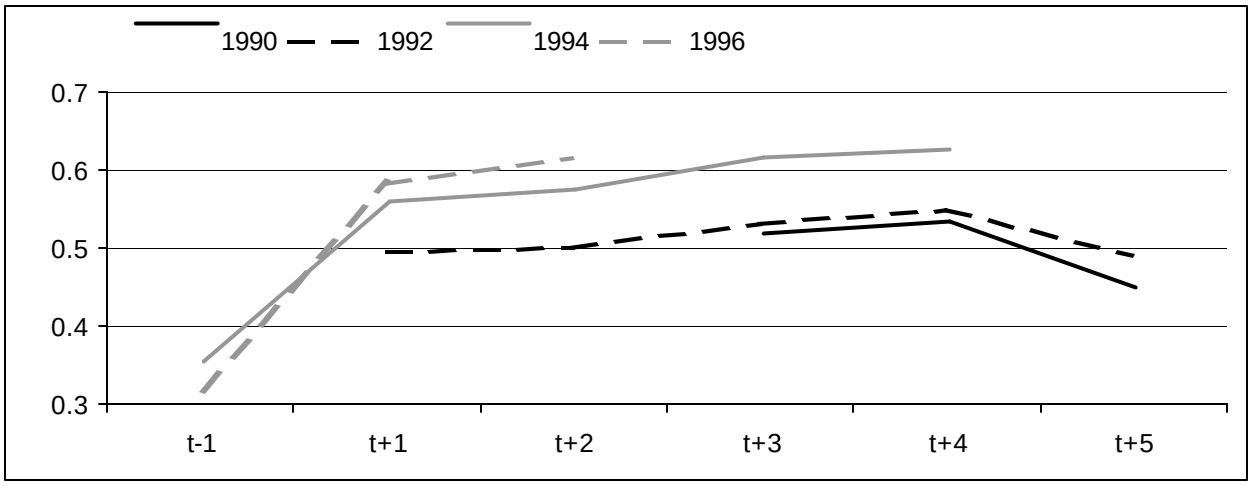
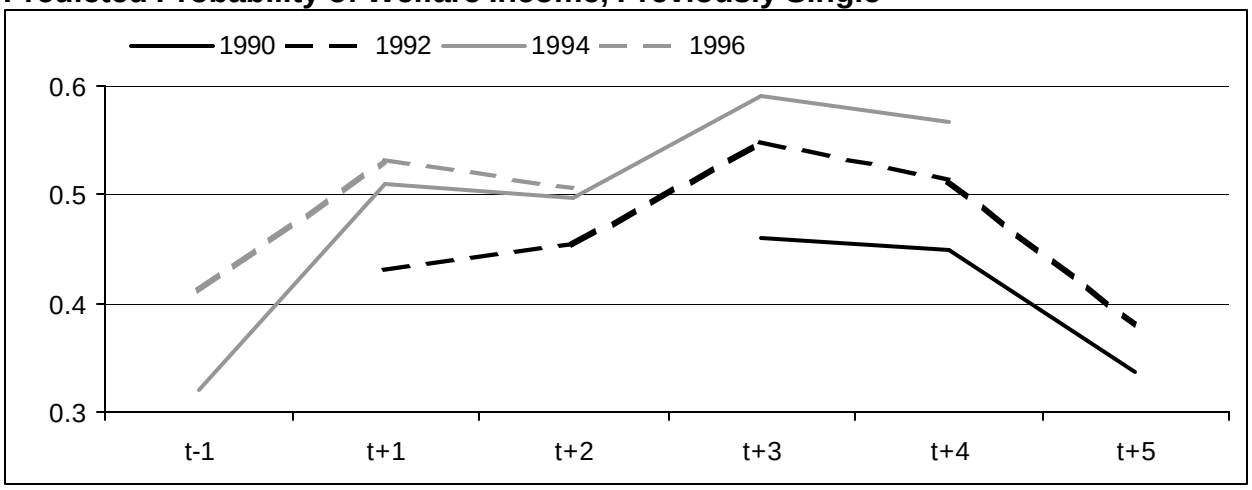


Figure 5.3
Predicted Probability of Welfare Income, Previously Single



Beyond t+1, inferences are hampered by the relatively few years over which we can observe welfare use. There would not appear to be strong support, however, for the hypothesis that welfare participation grows (or declines) steadily as each cohort spends another year in lone motherhood. More formal statistical tests confirm the image in Figures 5.1 through 5.3 that the only change from t+1 onwards which is of substantial magnitude and statistical significance is that between t+5 and the other spell years for the CLC and S groups.

The between-cohort trends in the predicted probabilities are presented in Figures 6.1 through 6.6 and Table 5-A. We have only three years (92-94) of welfare data for spell year t-1 and the only statistically significant trend in Figure 6.1 is the increase for the S group.[2] In spell years t+1 (Figure 6.2) through t+5 (Figure 6.6), we observe two basic trends: an increase in welfare use for all groups during the recession of the early 1990's and, over the entire data period, an increase in welfare use for the CLC and S groups relative to that of the MC group. This is consistent with our finding in Figures 2.1 through 2.6 of a decrease in the probability of earned income for the CLC and S groups relative to the MC group.

We undertook the same two checks for unobserved heterogeneity as in our earnings logits and regressions. The specification with a sample of completed spells indicated that women with longer spells of lone motherhood are more likely to have welfare income. The dummy variable coefficients, however,

often fail to achieve statistical significance and invariably indicate differences in the probability of welfare use of less than five percentage points. This finding is consistent with our inference that Figures 5.1 through 5.3 that there is no strong, consistent increase or decrease in welfare use after the transition to lone motherhood (year t+1). Both this check and the second one, which uses the sample of women with spells of lone motherhood of at least four full years, did not alter our basic conclusions as to changes over spell years, cohorts (calendar years) and between types of lone mothers.

Figure 6.1
Predicted Probability of Welfare Income, Spell Year t-1

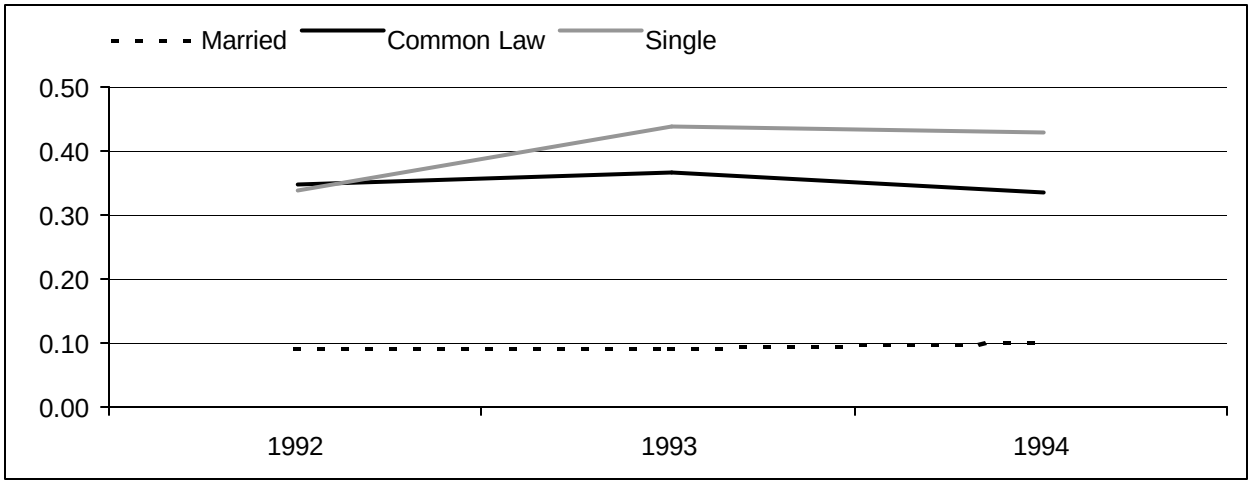
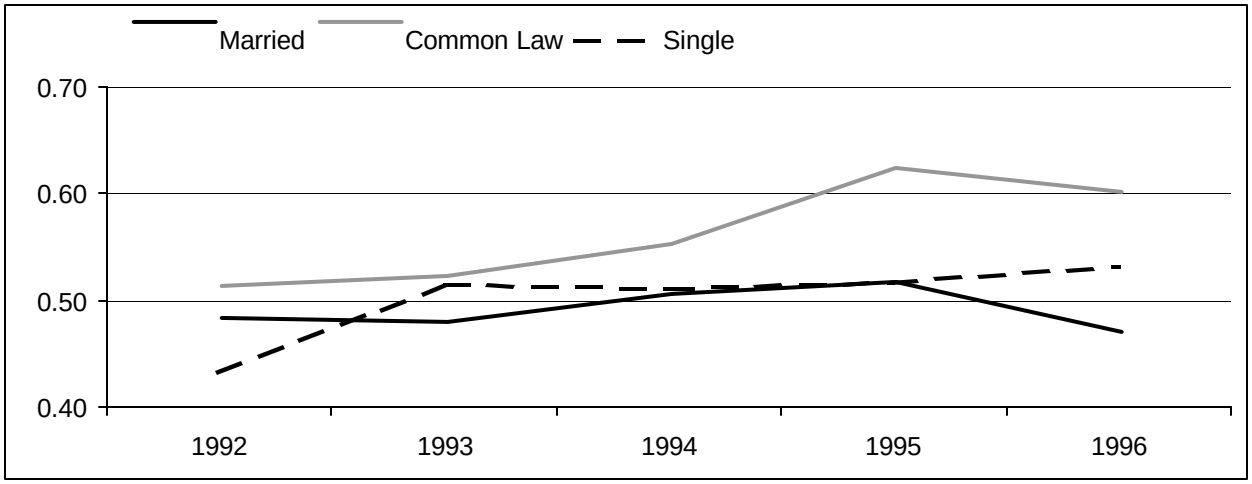


Figure 6.2
Predicted Probability of Welfare Income, Spell Year t+1



[2] The reason for this is that LAD data stop at 1997 and we have imposed the condition for sample inclusion that we observe the individual from spell year t-2 through t+2.

Figure 6.3
Predicted Probability of Welfare Income, Spell Year t+2

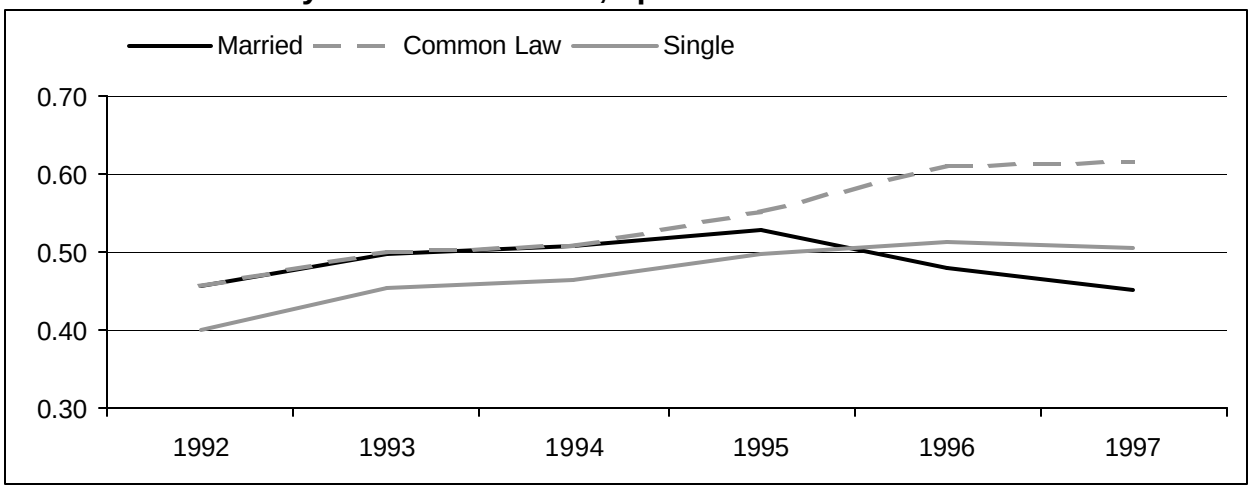


Figure 6.4
Predicted Probability of Welfare Income, Spell Year t+3

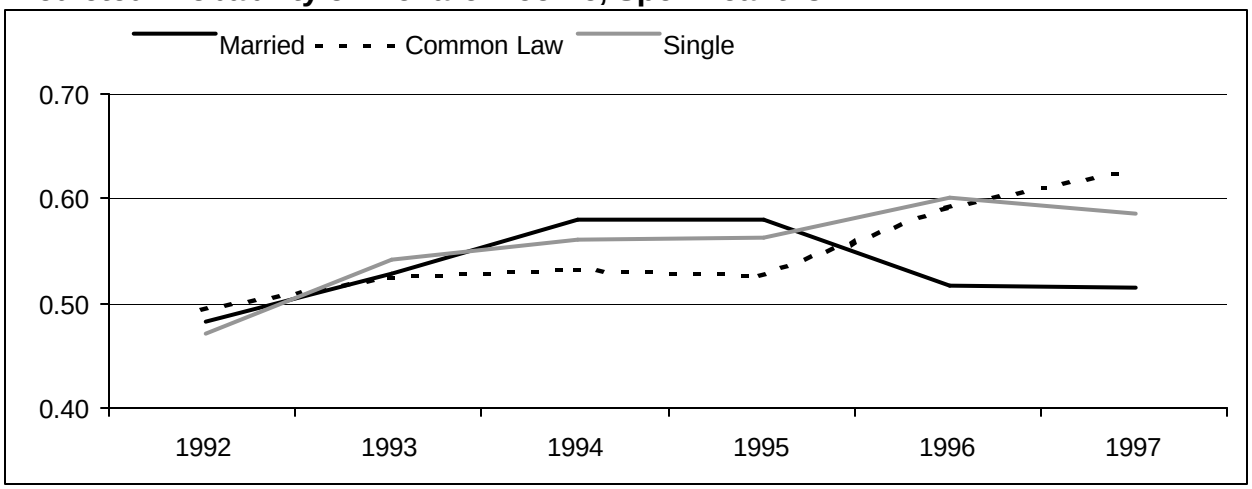


Figure 6.5
Predicted Probability of Welfare Income, Spell Year t+4

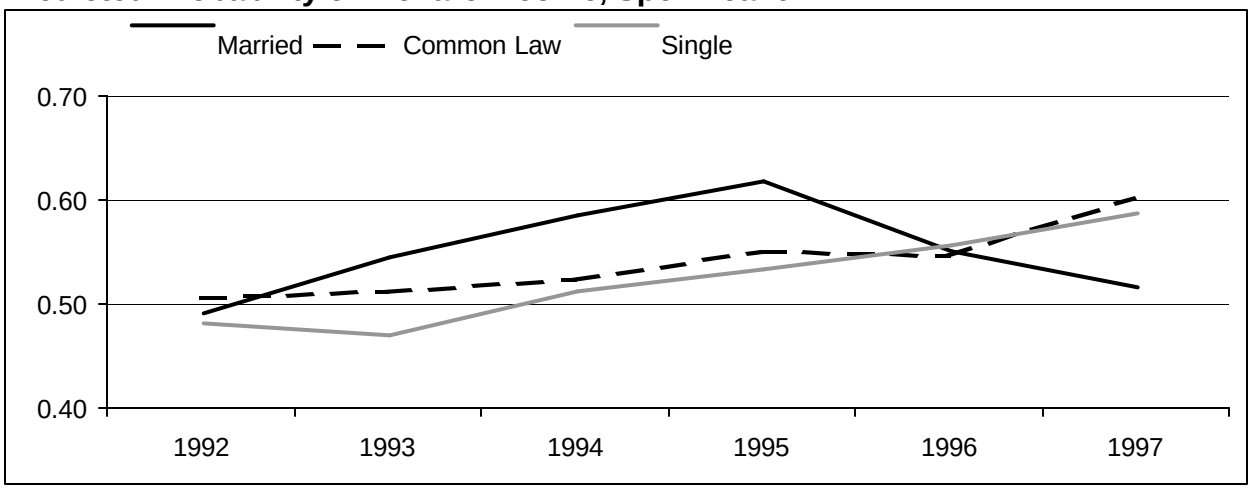
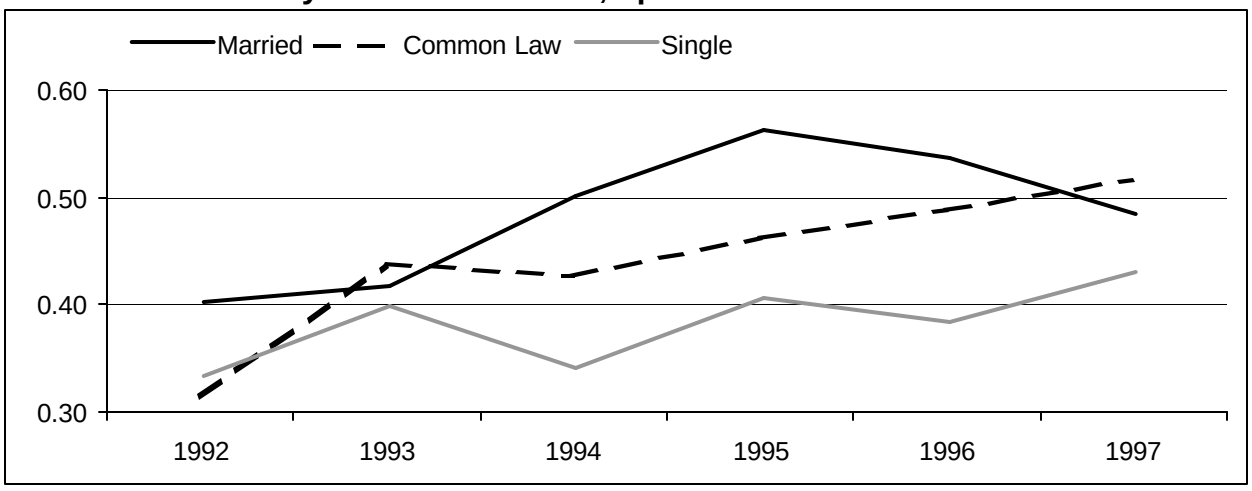


Figure 6.6
Predicted Probability of Welfare Income, Spell Year t+5



5. Conclusion

We use the Longitudinal Administrative Databank (LAD) to provide the first longitudinal analysis of the earnings, and labour force and welfare participation of Canadian lone mothers. We analyze trends in these outcomes both within and between cohorts of lone mothers. We focus, in particular, on differences between lone mothers based on previous marital status. Our data cover the first five full years of lone motherhood as well as the last full year prior to the spell of single parenthood. We also employ several checks to test for the sensitivity of our findings to unobserved heterogeneity but find that these do not alter our conclusions.

The LAD has a limited number of demographic control variables, but we generally find that labour force and welfare participation vary as one would expect with factors such as age of mother, age of youngest child, and number of children. The unemployment rate generally has the expected effects, but the level of welfare benefits has a strong impact on labour force participation only during the year prior to lone motherhood. Our results imply that the paid work and welfare use of lone mothers are more sensitive to personal characteristics and the labour market than to the available level of benefits.

Net of controls for these demographic factors, the transition to lone motherhood involves a decline in the probability of any earned income, not just for the previously single, but also for the previously married with children and the previously common law with children. During the first five years of lone motherhood, the likelihood of earned income continues to decline modestly or remains stable. The most noticeable feature of our findings is the change across cohorts. In all spell years and in the year prior to lone motherhood, the likelihood of earned income for the previously single declined over our sample period both in absolute terms and relative to that for the previously married with children.

Among persons with earned income, the transition to lone motherhood involves an increase in annual earnings for the previously married and common law. During the first five years of lone motherhood, changes in earnings among those with earned income are not always monotonic from year to year but generally indicate moderate increases over the spell of lone motherhood. Our most consistent finding is that between cohorts there is a decrease in predicted earnings among the previously single both in real

dollars and relative to the previously married. This decline is found in the year before entry into lone parenthood as well as in each year afterward.

Our data for social assistance income date only from 1992 and our estimates for this outcome are correspondingly less precise. About one-third of the previously common law or previously single women in our sample do report some such income in the last full year before becoming a lone mother. As with labour force participation, the unemployment rate generally has the expected effects on welfare participation, but the level of welfare benefits has a strong impact only during the year prior to lone motherhood. The transition to lone motherhood entails a sharp increase in welfare use for all types of women. There is not strong support, however, for the assertion that welfare participation grows (or declines) steadily with the length of the spell of lone motherhood. Once again our most consistent finding is the increase in the probability of welfare income for the previously common law and the previously single relative to that of the previously married.

The clearest picture painted in this paper is that of a deterioration across cohorts of the previously common law and especially of the previously single lone mothers in term of their reliance on earned income and welfare income. Some previous studies based on cross-sectional data have noted this difference between lone mothers based on prior family status. This current paper, however, shows that this is a relatively recent but growing phenomena which persisted into the recovery of 1990's, and that this change is as true of the last full year prior to the start of the spell of lone motherhood as it is of the single parent spell. Hence, it appears to be due to the pre-existing characteristics of these women rather than some modification of the transition process between these demographic states.

Appendix

Table 1-A

Frequencies of Starting Spells by Type and Age of Lone Mother

	1984	***1985***	***1986***	***1987***	***1988***	***1989***	***1990***	***1991***	***1992***	***1993***	***1994***	***1995***	***Total***
Married, Children	7,280	7,920	7,520	7,390	7,980	7,910	8,350	9,440	9,570	9,590	9,390	10,070	102,410
Common Law, Children	800	1,160	1,090	500	710	1,310	1,330	1,930	1,810	2,540	3,470	4,050	20,700
Unattached	800	1510	1,590	1,450	1,510	1,580	1,600	1,840	1,710	1,740	1,660	1,560	18,550
Filing Child	400	550	610	590	730	790	840	990	780	680	620	620	8,200
Married or Common Law, No Children	90	170	170	150	160	200	230	290	250	250	330	240	2,530
Total	9,370	11,310	10,980	10,080	11,090	11,790	12,350	14,490	14,120	14,800	15,470	16,540	152,390
<20	140	140	110	130	150	230	220	260	210	200	210	210	2,210
20-24	1,700	2,040	1,880	1,690	1,900	1,890	1,970	2,390	2,020	2,000	2,100	2,220	23,800
25-29	2,070	2,820	2,600	2,370	2,570	2,690	2,750	3,010	2,790	2,760	2,850	2,960	32,240
30-34	2,090	2,510	2,430	2,240	2,530	2,750	2,880	3,500	3,390	3,590	3,820	3,990	35,720
35-39	1,800	2,040	2,010	1,840	2,080	2,230	2,460	2,750	3,000	3,180	3,370	3,600	30,360
40-44	930	1,140	1,260	1,190	1,270	1,400	1,470	1,780	1,850	2,040	2,070	2,400	18,800
45-54	650	620	680	620	600	600	610	810	860	1,020	1,040	1,160	9,270

Table 2-A

Predicted Probability of Positive Earnings and Predicted Earnings, Positive Earners By Type of Lone Mother*

	Predicted Probability of Positive Earnings						Predicted Earnings (Given Positive Earnings)					
Year of	Married											
t+1	*t-1*	*t+1*	*t+2*	*t+3*	*t+4*	*t+5*	*t-1*	*t+1*	*t+2*	*t+3*	*t+4*	*t+5*
1985	0.70	0.67	0.62	0.59	0.58	0.56	17,978	21,808	21,196	21,420	22,454	22,679
1986	0.72	0.70	0.63	0.58	0.60	0.58	18,190	22,065	21,535	22,336	22,308	20,828
1987	0.75	0.71	0.63	0.58	0.60	0.61	18,246	22,422	22,237	22,610	22,742	22,808
1988	0.77	0.69	0.64	0.59	0.61	0.58	17,513	22,909	22,275	22,691	23,060	23,210
1989	0.79	0.72	0.67	0.63	0.63	0.58	18,310	23,670	22,578	22,517	23,358	23,216
1990	0.80	0.72	0.66	0.60	0.59	0.55	18,359	23,473	22,624	23,122	23,324	23,116
1991	0.79	0.70	0.63	0.57	0.56	0.54	17,882	22,361	22,144	22,048	22,559	22,030
1992	0.79	0.68	0.59	0.54	0.54	0.54	17,485	22,162	21,716	21,994	22,155	21,403
1993	0.80	0.69	0.60	0.55	0.57	0.60	17,810	22,073	21,828	21,719	22,731	22,042
1994	0.79	0.67	0.60	0.58	0.61		18,015	22,619	21,916	21,708	22,079	
1995	0.78	0.69	0.64	0.62			18,242	22,900	22,204	23,225		
1996	0.75	0.70	0.66				18,431	22,389	22,040			
	Common Law											
t+1	*t-1*	*t+1*	*t+2*	*t+3*	*t+4*	*t+5*	*t-1*	*t+1*	*t+2*	*t+3*	*t+4*	*t+5*
1985	0.71	0.62	0.58	0.52	0.53	0.52	19,008	23,390	21,433	21,788	22,920	21,501
1986	0.71	0.68	0.63	0.60	0.57	0.53	18,773	21,386	20,408	20,426	21,685	23,269
1987	0.81	0.74	0.72	0.64	0.62	0.58	20,052	23,515	21,911	22,255	23,270	23,520
1992	0.66	0.62	0.56	0.52	0.50	0.47	18,338	21,805	20,340	19,810	20,595	20,197
1993	0.64	0.62	0.59	0.55	0.52	0.49	17,609	21,510	19,893	20,045	20,772	21,209
1994	0.65	0.60	0.56	0.52	0.52		17,403	21,264	20,334	19,978	20,729	
1995	0.59	0.54	0.49	0.46			16,623	19,796	18,385	18,080		
1996	0.64	0.57	0.52				16,735	20,456	19,266			
	Single											
t+1	*t-1*	*t+1*	*t+2*	*t+3*	*t+4*	*t+5*	*t-1*	*t+1*	*t+2*	*t+3*	*t+4*	*t+5*
1985	0.94	0.75	0.75	0.67	0.64	0.64	22,723	23,182	24,737	23,022	23,833	24,485
1986	0.89	0.74	0.75	0.64	0.66	0.65	21,870	22,047	23,218	20,935	22,648	25,609
1987	0.92	0.76	0.77	0.67	0.68	0.68	21,726	21,950	23,272	21,753	24,124	26,480
1988	0.92	0.72	0.73	0.63	0.64	0.65	21,932	21,602	22,873	20,121	21,768	23,582
1989	0.83	0.67	0.65	0.59	0.59	0.61	21,216	19,938	22,313	20,123	22,057	23,297
1990	0.87	0.67	0.68	0.57	0.59	0.60	21,886	20,416	22,387	20,911	22,895	25,142
1991	0.86	0.68	0.69	0.59	0.60	0.57	22,081	20,792	21,571	19,615	21,087	23,667
1992	0.85	0.65	0.69	0.57	0.57	0.59	22,150	20,913	21,936	20,323	22,159	23,246
1993	0.76	0.60	0.63	0.51	0.52	0.52	20,459	19,969	20,745	19,866	20,925	22,523
1994	0.75	0.61	0.63	0.52	0.53		20,330	19,402	20,583	18,811	21,091	
1995	0.75	0.59	0.62	0.51			19,710	18,922	21,095	18,742		
1996	0.78	0.61	0.63				20,294	19,575	21,856			

*Earnings in 1997 dollars. Lone mother is assumed to be age 25 to 34, with one child age 2 or less who does not belong to a minority language group and does lives in a city of 500,000 or more in Ontario. Welfare benefits are assumed to be $15,000 and the unemployment rate is 8%.

Table 3-A

Predicted Probability of Positive Earnings and Predicted Earnings, Positive Earners, By Spell Year

Predicted Probability of Positive Earnings				Predicted Earnings (Given Positive Earnings)			
	Married	*Common Law*	*Single*		*Married*	*Common Law*	*Single*
Spell Year t-1							
1983	0.70	0.71	0.94	1983	17,978	19,008	22,723
1984	0.72	0.71	0.89	1984	18,190	18,773	21,870
1985	0.75	0.81	0.92	1985	18,246	20,052	21,726
1986	0.77	0.83	0.92	1986	17,513	20,299	21,932
1987	0.79	0.70	0.83	1987	18,310	19,082	21,216
1988	0.80	0.68	0.87	1988	18,359	17,863	21,886
1989	0.79	0.68	0.86	1989	17,882	18,180	22,081
1990	0.79	0.66	0.85	1990	17,485	18,338	22,150
1991	0.80	0.64	0.76	1991	17,810	17,609	20,459
1992	0.79	0.65	0.75	1992	18,015	17,403	20,330
1993	0.78	0.59	0.75	1993	18,242	16,623	19,710
1994	0.75	0.64	0.78	1994	18,431	16,735	20,294
Spell Year t+1							
1985	0.67	0.62	0.75	1985	21,808	23,390	23,182
1986	0.70	0.68	0.74	1986	22,065	21,386	22,047
1987	0.71	0.74	0.76	1987	22,422	23,515	21,950
1988	0.69	0.77	0.72	1988	22,909	23,059	21,602
1989	0.72	0.66	0.67	1989	23,670	21,174	19,938
1990	0.72	0.65	0.67	1990	23,473	20,124	20,416
1991	0.70	0.64	0.68	1991	22,361	21,043	20,792
1992	0.68	0.62	0.65	1992	22,162	21,805	20,913
1993	0.69	0.62	0.60	1993	22,073	21,510	19,969
1994	0.67	0.60	0.61	1994	22,619	21,264	19,402
1995	0.69	0.54	0.59	1995	22,900	19,796	18,922
1996	0.70	0.57	0.61	1996	22,389	20,456	19,575
Spell Year t+2							
1986	0.62	0.58	0.75	1986	21,196	21,433	24,737
1987	0.63	0.63	0.75	1987	21,535	20,408	23,218
1988	0.63	0.72	0.77	1988	22,237	21,911	23,272
1989	0.64	0.73	0.73	1989	22,275	22,808	22,873
1990	0.67	0.58	0.66	1990	22,578	21,450	22,313
1991	0.66	0.57	0.68	1991	22,624	19,848	22,387
1992	0.63	0.58	0.69	1992	22,144	20,719	21,571
1993	0.59	0.56	0.69	1993	21,716	20,340	21,936
1994	0.60	0.59	0.63	1994	21,828	19,893	20,745
1995	0.60	0.56	0.63	1995	21,916	20,334	20,583
1996	0.64	0.49	0.62	1996	22,204	18,385	21,095
1997	0.66	0.52	0.63	1997	22,040	19,266	21,856
Spell Year t+3							
1987	0.59	0.52	0.67	1987	21,420	21,788	23,022
1988	0.58	0.60	0.64	1988	22,336	20,426	20,935
1989	0.58	0.64	0.67	1989	22,610	22,255	21,753
1990	0.59	0.69	0.63	1990	22,691	22,596	20,121
1991	0.63	0.55	0.59	1991	22,517	21,400	20,123
1992	0.60	0.56	0.57	1992	23,122	19,307	20,911

Spell Year t+3 (continued)

Predicted Probability of Positive Earnings				Predicted Earnings (Given Positive Earnings)			
	Married	*Common Law*	*Single*		*Married*	*Common Law*	*Single*
1993	0.57	0.60	0.59	1993	22,048	19,626	19,615
1994	0.54	0.52	0.57	1994	21,994	19,810	20,323
1995	0.55	0.55	0.51	1995	21,719	20,045	19,866
1996	0.58	0.52	0.52	1996	21,708	19,978	18,811
1997	0.62	0.47	0.51	1997	23,225	18,080	18,742
Spell Year t+4							
1988	0.58	0.53	0.64	1988	22,454	22,920	23,833
1989	0.60	0.57	0.66	1989	22,308	21,685	22,648
1990	0.60	0.62	0.68	1990	22,742	23,270	24,124
1991	0.61	0.69	0.64	1991	23,060	23,406	21,768
1992	0.63	0.54	0.59	1992	23,358	22,084	22,057
1993	0.59	0.53	0.59	1993	23,324	20,338	22,895
1994	0.56	0.56	0.60	1994	22,559	20,555	21,087
1995	0.54	0.50	0.57	1995	22,155	20,595	22,159
1996	0.57	0.52	0.52	1996	22,731	20,772	20,925
1997	0.61	0.52	0.53	1997	22,079	20,729	21,091
Spell Year t+5							
1989	0.56	0.52	0.64	1989	22,679	21,501	24,485
1990	0.58	0.53	0.65	1990	20,828	23,269	25,609
1991	0.61	0.58	0.68	1991	22,808	23,520	26,480
1992	0.58	0.72	0.65	1992	23,210	24,845	23,582
1993	0.58	0.55	0.61	1993	23,216	21,931	23,297
1994	0.55	0.52	0.60	1994	23,116	21,137	25,142
1995	0.54	0.51	0.57	1995	22,030	20,728	23,667
1996	0.54	0.47	0.59	1996	21,403	20,197	23,246
1997	0.60	0.49	0.52	1997	22,042	21,209	22,523

Notes: Earnings in 1997 dollars. Lone mother is assumed to be age 25 to 34, with one child age 2 or less who does not belong to a minority language group and does lives in a city of 500,000 or more in Ontario. Welfare benefits are assumed to be $15,000 and the unemployment rate is 8%.

Table 4-A

Predicted Probability of Welfare Income By Lone Mother Type

Year of	Married					
t+1	*t-1*	*t+1*	*t+2*	*t+3*	*t+4*	*t+5*
1988						0.40
1989					0.47	0.41
1990				0.47	0.52	0.50
1991			0.46	0.52	0.57	0.56
1992		0.46	0.50	0.57	0.60	0.53
1993		0.46	0.51	0.57	0.53	0.48
1994	0.09	0.49	0.53	0.51	0.50	
1995	0.09	0.50	0.48	0.50		
1996	0.10	0.45	0.45			
Year of	**Common Law**					
t+1	*t-1*	*t+1*	*t+2*	*t+3*	*t+4*	*t+5*
1988						0.32
1989					0.51	0.44
1990				0.49	0.51	0.43
1991			0.46	0.52	0.52	0.46
1992		0.50	0.50	0.53	0.55	0.49
1993		0.50	0.51	0.53	0.55	0.52
1994	0.33	0.54	0.55	0.59	0.60	
1995	0.35	0.61	0.61	0.63		
1996	0.32	0.58	0.61			
Year of	**Single**					
t+1	*t-1*	*t+1*	*t+2*	*t+3*	*t+4*	*t+5*
1988						0.33
1989					0.46	0.39
1990				0.46	0.45	0.34
1991			0.40	0.53	0.49	0.40
1992		0.43	0.46	0.55	0.51	0.38
1993		0.51	0.46	0.55	0.54	0.43
1994	0.32	0.51	0.50	0.59	0.57	
1995	0.42	0.52	0.51	0.57		
1996	0.41	0.53	0.51			

Notes: Lone mother is assumed to be age 25 to 34, with one child age 2 or less who does not belong to a minority language group and does lives in a city of 500,000 or more in Ontario. Welfare benefits are assumed to be $15,000 and the unemployment rate is 8%.

Table 5-A

Predicted Probability of Welfare Income By Spell Year

	Married	Common Law	Single
Spell Year t-1			
1992	0.09	0.33	0.32
1993	0.09	0.35	0.42
1994	0.10	0.32	0.41
Spell Year t+1			
1992	0.46	0.50	0.43
1993	0.46	0.50	0.51
1994	0.49	0.54	0.51
1995	0.50	0.61	0.52
1996	0.45	0.58	0.53
Spell Year t+2			
1992	0.46	0.46	0.40
1993	0.50	0.50	0.46
1994	0.51	0.51	0.46
1995	0.53	0.55	0.50
1996	0.48	0.61	0.51
1997	0.45	0.61	0.51
Spell Year t+3			
1992	0.47	0.49	0.46
1993	0.52	0.52	0.53
1994	0.57	0.53	0.55
1995	0.57	0.53	0.55
1996	0.51	0.59	0.59
1997	0.50	0.63	0.57
Spell Year t+4			
1992	0.47	0.51	0.46
1993	0.52	0.51	0.45
1994	0.57	0.52	0.49
1995	0.60	0.55	0.51
1996	0.53	0.55	0.54
1997	0.50	0.60	0.57
Spell Year t+5			
1992	0.40	0.32	0.33
1993	0.41	0.44	0.39
1994	0.50	0.43	0.34
1995	0.56	0.46	0.40
1997	0.48	0.52	0.43

Notes: Lone mother is assumed to be age 25 to 34, with one child age 2 or less who does not belong to a minority language group and does lives in a city of 500,000 or more in Ontario. Welfare benefits are assumed to be $15,000 and the unemployment rate is 8%.

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