



*Canadian International
Labour Network*

Labour Market Outcomes:

A Cross-National Study

CILN is a collaborative research venture between the Social Sciences and Humanities Research Council (SSHRC) and McMaster University. Additional funding is provided by the University of British Columbia, the University of Toronto, Queen's University, York University and Human Resources Development Canada (HRDC).

McMaster University

DEPARTMENT OF ECONOMICS

**THE EVOLUTION OF WELFARE PARTICIPATION
AMONG CANADIAN LONE MOTHERS FROM 1973 - 1991**

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June 1998

I. Introduction.

The objective of this paper is to analyse changes in the welfare participation of Canadian lone mothers between 1973 and 1991.¹ Social assistance (SA) reform has been high on the policy agenda due in part to the rapid growth in caseloads during the most recent recession. This concern has earlier roots, however, in the late 1980's when there was little or no decline in the welfare rolls despite a large drop in unemployment (National Council of Welfare 1992b). This latter fact, in particular, suggested a possible growth in “welfare dependency” independent of the business cycle. This paper seeks to shed additional light on this issue. Have Canadians become more reliant on social assistance? If so, was this growing reliance due to cyclical or non-cyclical labour market phenomena such as weak or negative wage growth among young workers? What have been the roles of changes in SA policy or in demographic factors such as fertility or marital behaviour?

These policy questions have generated a large literature in other countries, especially the U.S. (Moffitt 1992). The Canadian literature is growing but still relatively small. This is the first study of Canadian welfare participation which uses a time series of national cross-sections. I limit my analysis to lone mothers, but not because they are responsible for all or most of the growth in the welfare caseload. Indeed, other groups, especially unattached individuals, have had more rapidly increasing SA usage as I show below. One reason for my focus on lone-mother families is that, despite recent trends, they remain, with the exception of the disabled, the group most reliant on welfare, , reliant with respect to participation rate, spell length (Barrett and Cragg 1998) and proportion of income derived from SA (Dooley 1994a). A second reason is that lone-mother families contain a large and growing fraction of poor Canadian children (Dooley 1994b). Rising levels of SA use may signal further deterioration in the socioeconomic prospects of these children. Any serious attempt to understand child poverty must consider the role which welfare plays in the lives of lone-mother families.

My first specific objective is to assess the change in welfare usage between 1973 and 1991 as measured primarily by the proportion of lone mothers who report any SA income in a given year. This exercise reveals that the concern with rising welfare dependency is neither entirely misplaced nor a simple story. Lone mothers under age 35

do show an increasing reliance on SA income accompanied by stagnant wages and declining market work. However, the opposite is true of lone mothers age 35 and over.

My second objective is to account for the observed changes in welfare use using a simple economic-demographic probit model of welfare participation. The resulting estimates are both consistent with theoretical expectations and capable of accounting for a substantial portion of the very different trends for older and younger lone mothers. The rising welfare use among younger lone mothers can be explained in part by a decline in wages relative to welfare benefits accompanied by a mixed pattern of demographic change (fewer children but more never married mothers). Declining welfare use among older lone mothers can be explained in part by decreasing family size and increasing education accompanied by market wages which grew at the same rate as welfare benefits. Section II of the paper contains a literature review. The data are discussed in Section III. Section IV describes the trends in welfare participation and the possible determinants thereof. In Section V, I report estimates of a probit model of welfare participation and assess the model's capacity to account for the very different SA trends among younger and older lone mothers. Section VI provides a summary.

II. Previous Studies

A brief review of the comparative statics of welfare participation will be helpful prior to a discussion of the literature. [See Charette and Meng (C & M ,1994) for a detailed, graphical exposition.] Two welfare policy parameters influence the budget set: the guarantee and the tax rate. The guarantee or basic assistance (BA) is the welfare payment if the client has no other source of income. The national average for a lone mother with one child was \$11,000 in 1991 (National Council of Welfare 1992). The implicit (or negative) welfare tax is zero on some minimal level of monthly earnings referred to as the "earned income exemption" (EIE) or "set aside". This ranged in value from \$30-\$200 per month in 1991. The tax on earnings beyond the exemption or "marginal tax rate" (MTR) ranges from 75% to 100% (National Council of Welfare 1993). The "break even" is the level of earnings at which the welfare payment is reduced to zero which, in a simple system, is equal to $EIE + (BA/MTR)$.

The probability that a randomly selected individual qualifies for SA is an increasing function of the level of basic assistance and the earnings exemption, and a decreasing function of the marginal tax rate. Individuals with higher hourly wages will reach the break even at fewer hours of market work, thereby making the probability of welfare participation a decreasing function of market wages.

Canadian research on SA use remains small in comparison with that on (un)employment insurance, but has grown in the last five years. Analyses of provincial caseload growth with aggregate data [Fortin (1995, 1997), Brown (1995), Hermanutz and Smith (1996), and Stewart and Dooley (1998a)] have generally found that SA usage is statistically associated with the levels of unemployment, welfare benefits and UI eligibility restrictions in the manner suggested by the theory.

Charette and Meng (C & M 1994) use cross-sectional survey data from the 1989 Labour Market Activity Survey (LMAS) to study welfare participation among all lone female heads of households including the childless. They estimate that a 10% increase in either basic assistance or the earned income exemption would lead to an increase of 2-3 percentage points in the proportion of female heads who receive SA in any given year. Their coefficient for the marginal welfare tax is very imprecisely estimated possibly due to the small variation in this variable. C & M also find that welfare participation income is more likely for females heads with the following characteristics : low wages, little schooling, large numbers of children, a pre-school age child and the marital status of "never married". Allen (1993) obtains a similar coefficient for basic assistance with the 1986 Census Individual Public Use Sample despite the fact that his sample includes most women and he lacks measures for wages, the earnings exemption and the welfare tax.²

Christofides, Stengos and Swidinsky (1997) estimate a bivariate probit model of welfare participation and labour supply using the same LMAS data as C & M. They find that market wages and personal characteristics (age, education and the number and ages of children) have strong associations with the dependent variables but that welfare program parameters, especially basic assistance, do not in both the bivariate and univariate specifications. Possible explanations as to why Christofides et al. and C & M report such disparate estimates with the same data set include differences in sample composition and variable measurement, especially policy parameters.

The current paper provides the first model of Canadian welfare participation estimated with a time-series of cross-sections. A recent U.S. study highlights the potential importance of moving from a single cross-section to a time-

series. Moffitt (1994) found that the strongly positive association between the state level of welfare (AFDC) benefits and the likelihood that a woman is a lone mother, which he and others had found in single cross-sections, disappeared or even reversed in sign when he used a time-series of cross-sections and included a state fixed effect in his model. His interpretation is that the large welfare effects estimated in a single cross-section may reflect omitted variable bias in that more liberal states may both legislate higher benefits and attach less stigma to lone-motherhood. One motivation for the current paper is to see if a Canadian time-series of cross-sections provides estimates similar to those obtained in a single cross section.³

A third vein of research uses provincial administrative caseload data to study the dynamics of SA use. These studies include British Columbia (Barrett [1996], Barrett and Cragg [1998]), Quebec (Fortin, Lacroix and Roberge [1996], Fortin, Lacroix and Thibault [1997]) and Ontario (Stewart and Dooley [1998b]). Such data shed light on the determination of welfare spell length, but can not be used to model welfare participation due to the lack of information on non-clients.

A final form of welfare study is the Self-Sufficiency Project (SSP) which is a demonstration project in British Columbia and New Brunswick designed to determine the impact on market work and welfare use of a substantial earnings supplement tied to a full-time work requirement. Eligibility is limited to lone mothers who have been on SA for at least one year. At eighteen months into the project, Card and Robins (1996) report that treatment group members, relative to controls, have significantly higher employment rates, earnings and total income (earnings plus SSP payments plus welfare) and lower welfare participation.

III. Data Sources

The data used in this study are from the economic family files of the Survey of Consumer Finances (SCF) for the income years 1973, 1975, 1979, 1982, 1989, 1990 and 1991. As with other survey data (LMAS, Census), the only welfare information in the SCF files is a variable reporting the amount of income from "Social Assistance and Provincial Income Supplements". Virtually all of the income in this category for lone mothers is welfare because provincial income

supplements for families with children are reported under a different SCF category. The measure of welfare participation used in this paper is the presence or not any such income during the past year.

Statistics Canada reports, and my own calculations confirm, that welfare income is under-reported on the SCF (and other surveys). The SCF estimates of aggregate "social assistance and provincial income supplements" during the 1980's are 65%-70% of the expenditures reported by the provinces (Health and Welfare Canada 1984 et al.). However, the number of SCF respondents under age 65 who reported positive annual amounts of "social assistance and provincial income supplements" is about 85%-90% of the average quarterly caseload reported by the provinces (Health and Welfare Canada 1984 et al.). Hence, the impact of under-reporting on this binary variable appears to be less severe than on the amount of SA income.⁴ Furthermore, the degree of under-reporting appears to be stable over time which permits the SCF data to measure accurately the changes in welfare participation. I also show below that trends in the incidence of SA income are very consistent with trends in earnings and weeks worked which are known to be accurately reported in the SCF. A final rationale is that there are no alternative data which are both superior and accessible.

I divide the seven years of data into three periods. The first period contains the earliest economic family files which are for 1973 and 1975. The second period provides a midpoint with data for 1979 and 1982. The third period contains the data for 1989, 1990 and 1991. Each of these three periods contains one year with relatively strong labour market conditions and one year with relatively weak labour market conditions. In each of these seven years, I selected lone female heads, age less than 60, of families with children under 18.⁵ Due to the key role of market wages, I also excluded the few lone mothers who were classified as self-employed.⁶ Table 1-A shows the size of the full sample and the wage regression sample.

A separate analysis for lone mothers is justified given the large and persistent differences between this group and other women in welfare participation, market work and income (Dooley 1994a). However, I take the lone mother population as given, as do other authors, and do not attempt to model the marital and fertility behaviour which governs the selection process into lone motherhood. One reason for concern with this assumption is that the selection process into and out of lone motherhood may have changed over time causing my welfare participation probit estimates to reflect, in part, the impact of independent variables on the composition of the population of lone mothers. The identification of a more complete model of welfare use and lone mother status is not possible with currently available

data and must await future research. There is some evidence, however, that this selection problem may not be too severe.

The top panel of Table 2-A shows that the proportion of all mothers who are lone mothers did increase from 8% to 14%. The middle panel, however, shows that the increase in the proportion of all Canadian women who are lone mothers was only from 5% to 7% overall and that there was no increase among women age 35 and over. This seeming contradiction is explained by the bottom panel which shows that the proportion of women who are married mothers decreased sharply, especially for the older group. The middle panel of Table 2-A is consistent with a stable selection process of women into lone motherhood.

There are two published Canadian studies concerning lone mother status and welfare policy. Hum and Choudhry (1992) used data from the Manitoba Mincome Experiment to estimate the association between the "generosity" of a negative income tax and marital stability. However, their estimates are very imprecise and their qualitative findings are hard to interpret. Allen (1993) used the 1986 Census Public Use File and estimated an extremely large (elasticity equal to 10.7) coefficient for the impact of provincial welfare benefits on the likelihood that a woman is a lone mother.

Dooley, Lefebvre and Merrigan (1997) have recently estimated a model of lone female headship using the (Individual) Survey of Consumer Finances for the years 1981-1994. Like Moffitt (1994), we find that the coefficients for welfare benefits were invariably insignificant (and often of the unexpected sign) in a model with provincial fixed effects. This finding is also consistent with the assumption in this paper that estimated impacts of welfare policy on SA use do not primarily reflect sample selection effects.

IV. Trends in Social Assistance Use and Its Determinants

IV.1. Social Assistance Use

The principal SA trends to be considered in this paper are presented in the top panel of Table 1. The proportion of all lone mothers who report SA income was unchanged at 39%-40% over the sample period, but this overall stability

conceals an important age difference. The proportion of lone mothers under age 35 with SA income rose by 11-13 percentage points whereas this same fraction fell from 36% to 29% among those age 35 and over.⁷

The constancy in the overall SA participation rate of lone mothers indicates that this group was likely not the principal source of the growth in the caseload over this period. The second panel of Table 1 provides the welfare participation rate for unattached individuals, couples with children, childless couples and lone fathers. The proportion of each group reporting social assistance income grew over time with unattached individuals and lone fathers showing the largest increases (in percentage points). As with lone mothers, younger singles and husbands generally exhibit the larger increases than older ones (not shown here). However, there is no case of a decline in welfare participation in the 35-59 age category other than in the case of lone mothers..

The final two panels of Table 1 show two consequences of more rapid growth in SA use among unattached individuals and couples than among lone mothers. The next-to-last panel shows that proportion of all SA income reporters who are lone mothers fell from one-third in 1973/1975 to one-quarter in 1989/1990/1991. The bottom panel indicates that the proportion of all welfare income reported in the SCF which was reported by lone mothers also fell from 47% to 33%. Note that the explanation for these last two panels in Table 1 is not that lone mothers were a declining proportion of all family heads because the opposite was true. The explanation lies in the more rapid growth in welfare use among other individuals and families.

We now return to a focus on lone mothers. Table 2 shows further differences in income sources between younger and older lone mothers. The first panel indicates that the fraction of income derived from SA increased from 41% to 48% among the youngest lone mothers, was constant (28%-29%) among mothers age 25-34, and declined from 21% to 16% among mothers age 35 and over. These age differences are even larger when considering the fraction of income derived from all government transfers in the second panel. This proportion grew by 12 and 8 percentage points among mothers age under 25 and 25-34 respectively, but fell by 7 points among the oldest age group. The main source of non-transfer income for these families is the head's earnings. The bottom panel of Table 2 shows that both lone mothers under age 25 and those over age 34 earned about one-third of their total family income in 1973/1975. By the end of the sample period, however, this fraction had fallen to almost one-fifth for the younger group and had risen to almost one-half for the older group.

The top panel of Table 3 shows mean total family income which grew in each decade at about the same rate (16%-18%) for each age group. The second panel of Table 3 shows, however, that this growth came from very different sources for younger and older lone mothers. The earnings of lone mothers under 25 declined by \$1,515 whereas their transfers grew by \$3,499, almost 60% of which was from greater SA. The mean earnings of lone mothers age 25-34 increased by only 5% so that their main source of income growth was a \$2,362 increase in transfers, about a third of which was SA. In contrast, the mean earnings of lone mothers age 34 and over grew by \$7,671. The decline in the earnings of other family members likely reflects the dwindling presence of older children in these families. The mean SA income of these older lone mothers fell by \$939 which is even larger than the decline of \$564 in the mean of total government transfers.

One reason for our focus on lone mothers, as indicated in the Introduction, is that this type of family contains such a large and growing proportion Canada's poor children. Over our sample period, the overall proportion of lone-mother families with income below the 1986 LICO did fall from 64% to 57%. Here too, though, differences by age of mother are important. The poverty rate of mothers under age 25 was unchanged at the close to universal rate of 86%. Among lone mothers age 25-34, the percentage in poverty dropped from 74% to 64% in the 1970's but then rebounded to 69% during the 1980's. In contrast, the poverty rate among the oldest lone mothers fell in each decade from an initial value of 55% to 43%.⁸

The very different changes in welfare and earned income for younger and older lone mothers are in part due to different employment trends as indicated in Table 4. The top panel shows that about one-half (52% versus 56%) of the youngest and the oldest lone mothers worked one or more weeks in the market in 1973/1975. By the end of the sample period, this proportion had fallen slightly to 46% for mothers under 25, but had risen to almost three-quarters (73%) for mothers age 35 and over. This fraction changed little for mothers age 25-34. The second panel demonstrates that these age differences are also true of "full-year, full-time" work, defined as working 48 or more, mostly full-time weeks in the market. Over the sample period, this employment rate fell slightly for the two younger age groups, but grew from one-third to almost one-half among the mothers age 35 and over.⁹ One factor that may account for differences in market work trends is school attendance. The proportion of lone mothers who attend school (full-time

or part-time) did increase, but it did so by a relatively similar and small (3-5 percentage points) amount for all age groups.

IV.2. Demographic Characteristics

We now consider changes in a series of potential determinants of SA use starting with demographic characteristics in Table 5. These data are disaggregated by age which reflects my interest in explaining the very different welfare trends for younger and older mothers. I do not explicitly show the changes in the age distribution of lone mothers but a brief summary may prove helpful. The proportion of lone mothers under age 25 was constant at about 10% which reflects the offsetting effects of the increasing proportion of women under age 25 who are lone mothers (see Table 2-A) and the decreasing proportion of all women who are under age 25. The proportions of lone mothers age 25-34 and 35-44 each increased from 31% to 38% which reflects, in part, the movement of the baby boom into these age ranges. The proportion of lone mothers age 44-59 decreased from 28% to 14% due, in part, to trends toward an earlier cessation of childbearing.

The first demographic characteristic in Table 5 is marital status. Women in (reported) non-registered unions are excluded from my sample because Statistics Canada classifies such couples as “married”. The SCF does permit a women to be classified as a “married lone mother” if her husband is absent for a prolonged period due, for example, to institutionalization. Finally, the SCF do not separate widows from the separated/divorced, but the Census Public Use Samples reveal that most “previously married” lone mothers fall in the latter category.

The proportion of lone mothers under age 35 who are never married rose dramatically from 22% to 46% whereas most lone mothers over age 34 were “previously married” at both the start and the end of the sample period. This change for the younger group is potentially important since previous studies (Charette and Meng, Dooley 1994a) have found that never married mothers have a much higher (lower) likelihood of welfare (labour force) participation even conditional on age, schooling and wages. The decline in the fraction of lone mothers who are “married, spouse absent” during the 1970's likely reflects more accurate reporting of marital status as the stigma attached to lone motherhood has weakened. In results not shown here, I find that “previously married” and “married, spouse absent” lone mothers are very similar to each other (and distinct from the “never married”) in terms of age, family income,

earnings, welfare participation and labour supply. Hence, these categories are combined in the probit models reported in Section IV.

The middle panels of Table 5 provide information concerning the number and ages of children. Welfare participation has usually been found to increase both with the number of children and with the presence of a preschooler. Both factors increase home productivity and day care costs, and SA payments increase with family size. The average number of children declined for all lone mothers, but especially for the older group. In 1973/1975, the older mothers were less likely to have a single child and more likely to have three or more children but the opposite was true by 1989/1990/1991. Despite the drop in family size, the proportion of mothers with a preschooler increased which reflects the increase in the age at which many women have their first and second births.

The final characteristic in Table 5 is schooling which may influence welfare participation, not only through wages, but also via preferences and access to jobs with better non-wage conditions. Schooling levels increased for all lone mothers, but especially the older group. In 1973/75, the younger mothers were a bit more likely to have post-secondary schooling (22% vs. 18%), but 49% of older mothers had such education by 1989/1990/1991 compared to 32% of the younger group.

The demographic changes in Table 5 are consistent with those in welfare participation. The older group came to have fewer children and more schooling which would tend to lower SA use and increase employment and earnings.

The younger mothers also decreased their fertility and increased their education but these changes were of comparatively small magnitude and were offset by the large increase in the proportion never married of this group.

IV.3. Earnings Capacity

The best available measure of earnings capacity in the SCF is the weekly earnings of those who worked mostly full-time weeks which was available for 45% of my sample. An alternative is the annual earnings of those who work both full-year (48 weeks or more) and full-time weeks which was available for one-third of my sample. These two measures yield similar time trends and probit estimates so I present only the results from the larger sample of full-time weekly earnings.

The top panel of Table 6 indicates that lone mothers under 25 had modest earnings gains in the 1970's that were more than offset by losses in the next decade. The earnings of mothers age 25-34 grew but only slightly from \$425 to \$451. Only the oldest mothers experienced substantial weekly earnings gains from \$460 to \$554 over the sample period. This growing gap between the wages of young and old was also true of the entire labour force (Morissette, Myles and Picot 1994). The second panel of Table 7 contains the mean predicted full-time earnings in the full sample based on a selection-corrected (Heckman 1979) regression of log weekly earnings on age, schooling and province in each year. There is less variation over time in this measure, as compared to observed earnings, but the widening gap between younger and older mothers is still apparent. For some lone mothers, especially those under 25, the minimum wage may be a better measure of earnings capacity. The final panel of Table 6 shows that the average provincial minimum wage declined by about 25% over this period which is also indicative of a worsening relative situation for younger workers.

IV.4. Social Assistance Policy

My information on provincial SA policy parameters came from a variety of sources which are listed in Table 7. In the probit estimates presented in the next section, I used separate basic assistance levels for families with one, two and three children. The first column of Table 8 provides the mean (population weighted) annual level of basic assistance (in 1991\$) for a lone mother with one child. The real value of basic assistance grew by about 25% over the sample period and this was also true of benefits for larger families. Columns (2), (3) and (4) of Table 7 contain the ratio of basic assistance in column (1) to the annual equivalents of the full-time, weekly earnings for lone mothers from the top panel of Table 6. This ratio increased substantially from 47% to 68% for mothers under 25 and from 39% to 47% for mothers age 25-34. Only for the oldest group did earnings capacity keep pace with basic assistance levels.¹⁰ Column (5) shows that the ratio of SA benefits to the average provincial minimum wage grew markedly from 72% to 117%.

The last three columns of Table 7 provide information concerning the welfare tax on earned income. Most provinces in most years apply the earnings exemption and marginal tax rate to "net earnings", that is, gross earnings minus various costs of working. The type and level of such deductions vary over time and across provinces but information concerning these is quite limited.¹¹ Columns (6) and (7) demonstrate that the mean earnings exemption declined by about 28% and that the mean marginal welfare tax rate declined slightly from 95% to 89%. Column (8)

contains a composite welfare tax rate, similar to that used by C & M, which measures the proportion of the first \$500 in monthly earnings which is taxed back in the form of a reduced SA payment. This changed little in value over time as did a composite tax rate based on the first \$1,000 of earned income (not shown here). Decreases in the marginal rate and the earnings exemption offset each other.

In summary, the data in Tables 5, 6 and 7 are quite consistent with the observed trends in SA use. The expected impact of demographic change on welfare participation for lone mothers under age 35 is difficult to sign. However, their earnings opportunities were clearly declining in value relative to basic assistance from which one would predict greater welfare participation. For lone mothers age 35 and over, wages grew at the same rate as basic assistance and the impact of demographic change was clearly such as to decrease welfare participation.

VI. Multivariate Analysis

This section begins with a discussion of several variables used in the probit model and of the estimation procedure for the wage effect. I then present the probit estimates for the likelihood of welfare participation. Finally, I assess how well these coefficient estimates can account for the very different participation trends of the various age groups.

I include only one category for post-secondary education in the probits because there are virtually no lone mothers with a university degree who report SA income. The unemployment rate is the annual average of the provincial unemployment rate which increased from 6.3% to 8.8% over our sample period. Virtually identical probit estimates are obtained with the female unemployment rate. Other Income is total family income minus the sum of the mother's earnings and government transfers. The mean value of this variable fell from \$5,936 to \$4,832 reflecting in part the declining presence and earnings of older children. Extended Family is a dummy variable equal to one if the family includes members other than the mother and her never-married children.¹² The sample proportion for this variable was unchanged at 7%-8% over the sample period. Other Income and Extended Family could be modelled as endogenous variables were the data available to estimate a richer model.

I estimate a univariate probit for welfare participation. The SCF data provide no information concerning the timing of welfare and labour force participation within the year and, therefore, can not be used to estimate a bivariate probit such as that estimated with LMAS data by Christofides et al. (1997). Christofides reports (in a private communication) that the coefficients and standard errors are very similar in their univariate and bivariate welfare participation probits.

The principal wage measure is the (natural logarithm of) predicted full-time weekly earnings. The wage imputations are corrected for selection bias using standard (Mills ratio) methodology (Heckman 1979). Identification of the wage effect in a welfare participation function is usually problematic because there are few, if any, variables available that can be readily thought of as affecting welfare participation only via wages. For the estimates presented in Table 8, wage identification is achieved by including in the wage equation one set of interaction terms between time and education, and another set between time and province. However, there is no substantive change in the welfare probit coefficient and standard error estimates when I drop either set of interaction terms (time with education and time with province) from the wage equation or when I use OLS-based wage imputations. The use of predicted full-year, full-time earnings does lower the (still statistically significant) wage coefficient by about one-third, but the other coefficients are little changed. One change which does make a difference is to drop the schooling variables from the welfare probit as is sometimes done to identify the wage effect. In my case, this almost doubles the (absolute) size of the wage coefficient from I which infer that the schooling belongs in the welfare probit along with wages. From the foregoing informal tests, I conclude that the estimates in Table 8 are robust with respect to reasonable variation in specification and estimation method of the wage equation.

Table 8 contains five different sets of probit estimates. The first two are obtained with the pooled sample and differ only in the inclusion or not of a fixed effect for each province. The final three columns contain coefficients obtained by estimating a separate model within each time period. I report only the coefficients and the p-values in the table and comment on the size of the marginal effects in the text. The constant or “base case” refers to a previously married mother from Ontario, age 25-34, with secondary schooling and two children including a preschooler. The predicted probability for the constant is 0.40 which is the same as both the sample proportion and the predicted probability at the mean values of the independent variables. (These three variables need not, of course, be equal but

they happen to be so in this sample.) In the discussion below, I will use this value (0.40) as the starting probability for the discussion of marginal effects below. My interest is simply to provide an illustration of the quantitative importance of the coefficients. Hence, I do this in the simplest way which is to assess the change in the predicted probability at the sample mean (0.40) when the value of each independent variable is changed one at a time.

The first column presents the coefficients based on the pooled sample with provincial fixed effects. Almost all of the p-values are less than 0.05. Lone mothers age 35 and over have a significantly higher likelihood of welfare use than do younger ones. This coefficient implies an increase in conditional probability from 0.40 to 0.44. The wage coefficient implies that a ten percent increase in this variable would lead to a decline of 6 percentage points in the probability of welfare participation to 0.34. In the case of basic assistance, an increase of \$1,000 per year would result in an increase of about 3 percentage points in the probability of SA.¹³

The earnings exemption coefficient indicates that an increase of \$100 per month (which is a very large proportionate increase) would increase the likelihood of welfare participation by two percentage points. The marginal welfare tax coefficient is very small and has a large p-value. Substitution of the composite welfare tax rate (see Table 7) on either the first \$500 or the first \$1,000 of earned income in place of the earnings exemption and the marginal tax rate yields a coefficient which is small in magnitude and has a large p-value.

The results in the preceding paragraph imply that the welfare participation decision of lone mothers is not very sensitive to the implicit welfare tax. This may reflect weaknesses in the currently available measures of the effective tax rates. Alternatively, the welfare participation decision of lone mothers may in truth be far less sensitive to the welfare tax than to the level of basic assistance. Such might be the case if the central choice for most lone mothers in any given month is between (i) welfare and no (or little) earned income versus (ii) earned income and no welfare. At present, this topic can not be studied thoroughly with SCF data due to the absence of monthly information on SA income and earned income. However, it should be high on the agenda for research using other data.

A one percentage point increase in the unemployment rate is associated with a 1 percentage point increase in the probability of welfare participation. The coefficients for family size indicate that the conditional probability of SA use is 5 percentage points lower than the base case if there is only one child and 9 percentage points higher than the base case if there are three or more children. The absence of a preschooler is associated with a drop of 8 percentage points

in the likelihood of SA whereas the status of never married is associated with a large increase of 13 percentage points. The effect of education appears not to just operate through wages. Mothers with less than a grade 9 education have a conditional probability of 0.58 compared to a value of 0.32 for those with post-secondary schooling.

The coefficient for "other income" is highly significant but is only one-half the size of the basic assistance coefficient. A smaller impact for "other income" may result from poor reporting of this variable, but it may also reflect the real fact that such income is much less predictable than SA benefits. I had expected a negative effect for "extended family" due to differences in the availability of child care, but the coefficient is positive. This may reflect a "doubling up" of poor families, but note that we partially control for this via the "extended family" variable. The provincial dummies (not shown here) present an interesting pattern. Newfoundland, PEI, Nova Scotia and Saskatchewan have significantly negative coefficients and predicted probabilities ranging from 0.21 (PEI) to 0.31 (NS) as compared to 0.40 for Ontario. New Brunswick is the only "have not" province for which the conditional probability of welfare participation is not significantly lower than for Ontario.

The second column of Table 8 shows estimates provided by the pooled sample when there are no provincial fixed effects. In Section II, I cited a study of female headship in the US in which Moffitt (1994) found that the presence of state dummy variables eliminated the estimated impact of welfare (AFDC) benefit levels on female headship. Such is not the case with my estimates in Table 8 because the coefficient for basic assistance decreases only very slightly to 0.58. Indeed, there are only a few prominent changes in the whole set of estimates. The age coefficient for mothers age 35 and over is no longer significant, but the coefficient for the youngest group (<25) now is and yields a predicted probability of 0.46. Also, the wage coefficient falls in absolute value from -1.6 to -.99.

The wage and basic assistance elasticities evaluated at the sample mean are -1.5 (-0.93 with no fixed effects) and 0.75 respectively which are considerably larger than the values of -0.38 and 0.27 found by Charette and Meng. However, my earnings exemption elasticity is only 0.15 compared to their value of 0.59. We both find little effect for the marginal tax rate. Christofides, Stengos and Swidinsky find zero effects for welfare program parameters, but a very large wage elasticity which I calculate to be approximately -3.3 at the sample means.

The estimates from the pooled sample do not allow for any interactions with time period, but the models reported in the final three columns do. These contain coefficients obtained from a separate model estimated for each

time period. There are no provincial fixed effects in these last models because there only source of variation in the earnings exemption and the marginal tax rate within each year is that across provinces.

The within-time-period coefficient estimates are fairly stable across time periods. The lone mothers under age 25 have a lower predicted probability of SA use in each time period, but it is interesting to note that the size of this difference is declining over time even though the differences in unconditional probabilities are increasing as shown in Table 1. The basic assistance coefficient has the same magnitude in the first and last time periods but has a low p-value only in the most recent one. The high p-values in the first two periods reflect, in part, the limited within-time-period variation in this variable. Furthermore, the quality of the basic assistance data is poorest for the middle time period (1979/1982) which is consistent with the very weak coefficient estimate for this variable in the next-to-last column.

The coefficient for the earnings exemption is zero in terms of statistical significance and/or magnitude in each time period. This likely reflects the fact that inter-temporal variation (relative to inter-provincial variation within a time period) is even more important in the case of this variable than in the case of basic assistance. The non-significance of the unemployment rate in the first time period may also reflect the somewhat smaller degree of inter-provincial variation in the first time period for this variable.

The demographic coefficients are generally stable. The differences in predicted probabilities of SA use between mothers with one versus three or more children are diminishing over time. This is consistent with the observed decline over time in labour supply differences between women with varying family sizes (Dooley 1994a). The coefficient for the presence of extended family members is only significant (and is very large) in last time period. I have no ready explanation for this given that, to begin with, I had expected this coefficient to have a negative sign.

My final task in this section is to see how well a simple economic-demographic model can account for the changes in welfare participation. The first row of Table 9 provides the actual changes in the proportions of lone mothers reporting SA income from Table 1. The second row shows changes predicted by probit coefficients from the pooled sample with fixed effects. I use these coefficients to predict a probability for each individual in the first and the last time periods. The differences between these mean predicted probabilities (1989/1990/1991 minus 1973/1975) is what appears in the second row. As indicated, these coefficients do a good job of predicting the overall change and also predict the major part of the actual change for each age group, especially the youngest mothers. The relative values of wages and

basic assistance changed greatly for mother under age 35 and these two variables predict one-half of the observed changes for these age groups (not shown in Table 9). This is not the case for mothers over age 34 because the relative values of these two variables changed little for this age group.

The third row of Table 9 shows that dropping the fixed provincial effects weakens slightly the predictive power of pooled sample coefficients in the two younger age categories. Among the oldest group of lone mothers, however, the demographic variables (marital status, education, and number and ages of children) can account for all of the observed decline in welfare participation with the bulk of the credit going to the schooling variables. These predictive power of the demographic variables is small among mothers under age 35, however, because of the offsetting effects of fewer children and more schooling on the one hand and more never married mothers on the other hand.

In the last two rows of Table 9, I use the within-time-period coefficients to indicate the changes in the probability of SA income that would be predicted by changes in independent variables on the one hand and the changes in coefficients on the other. The procedure for the second-to-last row is the following. I first use the 1973/1975 coefficients to predict a probability for each individual in the first time period and the last time period and take means. The differences between these mean predicted probabilities (1989/1990/1991 minus 1973/1975) provides one measure of the impact of changes in the independent variables. I then repeat this procedure using the coefficients from each of the other two time periods. The averages from these three sets of predictions exercises are presented in the next-to-last row of Table 9. As indicated, changes in independent variables do a good job of predicting the change in SA use among the oldest lone mothers and a poor job of predicting the change among mothers age 25-34. Mothers under age 25 provide an intermediate case. The procedure for the last row of Table 9 is as follows. I first predict a probability for each mother in the 1973/1975 sample using both the 1973/1975 coefficients and the 1989/1990/1991 coefficients and take means. The differences between these mean predicted probabilities (1989/1990/1991 coefficients minus 1973/1975 coefficients) provides one measure of the impact of changes in the coefficients. I then repeat this procedure using the observations from each of the other two time periods. The averages from these three sets of predictions exercises are presented in the last row of Table 9. Changes in the coefficients do a good job of predicting the change in SA among mothers under age 35 but a poor job of predicting the change for the older mothers.

VII. Summary and Conclusion.

The objective of this paper has been to analyse changes in welfare participation among Canadian lone mothers during the 1970's and 1980's. The growth in the social assistance caseload during the most recent recession and the failure of caseloads to fall during the recovery of the late 1980's raised the question of a possible increase of "welfare dependency". Has the reliance of Canadians on welfare grown and, if so, what have been the roles of such factors as the business cycle, longer-run labour market changes, social assistance policy and demographic factors? Canadian research on these questions has been quite limited until recently. This paper provides the first analysis of Canadian welfare participation using a time-series of cross-sections. I focus on lone mothers because they remain far more welfare-reliant than any other group of Canadians, save for the disabled, and because the very important problem of child poverty is so intimately linked to the economic status of single-parent families and their access to social assistance.

Data from seven Surveys of Consumer Finances between 1973 and 1991 reveal very different patterns of change among older and younger lone mothers. Those under age 35 show an increasing reliance on social assistance income accompanied by stagnant wages and declining levels of market work and earnings. Lone mothers age 35 and over exhibit a decreasing reliance on welfare accompanied by rising levels of market work, wages and earnings. Furthermore, these welfare participation trends are consistent with observed changes in economic and demographic determinants. For the older mothers, demographic change (fewer children and more schooling) was clearly such as to promote greater earnings and less welfare. Wages among this age group also grew at the same pace as social assistance benefits. For younger mothers, wages fell relative to welfare benefits, but their demographic changes were more mixed. Family size fell and schooling increased, but there were also large increases in the proportion never married.

A probit model of welfare participation was estimated with both a pooled sample from three different time periods (1973/975, 1079/1982 and 1989/1990/1991) and with separate samples from each time period. The coefficient estimates from the pooled sample are generally of the expected sign and statistically significant. They are also robust with respect to the specification of the welfare participation function and the auxiliary wage equation. Unlike Moffitt (1994), I did not find that the presence or not of provincial fixed effects influenced the effect of welfare benefit levels.

The estimates obtained with separate samples from each time period are generally similar to those from the

pooled sample and stable over time. The major exceptions are that the coefficients for welfare benefit levels become less precise and the estimated effect of the earnings exemption becomes zero. For each variable, inter-temporal variation, both within and across provinces, is very important relative to inter-provincial variation with time periods. Finally, the probit estimates from the pooled sample generally account well for the very different welfare participation trends among younger and older lone mothers, especially the former. Using estimates from the within-time-period samples, I find that changes in the independent variables do a better job of accounting for changes in welfare use among lone mothers over age 34 and that changes in the probit coefficients do a better job of accounting for changes in welfare use among lone mothers under age 35, especially those age 25-34.

To return to the questions posed above, did welfare dependence increase among Canadian lone mothers during the 1970's and 1980's and, if so, why? The answer is yes for lone mothers under age 35 and a key factor appears to be deterioration in the labour market for young workers relative to social assistance benefits combined with demographic trends that had offsetting positive and negative influences on welfare use. For lone mothers age 35 and older, the answer is not only no, but that the reliance on welfare of this group has declined. The key factors in this case are rising levels of schooling and declining numbers of children combined with market wages that kept pace with welfare benefits.

There clearly is much room for further research in this area. Welfare participation needs to be modelled jointly with the marital and fertility behaviour that determines selection into and out of the status of lone motherhood. Further research is also needed with longitudinal data from administrative or survey sources to explore the dynamics of social assistance usage. The welfare participation of other families and individuals deserves more careful study. Finally, a broader range of policy effects, such as UI (or EI) eligibility restrictions, need to be incorporated into the model.

Acknowledgements

I gratefully acknowledge the comments and assistance of Sheelah Dunn Dooley, Thomas Lemieux, Peter Kuhn, Gilles Seguin, two anonymous referees and participants in workshops at UQAM and the University of Windsor. The data used in this study are from the Economic Family files of the Survey of Consumer Finances for the income years 1973, 1975, 1979, 1982, 1989, 1990 and 1991. All computations on these micro data were done by the author. The responsibility for the use and interpretation of these data are solely those of the author.

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Endnotes

1. I use the term "lone" because Statistics Canada uses the term "single" to mean "never married". I do not include the 10%-15% of lone parents who are men. The large income differences between male and female lone parents justify separate analysis but the number of lone fathers in my data set and most other ones is very small - only a few hundred.
2. Allen also includes the provincial value of the exemption for liquid assets, which ranged from \$1,000 to \$5,000 in 1991, and obtains a significantly positive coefficient. I have not included this variable not only because I was unable to obtain a satisfactory time series but also because I find it hard to believe that this is a relevant constraint for many lone mothers. The penalty for exceeding the limit is large (the loss of full benefits) and, for those mothers with modest excess assets, conversion to useful durables (clothes or appliances) or less easily detectable cash would not appear to be costly. No study of welfare participation has included this variable.
3. Rosenzweig (1995) finds that higher AFDC benefit levels and lower marital prospects induce young women to choose to have an extra-marital birth using data from the National Longitudinal Survey of Youth. Foster and Hoffman (1998), in turn, have challenged Rosenzweig's conclusions.
4. The SCF figure should be the larger because it is an annual rather than a quarterly measure.
5. The upper age limit of 60 excludes very few observations and is imposed because the SCF economic family files prior to 1986 do not permit one to identify the few lone female heads (of families with children under 18) who are not the mothers of the children in the family. The post-1986 files indicate that most such lone female heads are over age 60. I also do not consider the approximately 10% of lone mothers who do not head their own economic family. These mothers are not identified on the economic family files but SCF Individual files indicate that they are typically very

young and report little SA income due to the income of other family members.

6. A further check for self-employment and inconsistent data was to include only those who reported either (i) positive weeks worked and positive earnings or (ii) zero weeks worked and zero earnings. I excluded the few observations that reported full-time weekly earnings (see Section III.3.) of less than \$100 or more than \$1500 on grounds of highly probable measurement error.

7. Dividing the age group 35-59 into two subgroups does not alter any of the basic empirical results presented in this paper. I searched for, but was unable to find, comparable studies of the US welfare participation rates by age of lone mother. Moffitt (1992) shows that the overall AFDC participation rate of lone mothers grew from 36% in 1967 to 63% in 1973, fell to 44% by 1982 and remained at approximately that level through at least 1987.

8. These poverty rates remain extremely high even if one adjusts for under reporting of SA income. Increasing the level of SA income in each family by 50% does lower the overall poverty rate but only from 57% to 51% in 1989/1990/1991, a far from comfortable set of circumstances.

9. Means weeks worked in the market increased by 9 weeks for the oldest group and decreased by about 2 weeks for the youngest group. Note that the foregoing trends in labour supply and earnings, two SCF variables which are known to be accurately measured, are very consistent with trends in the prevalence of SA income in Table 1.

10. Non-cash SA benefits also grew over the sample period, but estimates of the cash value of such benefits from either welfare or market employment are not available.

11. The most obvious changes were a switch from using net earnings to gross earnings in Nova Scotia in 1980 and the opposite switch in Ontario in 1989. Our probit estimates were not very sensitive to experimentation with various adjustments in the exemptions and tax rate for these two provinces.

12. The values of SA benefits in the probits are the maximum available and are not adjusted for other sources of income. Such an adjustment would make SA benefits highly endogenous.

13. The SA benefits for three children were used for the few (3%) families with more children under eighteen. The exclusion of such families had little impact on the probit estimates.

Table 1-A			
Unweighted Numbers of Observations of Lone Mothers			
	1973/1975	1979/1982	1989/1990/1991
Total Lone Mothers			
Age <25	183	375	780
Age 25-34	544	1,007	2,290
Age 35-59	1,107	1,550	2,998
Total	1,834	2,932	6,068
Worked Mostly Full-Time Weeks			
Age <25	68	122	190
Age 25-34	262	487	1,041
Age 35-59	446	744	1,695
Total	776	1,353	2,926

Table 2-A			
Incidence of Lone Motherhood and Married Motherhood			
	1973/1975	1979/1982	1989/1990/1991
% of Mothers Who Are Lone Mothers			
Age <35	7	12	15
Age 35-59	9	12	13
Total	8	12	14
% of Women ^a Who Are Lone Mothers			
Age <35	4	7	9
Age 35-59	6	6	6
Total	5	6	7
% of Women Who Are Married Mothers			
Age <35	58	54	48
Age 35-59	55	47	41
Total	56	50	44

^aIncludes only those women who are heads or spouses of heads of economic families.

Table 1**Social Assistance Income Use Among Lone Mothers and Other Families and Individuals**

	1973/1975	1979/1982	1989/1990/1991
Proportion of Lone Mothers Reporting Social Assistance Income			
Age<25	56	59	69
Age 25-34	39	40	50
Age 35-59	36	33	29
Total	39	39	40
Proportion of Other Individuals and Families Reporting Social Assistance Income			
Unattached Individuals	6	9	13
Couples With Children	3	4	6
Couples Without Children	2	4	6
Lone Fathers	7	10	15
Proportion of Family Heads Reporting Social Assistance Income Who Are Lone Mothers			
	36	29	25
Proportion of Total Social Assistance Income Which Is Reported By Lone Mothers			
	47	38	33

Table 2**Proportion of Income Derived From Various Sources By Lone Mothers**

	1973/1975	1979/1982	1989/1990/1991
Proportion of Income From Social Assistance			
Age <25	41	44	48
Age 25-34	28	26	29
Age 35-59	21	19	16
Total	25	24	24
Proportion of Income From Government Transfers			
Age <25	59	63	71
Age 25-34	47	46	54
Age 35-59	40	37	33
Total	44	43	45
Proportion of Income From Head's Earnings			
Age <25	33	30	22
Age 25-34	44	46	39
Age 35-59	33	41	48
Total	37	41	42

Table 3**Mean Income and Changes in Income Components Among Lone Mothers**

Mean Family Income (1991 dollars)			
Age <25	12,047	13,271	14,417
Age 25-34	17,023	19,059	19,963
Age 35-59	25,693	26,944	30,824
Total	21,641	22,551	25,059
Changes in Mean Levels of Income: 1973/1975 to 1989/1990/1991			
	Age <25	Age 25-34	Age 35-59
Total Family Income	+2,581	+3,157	+5,547
Head's Earnings	-1,515	+273	+7,671
Earnings of Others	+108	+438	-1,741
Total Transfer Income	+3,499	+2,362	-564
Social Assistance	+1,994	+843	-939

Table 4**Proportion Of Lone Mothers Working In The Market**

	1973/1975	1979/1982	1989/1990/1991
Proportion Working One Or More Weeks in Market			
Age <25	52	47	46
Age 25-34	62	66	61
Age 35-59	56	65	73
Total	57	63	66
Proportion Working 48 Or More, Full-Time Weeks in Market			
Age <25	14	12	8
Age 25-34	33	34	27
Age 35-59	33	40	47
Total	31	35	35

Table 5
Demographic Characteristics of Lone Mothers

	Age <35			Age 35-59		
	1973/ 1975	1979/ 1982	1989/ 1990/1991	1973/ 1975	1979/ 1982	1989/ 1990/1991
Never Married	22	28	46	4	5	10
Previously Married	66	67	50	88	90	86
Married, Spouse Absent ^a	12	5	4	8	5	4
One child	44	53	49	41	55	56
Two children	33	35	37	29	31	32
Three or more children	23	12	14	30	14	12
With Child Under 7	69	69	73	14	13	21
Grade 8 or Less	22	13	8	35	27	12
Grade 9-13	55	66	59	45	51	41
Some Post-Secondary	20	17	29	15	16	36
University Degree	3	3	4	4	6	11

^aA lone mother may be classified as "married" if her husband is absent for an extended period, e.g., institutionalization. The dramatic drop in this proportion indicates that the 1973/75 value may be an overestimate due to misreporting.

<p align="center">Table 6</p> <p align="center">Observed and Estimated Full-Time Weekly Earnings of Lone Mothers (1991 dollars)</p>			
Mean Weekly Earnings Among Full-Time Workers	1973/1975	1979/1982	1989/1990/1991
Age <25	354	393	314
Age 25-34	425	463	451
Age 35-59	460	500	554
Total	439	477	508
Mean Predicted Earnings in Full Sample - Selection Corrected			
Age <25	360	399	350
Age 25-34	440	466	441
Age 35-49	461	504	530
Total	444	478	478
Minimum Wage (35 hours)	6.62 (232)	5.96 (209)	5.21 (182)

Table 7

Basic Social Assistance, Earnings Exemption and Tax Back Rate for Lone Mother With One Child

	Basic Assistance ^a	Basic Assistance/ Full-Time Earnings ^b			Basic Assistance/ Minimum Wage ^b	Earnings Exemption ^c	Marginal Welfare Tax Rate ^d	Composite Welfare Tax Rate ^e
		(1)	(2)	(3)				
		<25	25-34	35-59				
1974-1975	8,707	47%	39%	36%	72%	166	95%	65%
1980	9,788	48%	41%	38%	90%	151	94%	65%
1989-1991	11,095	68%	47%	38%	117%	126	89%	67%

^a Annual amount of social assistance for a lone mother with one child and no other private sources of income (1991\$). All lone mothers, both welfare clients and non-clients alike, would also have been entitled to family allowance payments and child tax credits depending on the year, province of residence and private sources of income. Data are from Federal-Provincial Working Party on Income Maintenance (1975), Banting (1982), National Council of Welfare (1990, 1991, 1992) and Sarlo (1992).

^b Annual equivalent of earnings or wage figures in Table 7. All figures are in 1991\$.

^c Monthly level of earned income on which the welfare tax back rate is zero. Data are from Health and Welfare Canada (1973, 1984, 1986, 1988, 1989, 1991), National Council of Welfare (1990, 1991, 1992) and various provincial gazettes.

^d Welfare tax back rate applied to monthly earnings beyond the exemption. The dollar amount to which this is applicable varies.

^e Proportion of the first \$500 of monthly earned income which is “taxed back” in the form of lower welfare.

Table 8
Probit Estimates For Welfare Participation of Lone Mothers

	Pooled Sample		1973/1975	1979/1982	1989/1990/ 1991
	Provincial Dummies	No Provincial Dummies			
Constant ^a	8.7* (.00)	4.9* (.00)	4.7* (.05)	4.0* (.02)	5.1* (.00)
LT25	.07 (.20)	.15* (.00)	.31* (.04)	.18* (.05)	.13* (.05)
GT34	.10* (.01)	.03 (.40)	.11 (.23)	-.01 (.89)	.02 (.76)
Ln Wage	-1.60* (.00)	-.99* (.00)	-.96* (.03)	-.77* (.01)	-1.01* (.00)
Basic Assistance (000's)	.063* (.00)	.058* (.00)	.046 (.20)	.017 (.41)	.047* (.00)
Earnings Exemption (00's)	.057* (.02)	.063* (.00)	.00 (.43)	.05 (.16)	.002* (.00)
Marginal Welfare Tax Rate	-.001 (.46)	.001 (.28)	.38 (.08)	.001 (.54)	-.05 (.74)
Unemployment Rate	.033* (.00)	.024* (.00)	.010 (.67)	.034* (.00)	.016* (.01)
One Child	-.13* (.00)	-.14* (.00)	-.26* (.00)	-.29* (.00)	-.08* (.05)
>2 Children	.22* (.00)	.21* (.00)	.35* (.00)	.14 (.10)	.23* (.00)
No Kid <7	-.21* (.00)	-.21* (.00)	-.15* (.05)	-.24* (.00)	-.21* (.00)
Never Married	.35* (.00)	.35* (.00)	.28* (.01)	.29* (.00)	.35* (.00)
Less Than High School	.47* (.00)	.52* (.00)	.51* (.00)	.68* (.00)	.41* (.00)
More Than High School	-.19* (.00)	-.31* (.00)	-.35* (.01)	-.37* (.00)	-.31* (.00)
Other Income (000's)	-.03* (.00)	-.03* (.00)	-.02* (.00)	-.03* (.00)	-.05* (.00)
Extended Family	.12* (.03)	.11* (.04)	-.09 (.48)	-.08 (.43)	.41* (.00)

P-values in parentheses and * indicates a value < .05. Number of Observations = 10,834.

^aPreviously married mother from Ontario, age 25-34, with secondary schooling, two children and a preschooler.

Table 9**Actual and Predicted Changes in Proportions of Lone Mothers Reporting
Social Assistance Income: 1973/1975 to 1989/1990/1991**

	<25	25-34	35+	Total
Actual Change (% points)	+13	+11	-7	+1
Predicted Changes - Pooled Sample				
Fixed Provincial Effects	+11	+7	-4	+2
No Fixed Provincial Effects	+8	+5	-5	0
Predicted Changes - Separate Sample For Each Time Period				
Changes in Independent Variables ^a	+5	+1	-7	-2
Changes in Coefficients ^b	+8	+9	0	+4
^a Averages of the predictions derived from the coefficients in each time period. ^b Averages of the predictions derived from the independent variables in each time period.				

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Last updated March 27, 2000