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McMaster University

DEPARTMENT OF ECONOMICS

**THE DURATION OF SPELLS ON WELFARE AND
OFF-WELFARE AMONG LONE MOTHERS IN ONTARIO**

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This paper provides a first look at the dynamics of social assistance use among lone mothers in Ontario. We use an administrative caseload data set to analyse the relationship between the duration of spells, both on welfare and off welfare, and a series of factors including the clients' personal characteristics, their history of welfare use, the duration of current spells, labour market conditions and social assistance benefit levels.

We find mixed evidence concerning the key policy question of the scarring or stigmatizing effects of welfare, that is, a "welfare trap". There is evidence that the likelihood of exiting welfare declines during the first year of a spell. The support is weakest, however, in our preferred specification. There is more consistent evidence that the likelihood of returning to welfare declines during the first year after an exit, that is, staying off the rolls has the beneficial effect of making recidivism less likely. Clients who have spent more months on welfare in the past (controlling for age) do appear to have somewhat longer future spells on welfare and to return more quickly to the rolls once they leave, but the magnitude of this effect is very small. The length of both welfare and off-welfare spells is very sensitive to the levels of welfare benefits.

Most of the other coefficients have significant effects of the expected sign. Welfare spells tend to be longer for those lone mothers who are younger, poorly educated, never married, not employable and for those who have more and younger children. Spell lengths also increase with the level of the unemployment rate and decrease with the level of the minimum wage. Off-welfare spells tend to be shorter (the return to welfare more rapid) for those lone mothers who are older, never married, not employable and who have very young children. Off-welfare spells are longer when the minimum wage is higher.

I. Introduction

This paper provides one of the first in-depth looks at the dynamics of social assistance use in Ontario. Specifically, we study the duration of both welfare spells and off-welfare spells among lone mothers during the first half of the 1990's. This subject is timely for at least two reasons. First, social assistance (henceforth SA) policy reform has been high on the agenda in Ontario and in other provinces. This concern reflects in part the rapid growth in the welfare expenditures during the 1990's, but it has earlier roots in the recovery of the 1980's when there was no decline in the welfare caseload despite a large drop in unemployment. A second reason arises from our focus on lone mothers. Such families contain a large and growing fraction of poor children whose problems have been the subject of much recent discussion. They are the most reliant on welfare of any family type except for the disabled. Yet relatively little is known about their patterns of social assistance use especially in Ontario.

Several studies have used data from a single cross-section or a time-series of cross-sections to study the welfare participation of Canadian lone mothers. These studies have generally found the expected associations of welfare participation with personal characteristics, labour market indicators and policy parameters. Though informative, most survey data can not answer several questions of key interest to policy makers. What determines the length of time which lone mothers spend on welfare? After leaving welfare, which lone mothers are most likely to return to the rolls and how soon? Is there evidence of welfare dependence, that is, a "welfare trap"? For example, does the likelihood that a lone mother will leave welfare decline as her spell gets longer? Do individuals with great SA use in the past have a greater likelihood of returning to the rolls or of a longer spell on welfare spell if they do return?

Several recent papers have used caseload data from British Columbia and Quebec to answer some of the above questions. We begin the task for Ontario in this paper using administrative data made available to the authors by the Ministry of Community and Social Services (MCSS). Specifically, we analyse the link between the duration of spells both on welfare and off welfare, and a series of factors including personal characteristics, the client's history of welfare use, the duration of the current spell, labour market conditions and SA benefit levels.

Section II of the paper contains a brief review of the literature. The Ontario welfare system and the data used in this study are discussed in Section III. Section IV presents our estimation strategy. The empirical estimates for welfare spells and off-welfare spells are discussed in Sections V and VI respectively. Section VII is a summary and conclusion.

II. Review of the Literature

The Canadian literature on welfare can be divided into studies of the probability of welfare participation and studies of the welfare spell length. Prior to a discussion of specific studies, however, a brief review of the comparative statics of welfare participation will be helpful. [See Charette and Meng (1994) for a detailed, graphical exposition.] The two welfare policy parameters which influence the budget set are 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 implicit (or negative) welfare tax is zero on some minimal level of monthly earnings referred to as the "earned income exemption" (EIE). The tax on earnings beyond the exemption is the "marginal tax rate" (MTR).

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. These predictions have generally been confirmed by Canadian studies of welfare participation [Allen (1993), Charette and Meng (1994), Christofides, Stengos, and Swindisky (1997) and Dooley (1996)] and in U.S. studies reviewed in Moffitt (1992). These studies also generally find the likelihood of welfare participation is greater for lone mothers who are poorly educated, never married, have larger numbers of younger children and live in weak labour markets. In this paper, we assess the impact of many of these same variables on the length of welfare spells and off-welfare spells among SA clients.

Would we expect policy parameters, personal characteristics and the labour market to have the same impact on welfare length as on the probability of welfare participation? For a random sample of individuals, among whom the most common welfare spell length would be zero months, the answer is yes. Our administrative sample, however, is limited to actual clients and our estimated coefficients may be influenced by the non-random nature of selection into the data set. For example, one would expect an increase in basic assistance to have two effects: (1) lengthen the welfare spells of those persons already on welfare and (2) increase the proportion of the overall population that ever starts a welfare spell. If the second effect adds persons to the rolls with welfare spells which are shorter than those of veteran welfare clients, then the average observed spell length among all clients

could decrease. This same problem is true of the predicted effects of other independent variables and of off-welfare spells. Unambiguous predictions are difficult to make. However, we, and other researchers, usually find that the empirical association between independent variables and spell length is qualitatively similar to that found in studies of welfare participation.

A key policy issue for which administrative data is well suited is that of welfare dependence or a “welfare trap”. Does past use of the welfare system alter the likelihood of future use? Such dependence might result from changes in skills (atrophy), employers’ perceptions (stigma), knowledge of the SA system (fixed participation costs) or preferences. The term duration dependence refers to a situation in which the probability of terminating the spell changes as the spell proceeds. Lagged duration dependence refers to a situation in which the length of the current spell varies with the length of the previous spell(s). Detecting the presence of either type of dependence is complicated by the possibility of unobserved heterogeneity (UH). For example, some clients may be “short spell” types and others “long spell” types. As a welfare spell proceeds, the exit probability of the surviving clients may decline either because their individual characteristics are changing (skill atrophy) or because the surviving sample of clients consists increasingly of “long spell” types.

There have been two in-depth studies of welfare spell duration among Canadian lone mothers.¹ Barrett (1996) uses a ten percent random sample from the caseload in British Columbia between 1980 and 1992. For lone mothers, he finds that welfare exit rates are negatively related to (the spell length declines with) potential welfare benefits, the unemployment rate, and the number of children, and are positively related to the minimum wage. Barrett controls for one form of UH and still finds strong evidence for both negative duration dependence (the likelihood of terminating a spell declines as the spell gets longer) and negative lagged duration dependence (currents spells

are longer for clients with more total months on welfare prior to the current spell). Barrett concludes that welfare may have scarring or stigmatizing effects for some clients. He also finds strong evidence of UH which implies that more information is needed in order to identify those groups which are most vulnerable to such dependence effects. Barrett did not analyse off-welfare spells.

Fortin, Lacroix and Thibault (1997) use a sample of single parents on welfare between 1979 and 1993 in Quebec. One of their major concerns is the impact on welfare spells of unemployment insurance (UI) policy as measured by the “generosity” of the unemployment insurance (defined as the ratio of the maximum number of weeks a claimant may receive UI to the minimum number of weeks worked needed to qualify for UI) and the rate of coverage of UI.

They find evidence of negative duration dependence within welfare spells but, unlike Barrett, they were unable to control for UH because these models did not converge. (They did not test for lagged duration dependence.) They also found, as did Barrett, that the welfare exit rates are negatively related to potential welfare benefits, the unemployment rate, and the number of children (either pre-school or school-age) and positively related to parental age. Unlike Barrett, they found that welfare exit rates are negatively related to the provincial minimum wage. Fortin et al. used several variables which Barrett did not. The exit rate decreases with the welfare tax rate and increases with the client’s schooling and with the generosity of the UI system. They were not able to identify the impact of UI coverage in their welfare spell model

Fortin et al. provide the only Canadian estimates of a duration model for off-welfare spells. They find evidence of negative duration dependence, i.e., the likelihood of returning to welfare becomes smaller the longer one has been off the rolls, but here too they were unable to control for UH. The hazard of returning to welfare decreases with the age of the client but only after age 30.

More education lengthens off-welfare spells but only for clients under 30. Surprisingly, the exit rate is not significantly associated with potential welfare benefits or with the number and ages of children. The exit rate back onto welfare is positively affected by the unemployment rate and the minimum wage and is negatively associated with the generosity and coverage of the UI system.

In summary, Canadian studies of welfare use among lone mothers have generally found the expected association with personal characteristics, policy parameters and labour market conditions. In particular, duration analyses of welfare spell length have provided some evidence of dependence (scarring or stigma) effects.

III. Social Assistance in Ontario: The Basic System and Our Data Set

Short term financial assistance in Ontario is provided by municipalities under the terms of the General Welfare Assistance (GWA) Act. The provincial government administers a program of long-term assistance under the Family Benefits Act (FBA). GWA clients are categorized according to “reason for assistance” such as “inability to find regular employment” or and “lack of principal family provider”. FBA clients are categorized according to “case classification” such as “disabled” or “sole support parent”. Some lone mothers receive only GWA or FBA during an entire spell but switches from GWA to FBA are common. Indeed, a three month “waiting period” on GWA before switching to FBA was required of most unwed, separated and deserted lone parents prior to October 1991. In our estimation sample, 45% of spells involved a switch from GWA to FBA, only 2% involved a switch from FBA to GWA, 40% were solely (the uncensored portion) GWA and 14% were solely FBA.

Table 1 provides basic caseload information for our sample period, 1983 through 1994. The final column shows that the total caseload grew from 3.7% to 8.0% of the population age 15 and over. The total number of recipients (clients plus dependents) grew from 5.2% to 12.1% of the total population. Most of this growth occurred from 1990 on, but it is still notable that the caseload grew as a fraction of the population even during the strong recovery of the late 1980's when the unemployment rate fell from 11% to 7%. The proportion of clients who are lone parents grew from 30% to 37% during the 1980's but shrank back to 30% during the 1990's.

Table 2 provides information concerning annual benefit levels. In 1983, the FBA benefits for a lone parent with two children were the same as the GWA benefits for a couple with two children. By 1994, the former had grown by 45% and the latter had grown by 65%. Most of this growth in benefit levels occurred prior to 1990. Real benefit levels changed little during the 1990's until the cuts initiated by the current government in 1995. The final column of Table 2 shows the quadrupling of real social assistance expenditures which underlies much of the concern with welfare policy in Ontario.

Our data set contains a record for most individuals who received welfare in Ontario for one or more months during the period January 1983 to December 1994. We have annual values for demographic characteristics such as marital status and number of dependents under age 22. We have monthly values for welfare-specific variables such as level of welfare income and of other sources of income, and the reason for assistance. We have values at first encounter and at last encounter with the social assistance system during the data period for the variables schooling and county/municipality of residence. Finally, we have several unchanging variables such as date of birth and sex.

There are two significant gaps in our data. The first is that we have no GWA data for persons in ten counties/regional municipalities/districts which account for approximately 15% of the population of Ontario.² The second gap is that we are missing substantial amounts of data for the years 1983-1989. In the case of FBA, we are missing data for ten (non-consecutive) months during this seven year period. For GWA, monthly data are only available for March, June, September and December of (most of) the years during this period. Hence, GWA data are missing for two-thirds of the months prior to 1990. These gaps imply that we lack complete information for many welfare spells of either of the following types: (1) spells which occurred in those regions for which GWA data are not available (at any point in time) and (2) spells which commenced prior to 1990 in any part of the province. Therefore, we have chosen to restrict our estimating sample to those spells which commenced after 1989 and which occurred in areas for which we have GWA data.

Welfare Spells and Off-Welfare Spells. The estimates presented in this paper are based on the “two-month rule” which Barrett (1996) used to define spells with the BC data. A new welfare spell begins only after two successive months in which no cheque is issued and ends only when one encounters the next two successive months in which no cheque is issued.³ Barrett’s rationale was that a non-trivial proportion of what appear to be one-month, off-welfare spells (a single month with no cheque, preceded and followed by one or more months with a cheque) were in fact administrative or coding errors rather than true spell terminations. In results not presented here, we also used the “one-month rule” adopted by Fortin, Lacroix and Thibault (1997) under which a welfare spell is any sequence of one or more months in which a cheque is issued and an off-welfare spell is any sequence of one or more months in which a cheque is not issued. The two rules for spell definition yield very

similar proportional hazard model estimates due to the fact that few lone mothers in our data have single isolated months either on welfare or off welfare.⁴

Lone Mothers. We classified as a lone mother any woman between the between the ages of 18 and 59 who met either demographic criteria or case classification criterion.⁵ Our demographic criteria are that the client be unmarried (registered or common-law) with one or more dependents under the age of 22. The case classification criteria are that the woman be either (i) an FBA client classified as “single parent” or (ii) a GWA client who has one or more dependents under age 22 and is classified as “lacks of principal family provider”.⁶

Each of the above criteria for lone motherhood has a drawback. The demographic criteria may miss some *de facto* lone mothers may who are legally married.⁷ The case classification criteria may miss some GWA lone mothers whose category is not “lack of principal family provider” but rather, for example, “unable to find employment”. Therefore, we classified as a lone mother any client who met either criteria during any month of the spell. For the off-welfare spells, we classified as a lone mother any client who met either criteria during any month of the preceding welfare spell. In our sample, 89% of the spells met both criteria, 10% met only the demographic criteria, and 1% met only the case classification criteria.

Summary Statistics. Our estimation sample is a 10% random sub-sample of all records that met the criteria described in the two previous sections. Table 3 provides descriptive statistics. The maximum welfare spell length is 58 months. The mean welfare spell length is 17 months (with no adjustment for censoring) and 47% of all welfare spells are censored. Off-welfare spells can be up to 57 months long, they average 17 months in length and 67% are censored.

We constructed two measures of previous welfare use, the first of which is the number months on welfare between 1983 and the current spell. This averaged 7 months for welfare spells and 16 months for off-welfare spells. The second is a dummy variable for any months on welfare between 1983 and the current spell. Thirty-nine per cent (39%) of our welfare spells were not a first spell during the 1983-1994 period. By definition, this variable had a value of 100% for off-welfare spells. The next three rows of Table 3 indicate that, within the 1990-1994 period, most of our welfare and off-welfare spells were first spells.

Welfare clients are a bit younger than ex-clients (off-welfare spells) due in part to the fact that one must complete a welfare spell in order to start an off-welfare spell in our sample.⁸ We have the client's level of education at first encounter and at last encounter with the welfare system between 1983 and 1994, but values are missing for about 25% of our sample. We used the schooling value at the last encounter unless it was missing in which case we used the value for education at the first encounter if present. As Table 3 indicates, our sample of non-missing values was about evenly divided between those who have and have not completed high school.

Almost one-half of the mothers had only one child and less than one-fifth had three or more. Just over one-half of the mothers had a preschool age child and about 20% of the lone mothers in our sample were never married. We classified a mother as "not employable" if her FBA "case classification" or GWA "reason for assistance" was poor health or disability. This monthly value was a time-varying covariate in the welfare spell analysis. For the off-welfare spells, we classify a client as employable or not employable according to the last month of the most recent welfare spell. As Table 3 shows, very few (3-4%) clients begin either type of spell as "not employable".

Welfare benefits vary with family size and we followed Barrett in measuring this variable on a per capita (family member) basis. The most likely alternative to social assistance for many is a minimum wage job. We used the potential earnings from a full-time (140 hours per month) job at the minimum wage. We measured this variable on a per capita basis also in order to reflect the typical choice set of the mothers in our data.

Our labour market variables are the unemployment rate (for males age 20-59) and the help wanted index both of which are available for six different regions: Toronto, Hamilton (no observations in our estimation sample), London, Ottawa, Sudbury and the rest of the province. We used all except Hamilton for which we have no GWA data. We know the region of residence of each client at the time of first contact and last contact with the welfare system during the sample period.

In order to assign labour market variable values in each month, we assigned a client whichever regional value (first or last contact) was closest in time to the month in question.

IV. Estimation Strategy

The theoretical model underlying our estimation strategy assumes that individuals remain on welfare if the value of that state is greater than the value of the alternative state. Processes which could cause the relative values of these states to change over time include the arrival of a wage offer, a potential mate or another child.

The value of staying on welfare is defined as:

$$V_t^w = V^w(z(t), b(t), T^w)$$

where $z(t)$ is a vector of personal characteristics at time t , $b(t)$ is the potential benefits at time t , and T^w is the length of the welfare spell. The value of being off-welfare is defined as:

$$V_t^o = V^o(z(t), w(t), T^o),$$

where $w(t)$ is the value of earned income when off welfare and T^o is the length of time off welfare. Comparing these values and assuming that opportunities for leaving welfare arrive at some constant rate, v , according to a Poisson process, gives the hazard rate:

$$(1)$$

We follow Barrett and Fortin et al. in using the Prentice-Gloeckler-Meyer (PGM) piece-wise constant proportional hazard procedure to estimate the baseline hazard function and the coefficients for personal characteristics, policy parameters and labour market conditions [Prentice and Gloeckler (1978), Meyer (1988), or Meyer (1990)]. The PGM procedure requires no assumptions about the shape of the baseline hazard and allows control for one type of UH. A limitation of the PGM approach is that the covariates are assumed to shift the baseline but not to affect its shape. The proportional hazard model with UH assumed to take a multiplicative gamma form is the following:

$$h_i(t) = h_0(t) \exp(\beta' z_i(t)) \theta_i, \quad (2)$$

where h_i is individual i 's hazard rate, $h_0(t)$ is the baseline hazard function to be estimated, $z_i(t)$ is a vector of individual i 's characteristics which can vary through time, β is the parameter vector to be estimated and θ_i is a random variable that is assumed to be independent of $z_i(t)$ and follow a gamma distribution with a mean normalized to one and a variance of σ^2 .

The baseline is divided into intervals and the hazard rate is assumed to be constant within each interval. The decision concerning the number and length of the pieces must balance a desire for functional flexibility (more pieces) and convergence time and estimator precision (fewer pieces).

Our choice has been guided both by the specifications of previous researchers and by our own empirical hazard functions. The baseline hazard is divided into nineteen intervals for welfare spells and into fourteen intervals for off-welfare spells. The chart below provides the final month for each interval. The interval length is the difference between the final months of successive intervals. For example, the length of the fourteenth welfare interval is 5 (=21-16) months.

Definition of Intervals for Baseline Hazard																			
Interval	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Final Month: Welfare	1	2	3	4	5	6	7	8	9	10	11	13	16	21	27	35	45	55	∞
Off-Welfare	2	3	4	5	6	9	10	11	12	17	27	38	49	∞					

Estimates of this model both for welfare and off-welfare spells are presented in the next two sections. We experimented with fewer intervals and found that the coefficient estimates for the other independent variables changed little. See Stewart (1998) for further details concerning the estimation procedure.

V. Welfare Spells

The Kaplan-Meier empirical hazard function and survival function for the welfare spells are presented in Figures 1 and 2 respectively. The empirical hazard function is the ratio of exits to the number of spells still ongoing for each month defined as:

$$h(t) = d_t/n_t.$$

where n_t is the number of spells still ongoing at time t and d_t is the number of exits at time t . The survivor function is the percentage of spells still ongoing at each month defined as:

$$S(t) = \prod_{j|j < t} ((n_j - d_j)/n_j)$$

The hazard rate in Figure 1 falls off sharply during the first ten months of the spell and declines very slowly or not at all thereafter. Figure 2 reveals considerable variation in spell length. Approximately 30% of the spells end within 5 months and 50% of the spells are over within 20 months. More than 30%, however, are still ongoing at 55 months.

The estimates of the proportional hazard models for welfare spells are presented in Figure 3 and Table 4. We present the estimates for four different specifications: with and without the mother's level of education, and with and without controls for UH.⁹ Education is missing for over one-quarter of the observations and inclusion of this variable reduces our sample size from 20,139 to 14,918. As a check, we also estimated the hazard function using the education sample but omitting the schooling variables from the model. The resulting estimates (not shown here) are very similar to those presented in Figure 3 and Table 4. A likelihood ratio test (also not shown here) rejects the null hypothesis of no heterogeneity for both specifications (with and without schooling) with p-values of less than .01.

The baseline hazard is graphed in Figure 3. Tables of the coefficient and standard error estimates are available upon request from the authors. For Figure 3, we assigned the following modal values to the independent binary variables and mean values to the independent continuous variables. The spell is the first one (in 1990-1994) and it occurs in the 4th quarter for a mother aged 32 who is previously married, employable, with no previous welfare use, grade 12-13 schooling and

one dependent child, age 6-21. The unemployment rate is 9.0, the help-wanted index is 110, the benefit level is 460, and the minimum wage earnings is 316.

The shape of the baseline hazard provides a test of duration dependence within the spell. We conducted Wald tests for equality of the various steps in each baseline hazard. The tests indicate the presence of negative duration dependence throughout the first year of the spell in the following three cases: both specifications without education and the specification with education but no controls for UH. When we control for schooling and UH, there is support for negative duration dependence but only between the fourth and ninth months of the spell. We are unable to reject the hypothesis of no difference between the steps in the first and third months and between the hazard steps in the ninth and fourteenth months. In Figure 3, there is some evidence of an increasing hazard (positive duration dependence) beyond the first year especially when we control for education and UH. However, when we conducted step by step comparisons of the baseline after the ninth month, we were unable to reject of hypothesis of no difference. This result was even true of the sharp increase in the baseline hazard at the last step, i.e., we were unable to reject the null hypothesis that the last two steps are equal due to the large standard errors. In sum, we find support for negative duration dependence in the first twelve months as have others, but this support is weakest in our preferred specification with controls for both client schooling and unobserved heterogeneity.

The remaining hazard coefficients for the welfare spells are in Table 4. Each coefficient indicates the proportional shift in the baseline hazard predicted by the indicated change in the independent variable. Hence, a coefficient of 1.10 represents a ten percent shift up in the hazard (shorter spell) and a coefficient of 0.90 represents a ten percent shift down (longer spell). It may be easier to think in terms of spell length. The baseline hazard in Figure 3 with controls for both

schooling and UH implies a mean spell length of 9 months if one assumes a constant hazard beyond the sample period.¹⁰ A ten percent shift up (down) in the hazard implies a mean spell length of 8 (10) months. A fifty percent shift up (down) in the hazard implies a mean spell length of 5 (17) months. Most of the variables have significant coefficients of the sign that would be predicted by a simple model of welfare participation. Older lone mothers have higher hazards (shorter spells). A schooling level of Grade 9 or less is strongly associated with longer spells but this educational category characterizes a small and rapidly diminishing proportion of the population especially younger adults (Dooley 1996). Post-secondary education is associated with shorter spells. A joint test (not shown here) of the hypothesis that all of the schooling coefficients are equal to zero rejects the null with a p-value of less than .01. The status of never-married is strongly associated with longer welfare spells, a result consistent with all previous studies cited in Section II. The specific interpretation of this finding is obvious, but this characteristic is clearly not just a proxy for youth and poor schooling. More children are associated with longer welfare spells which is consistent with the heavier home responsibilities. Furthermore, welfare is worth more to larger families in the sense that benefits vary with family size but market wages do not. Note, however, that we adjust both our welfare benefit and minimum wage earnings measures for family size. The presence of pre-school children is associated with longer spells. The BC data available to Barrett did not contain the age of children. The measures used by Fortin, Lacroix and Thibault with the Quebec data were the number of children under 6 and the number of children age 6-17. Both effects were significantly negative (longer spells for younger children) and, consistent with our results, the coefficient for the number of preschool children was much larger than that for school age children. We can not replicate their model exactly because we only know the age of the youngest child. Few lone mothers

are classified as non-employable in our data, but those that are have a much lower hazard than do the employable ones ¹¹ Higher welfare benefits are strongly associated with a lower hazard. These estimates imply that an increase of \$100 per month per family member (about a 25% increase at the mean) implies an increase in the mean predicted spell length from 9 months to 14 months. The expected effect of an increase in minimum wage earnings is ambiguous for well known reasons. Higher wages, if available, make market work more attractive but the effect of a legislated increase may be to limit job opportunities for welfare clients. Our estimates in Table 4 indicate a positive impact (shorter spell) of minimum wage earnings on the hazard rate. As expected, a higher unemployment rate is associated with a lower hazard rate and longer welfare spells. The coefficients for the help-wanted index are not significantly different from zero.

The coefficient for previous months on welfare is highly significant which indicates the presence of lagged negative duration dependence. However, the magnitude of the coefficient is small. An additional ten previous months on welfare increases the expected length of the current spell by less than half a month. The interactions coefficients imply that this lagged duration effect does not vary with the age of the client. We also include two dummy variables which indicate if the spell is the second or third (or higher order) spell within the sample period. We find, as did Barrett, that both coefficients are significantly positive. Our sample period is less than five years long and, as a result, average spell length must be relatively short for there to be multiple spells.

Our quarterly dummy variables confirm that the hazard rate is distinctly higher in the second and third quarters than in the fourth quarter. The evidence also indicates that the first quarter hazard is higher than the last quarter hazard. The next-to-last row of Table 5 provides an estimate of the variance in the unobserved determinant of the welfare hazard. The coefficients in columns (2) and

(4) are both significantly different from zero which indicates rejection the hypothesis of no UH as did the likelihood ratio tests cited earlier in this section.

VI. Off-Welfare Spells

The empirical hazard and survival functions for the off-welfare spells are presented in Figures 4 and 5 respectively. The empirical hazard falls off sharply during the first ten months of the spell and thereafter declines very slowly or not at all. The survival function reveals that approximately 25% of ex-clients return to welfare within the first 10 months. Beyond that point, the survival function becomes relatively flat and about 60% of ex-clients are still off welfare after 4 years.

The estimates of the proportional hazard models for off-welfare spells are presented in Figure 6 and Table 5. We report results for only the two specifications that do not control for UH. The log-likelihood function is a function of the variance of the UH and constraining the value of this variance to be positive results in the log-likelihood being maximized at zero. This result indicates that UH is not present in our sample of off-welfare spells.

The baseline hazard in Figure 6 uses the same values for the independent variables that were used for the welfare baseline hazard with one exception. Previous months on welfare is now set equal to the sample mean of 14. Our Wald tests of the baseline in both off-welfare specifications indicate the presence of negative duration dependence during most of the first year of the spell but not beyond that point. Staying off welfare during the first twelve months appears to lead to a lower likelihood of recidivism

The remaining proportional hazard coefficients are in Table 5. The baseline hazard with controls for both schooling implies a mean off-welfare spell length of 32 months if one assumes a constant hazard beyond the sample period.¹² A ten percent shift up (down) in the hazard implies a mean spell length of 30 (34) months. A fifty percent shift up (down) in the hazard implies a mean spell length of 25 (46) months.

Older lone mothers consistently have lower hazards (longer spells). None of the schooling variables have significant coefficients and, furthermore, a joint test of the hypothesis that all of the schooling coefficients are equal to zero fails to reject the null (p -value = .75). Never-married lone mothers are more likely to return to welfare (higher hazard) which is consistent with our findings from the previous section and the literature in general.

Our expectation was that a larger number of children would be associated with a higher likelihood of returning to welfare, but the estimated coefficient implies just the opposite. (Fortin et al. estimated coefficients for the number of children under 6 and the number of children age 6-17, neither of which were significantly different from zero.) One possible explanation for this finding is selection bias, i.e., those mothers with large families who do manage to leave welfare are a highly selective subset of all clients and possess (unobserved) characteristics that make a return to social assistance very unlikely. This hypothesis is, unfortunately, not testable with currently available data.

Another possible explanation for the family size coefficients arises from the possibility that the birth of an additional child may prompt a return to welfare in some cases because this raises the value of home-time and lowers the net value of market work due to child care costs. And such additional births while off-welfare may be more likely among those ex-clients who have relatively

few children and, therefore, less incentive to limit family size which would be consistent with our coefficient estimate.¹³

The presence of a child under age 2 is strongly associated with a higher probability of a return to welfare but the presence of a child age 2-5 is not. This difference in age-of-child effects was also found for welfare spells. Mothers who are classified as non-employable due to poor health or disability have a higher likelihood of a return to social assistance.

The coefficients for welfare benefits imply, as expected, that higher benefit levels make a return to social assistance more likely. As with welfare spells, the size of this effect is quite large. An increase of \$100 in per capita welfare benefits (about 25%) would lead to a decrease in the predicted mean spell length from 32 months to 16 months. Higher minimum wages are associated with longer off-welfare spells which is consistent with the finding in Table 4 that higher minimum wages lead to shorter welfare spells. Higher levels of unemployment, as expected, are associated with a faster return to welfare but the coefficients are not significant. The coefficients for the help-wanted index are statistically significant but have the unexpected effect of making a return to welfare more likely. We have no ready explanation for this finding.

The linear coefficients for the number of previous months on welfare have a positive sign as which is consistent with our finding of negative lagged duration dependence for welfare spells (more previous months means a faster return to welfare). The p-values for the linear term are large, but the coefficients for the interaction with age are significant. This implies that positive lagged duration dependence (more past use means a quicker return to welfare) may characterize the lone mothers who are older have terminated spells. However, even among lone mothers age 42, who represent less than 10% of our sample, the effect of another 10 months of previous welfare is to shift up the

hazard by only 6%. Lagged duration dependence does not appear to be important quantitatively in the case of off-welfare spells. The significantly, positive coefficients for the higher order (2nd, 3rd or higher) spells imply that persons who have had multiple spells are more likely to return to welfare than are persons who have had only one spell. This result is consistent with our findings in the previous section in that persons who have manage to have more than one spell within a five year time period are likely to be persons who have frequent short welfare spells. Finally, our quarterly dummy variables confirm that a return to welfare is more likely in the third quarter. This quarter was also one in which an exit from welfare was most likely.

VII. Summary and Conclusion

This paper provides a first look at the dynamics of social assistance use among lone mothers in Ontario. We use an administrative data set provided by the Ontario Ministry of Community and Social Services to analyse the relationship between the duration of spells, both on welfare and off welfare, and a series of factors including the clients' personal characteristics, their history of welfare use, the duration of current spells, labour market conditions and social assistance benefit levels.

The empirical hazard and survival functions reveal considerable variation in the length of welfare spells. Approximately 30% of the spells end within 5 months and 50% of the spells are over within 20 months. However, over 30% are still ongoing at 55 months. Our proportional hazard estimates strongly confirm the presence of unobserved heterogeneity in welfare spells. Three of the four specifications which we estimate also indicate the presence of negative duration dependence (the likelihood of leaving welfare falls as the spell proceeds) during the first year of the spell. The

support for this finding, however, is weakest in our preferred specification. Our results also confirm the existence of negative lagged duration dependence, that is, the current spell is longer for lone mothers with more months of welfare receipt in previous spells. However, the magnitude of this effect is quite small.

Most of the other welfare spell coefficients have significant effects of the expected sign. Welfare spells tend to be longer for those lone mothers who are younger, poorly educated, never married, not employable and for those who have larger numbers of pre-school children. Spell lengths also increase with the level of potential welfare benefits and the unemployment rate, and to decrease with the level of the minimum wage. The magnitude of most of the effects are sizable especially in the case of welfare benefits, schooling, marital status and family size.

The empirical survival functions for off-welfare spells reveal that 25% of ex-clients return to welfare within the first 10 months. The survival function becomes relatively flat beyond that point, however, and about 60% of ex-clients are still off welfare after 4 years. Our proportional hazard estimates reveal that there is no strong evidence of unobserved heterogeneity in the case of off-welfare spells. There is support for the presence of negative duration dependence (the likelihood of returning to welfare declines as the spell proceeds) during the first year. There is some evidence of positive lagged duration dependence (more months of welfare receipt in previous spells means a faster return to welfare) but only among older lone mothers and the size of the effect is again quite small.

Off-welfare spells tend to be shorter (the return to welfare more rapid) for those lone mothers who are older, never married, not employable and who have very young children. Higher welfare benefits also appear to hasten the return to welfare. Off-welfare spells are longer when the minimum

wage is higher. We also find that the return to welfare is more likely when a mother has a smaller number of children. This last and unexpected result may be due to the selective nature of our sample, but this finding clearly calls for more investigation.

What are the most important policy implications of our findings? We find mixed evidence concerning the key question of the scarring or stigmatizing effects of welfare, that is, for a “welfare trap”. There is evidence that the likelihood of exiting welfare declines during the first year of a spell. The support is weakest, however, in our preferred specification. There is more consistent evidence that the likelihood of returning to welfare declines during the first year after an exit, that is, staying off the rolls has the beneficial effect of making recidivism less likely. Clients who have spent more months on welfare in the past (controlling for age) do appear to have somewhat longer future spells on welfare and to return more quickly to the rolls once they leave, but the magnitude of this effect is very small. Finally, the length of both welfare and off-welfare spells is very sensitive to the levels of welfare benefits.

Our results indicate the need for further work in the following areas. (1) Additional parameters should be incorporated into our analysis including measures of the coverage and adequacy of the (un)employment insurance system and of aggregate labour demand. (2) Consideration should be given to alternative measures of welfare dependency such as the proportion of a fixed window of time that is spent on welfare which reflects both the likelihood of starting a spell and the spell length. This measure would also permit the use of our data for the 1983-1989 period. (3) We need to analyse the spell duration of other groups such as young singles and couples. (4) A competing hazard model would help us to distinguish among different reasons for leaving

welfare and possibly provide insight into the unobserved heterogeneity which our study has confirmed.

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Endnotes

1. For examples of U.S. spell duration studies see Blank (1989), Feaster, Gottschalk and Jakubson. (1987), O'Neill, Bassi and Wolf (1987) and Plant (1984).
2. These are Bruce, Elgin, Hamilton-Wentworth, Huron, Manitoulin, Oxford, Peel, Perth, Peterborough and Rainy River.
3. We observe the actual cheque amount for each month on welfare. In a few cases, this amount is negative or zero which means that the cheque has been temporarily "blocked" for administrative reasons, e.g., information concerning the number of dependents is missing. MCSS considers such persons to be part of the regular caseload and so do we.
4. Our earliest welfare spell (using the two month rule) starts in March 1990 because GWA data are missing for November and December of 1989. A new welfare spell starts in March 1990 if a cheque is issued in that month but not in January and February of 1990. Our earliest off-welfare spell starts in April 1990 and occurs if a cheque is issued in March 1990 but there is no cheque in January and February (so that a new welfare spell starts in March) and no cheque in April and May (so that the new welfare spell lasts only one month) of 1990. Under the two-month rule, a welfare spell can last one month but an off-welfare spell must be at least two months long. This is because no welfare spell stops until one encounters two (or more) consecutive months off-welfare.

5. We also excluded lone mothers who receive only supplementary aid, special assistance, or aid for a foster or handicapped child. Also, henceforth we will use the term “case classification” when referring to both FBA and GWA categories even though “reason for assistance” is the term officially used for the latter.
6. One must have a dependent under age 22 to be classified as an FBA “sole support parent”. Such is not the case with a GWA client who “lacks a principal family provider”. Hence, we added the criterion of “has one or more dependents under age 22” for the latter.
7. See Dooley (1996) for a discussion of this issue in the context of the Survey of Consumer Finances.
8. We describe the frequencies in Table 3 as though they refer to clients but they actually refer to spells. The former are easier to discuss and the two sets of frequencies are very similar.
9. In one other specification, we included a dummy variable if the month was after October 1991 when the second part of the Steps To Employment Program was introduced. This decreased the welfare tax rate and allowed the full amount of child care to be deducted from gross income in the calculation of benefits. The coefficient for this variable was not significant and there was little change in the other estimates. Too few off-welfare spells ended before October 1991 for this coefficient to be identified in the off-welfare spell hazards.
10. Note that this predicted mean of 9 months is considerably shorter than the mean of 17 months among all observed spells, including censored ones, in Table 3. The reason for this difference is that we have assumed the presence of unobserved heterogeneity, as is justified by the data, and have assigned a value for the unobserved factor that results in relatively short predicted spells.
11. Some provinces classify lone parents with very young children as “unemployable” and this was true of Barrett’s study with BC data.
12. This predicted mean of 32 months is considerably longer than the mean of 17 months among all observed spells in Table 3. This difference is just as one would expect, that is, the observed mean to be shorter because it includes censored spells. We have not assumed the presence of unobserved heterogeneity for off-welfare because the data do not support this assumption.
13. Of the lone mothers whom we observe to return to welfare, 7% have more children upon return than at the end of their previous spell. Of that 7%, 79% had 1-2 children at the end of their previous spell. Unfortunately, we lack the data to make the appropriate comparisons because we do not know the (post-welfare) fertility history of those mothers with censored off-welfare spells.

Table 1
Ontario Assistance Caseload: December, 1983-1994

Year	Family Benefits	General Assistance	Single Persons	Lone Parents	Other Families	Total Cases	Total Cases/ Population, Age 15+
	Number of Cases						
1983	137,099	113,282	135,846	76,640	37,895	250,381	3.7%
1984	146,798	110,859	140,962	79,034	37,661	257,657	3.7%
1985	152,356	112,738	143,777	81,859	35,775	261,411	3.7%
1986	159,348	114,186	149,955	90,975	32,604	273,534	3.8%
1987	168,659	112,342	151,909	97,927	31,165	281,001	3.9%
1988	180,498	118,229	155,598	105,167	37,962	298,727	4.1%
1989	196,522	128,588	164,963	119,021	41,126	325,110	4.3%
1990	225,582	192,499	214,870	147,609	55,601	418,081	5.5%
1991	271,333	292,898	295,424	185,361	83,446	564,231	7.3%
1992	299,315	337,801	326,427	211,850	98,794	637,116	8.0%
1993	317,112	358,800	na	197,011	na	675,912	8.4%
1994	327,106	332,800	na	198,571	na	659,906	8.0%
	Distribution of Cases						Total Recipients/ Total Population
1983	55	45	54	31	15	100	5.2%
1984	58	42	55	31	14	100	5.2%
1985	58	42	55	31	14	100	5.1%
1986	58	42	55	33	12	100	5.3%
1987	60	40	54	35	11	100	5.4%
1988	60	40	52	35	13	100	6.1%
1989	60	40	50	37	13	100	6.2%
1990	54	46	52	35	13	100	7.8%
1991	48	52	52	33	15	100	10.5%
1992	47	53	51	33	16	100	11.8%
1993	47	53	na	29	na	100	12.4%
1994	50	50	na	30	na	100	12.1%

Source: Inventory of Income Security Programs in Canada, Health and Welfare Canada

Table 2
Ontario Social Assistance Benefit Levels and Total Expenditures: 1983-1994
(\$1990)

Year	Annual Benefit Level		Total Expenditures
	One Parent With 2 Children	Two Parents With 2 Children	(millions)
1983	10,932	10,851	1,365
1984	11,761	11,792	1,567
1985	12,101	12,137	1,677
1986	12,735	13,719	1,770
1987	13,552	14,383	1,888
1988	13,778	15,216	2,113
1989	13,850	15,102	2,279
1990	15,193	17,791	2,609
1991	15,553	18,201	3,386
1992	15,839	18,150	4,752
1993	15,821	18,112	5,637
1994	15,828	17,952	6,055

*Sources. Benefit levels from The Ontario Gazette-Regulations. Expenditures from Public Accounts of Ontario as cited in Sabatini (1996).

Table 3		
Summary Statistics for Welfare Spells and Off-Welfare Spells: 1990-1994		
	First Month of Welfare Spell	First Month of Off-Welfare Spell
Mean Spell Length (months with censored spells)	17	17
% of Spells Censored	47%	67%
Months of Previous Welfare Use Since 1983	7	16
Any Prior Welfare Use Since 1983	39%	100%
1st Spell in Sample Period	77%	80%
2nd Spell in Sample Period	17%	16%
3rd or Higher Spell in Sample Period	5%	4%
Age of Lone Mother		
<25	18%	13%
25-34	47%	48%
35-44	28%	33%
>44	7%	8%
Education (frequency of non-missing values in parentheses)		
Less than Grade 10	11% (15%)	11% (15%)
Grade 10 or 11	24% (33%)	25% (33%)
Grade 12 or 13	27% (36%)	26% (35%)
Some Post Secondary	12% (16%)	13% (17%)
Missing Values for Education	26%	25%
One Child Under Age 22	48%	47%
Two Children	34%	35%
3 or More Children	18%	18%
Age of Youngest Child <2	28%	17%

Table 3 (continued)		
Age of Youngest Child 2-5	31%	35%
Age of Youngest (Dependent) Child 6-21	41%	48%
Never Married	23%	20%
Not Employable (Disabled)	4%	3%
Maximum Monthly Welfare Benefits/Family Size(1990\$)	461	462
Minimum Wage Earnings/Family Size (140 hours per month)	304	310
Unemployment Rate	8.8%	9.1%
Help Wanted Index	112	105
Sample Size	20139	10732

Table 4
Duration Model Estimates on Welfare Spells

Variables	Without Education		With Education	
	(1)	(2)	(3)	(4)
	No Heter.	Heterog.	No Heter.	Heterog.
Age/10	1.114* (.00)	1.171* (.00)	1.112* (.00)	1.198* (.00)
Education: Less than Grade 10	---	---	0.931* (.02)	0.879* (.00)
Grade 10 or 11	---	---	0.991 (.38)	1.011 (.39)
Some Post Secondary	---	---	1.099* (.00)	1.107* (.02)
Never Married	0.746* (.00)	0.701* (.00)	0.786* (.00)	0.731* (.00)
Two Children	0.810* (.00)	0.662* (.00)	0.749* (.00)	0.544* (.00)
Three or More Children	0.670* (.00)	0.474* (.00)	0.610* (.00)	0.362* (.00)
Youngest Child Under 2	0.875* (.00)	0.861* (.00)	0.858* (.00)	0.825* (.00)
Youngest Child 2 to 5	0.973 (.14)	0.962 (.00)	0.959 (.25)	0.938 (.06)
Not Employable (Health/Disability)	0.681* (.00)	0.656* (.00)	0.690* (.00)	0.648* (.00)
Potential Benefits/Family Size (\$00)	0.593* (.00)	0.542* (.00)	0.656* (.00)	0.584* (.00)
Minimum Wage Earnings/Family Size (\$00)	1.518* (.00)	1.449* (.00)	1.295* (.00)	1.179 (.05)
Unemployment Rate	0.956* (.00)	0.949* (.00)	0.953* (.00)	0.948* (.00)

Table 4 (continued)				
Help-Wanted Index /10	1.001 (.44)	1.006 (.25)	0.995 (.25)	0.999 (.46)
Number of Past Months on Welfare /10	0.978* (.00)	0.972* (.00)	0.980* (.00)	0.967* (.01)
(Age/10) * (Number of Past Months of Welfare/10)	0.993 (.47)	0.997 (.39)	1.003 (.39)	1.001 (.49)
Second Spell	1.129* (.00)	1.158* (.00)	1.082* (.00)	1.082 (.03)
Third or More Spell	1.255* (.00)	1.362* (.00)	1.191* (.00)	1.303* (.00)
First Quarter	1.082* (.00)	1.093* (.00)	1.058 (.00)	1.063 (.468)
Second Quarter	1.152* (.00)	1.149* (.00)	1.153* (.00)	1.145* (.00)
Third Quarter	1.159* (.00)	1.158* (.00)	1.139* (.00)	1.138* (.00)
Sigma (Gamma Heterogeneity)	---	0.787 (.00)	---	1.173 (.00)
Sample Size	20139	20139	14918	14918
<p>*The baseline hazard was estimated for a spell which is the first one (in 1990-1994) that occurs in the 4th quarter for a mother aged 32 who is previously married, employable, with no previous welfare use, grade 12-13 schooling and one dependent child age 6-21. The unemployment rate is 9.0, the help-wanted index is 110, the benefit level is 460, and minimum wage earnings are 316.</p> <p>**Dummy variables were included for five regions, but the results are not reported here.</p> <p>***Values in the parenthesis are p-values. Asterisks indicate that the coefficient is significantly different from one at a 5% confidence level.</p>				

Table 5		
Duration Model Estimates Off-Welfare Spell: No Unobserved Heterogeneity		
Variables	Without Education	With Education
Age/10	0.845* (.00)	0.864* (.00)
Education: Less than Grade 10	---	1.009 (.448)
Grade 10 or 11	---	0.981 (.34)
Some Post Secondary	---	1.056 (.17)
Never Married	1.150* (.00)	1.205* (.00)
Two Children	0.634* (.00)	0.709* (.00)
Three or More Children	0.500* (.00)	0.625* (.00)
Youngest Child Under 2	1.557* (.00)	1.484* (.00)
Youngest Child 2 to 5	0.995 (.46)	1.006 (.046)
Not Employable (Health/Disability)	1.701* (.00)	1.826* (.157)
Potential Benefits/Family Size (\$100)	2.597* (.00)	2.681* (.00)
Minimum Wage Earnings/Family Size (\$100)	0.270* (.00)	0.289* (.041)
Unemployment Rate	1.010 (.30)	1.015 (.23)
Help-Wanted Index /10	1.089* (.00)	1.080* (.00)

Table 5 (continued)		
Number of Past Months on Welfare /10	1.017 (.08)	1.015 (.15)
(Age/10) * (Number of Past Months on Welfare/10)	1.036* (.01)	1.046* (.00)
Second Spell	1.575* (.00)	1.431* (.00)
Third or More Spell	1.867* (.00)	1.573* (.00)
First Quarter	0.954 (.19)	0.932 (.12)
Second Quarter	1.060 (.11)	1.037 (.25)
Third Quarter	1.106* (.02)	1.144* (.00)
Sample Size	10732	8081
<p>*The baseline hazard was estimated for a spell which is the first one (in 1990-1994) that occurs in the 4th quarter for a mother aged 32 who is previously married, employable, with 14 months of previous welfare use, grade 12-13 schooling and one dependent child age 6-21. The unemployment rate is 9.0, the help-wanted index is 110, the benefit level is 460, and minimum wage earnings are 316.</p> <p>**Dummy variables were included for the regions, but the results are not reported here.</p> <p>***Values in the parenthesis are p-values. Asterisks indicate that coefficient is significantly different from one at a 5% confidence level.</p>		

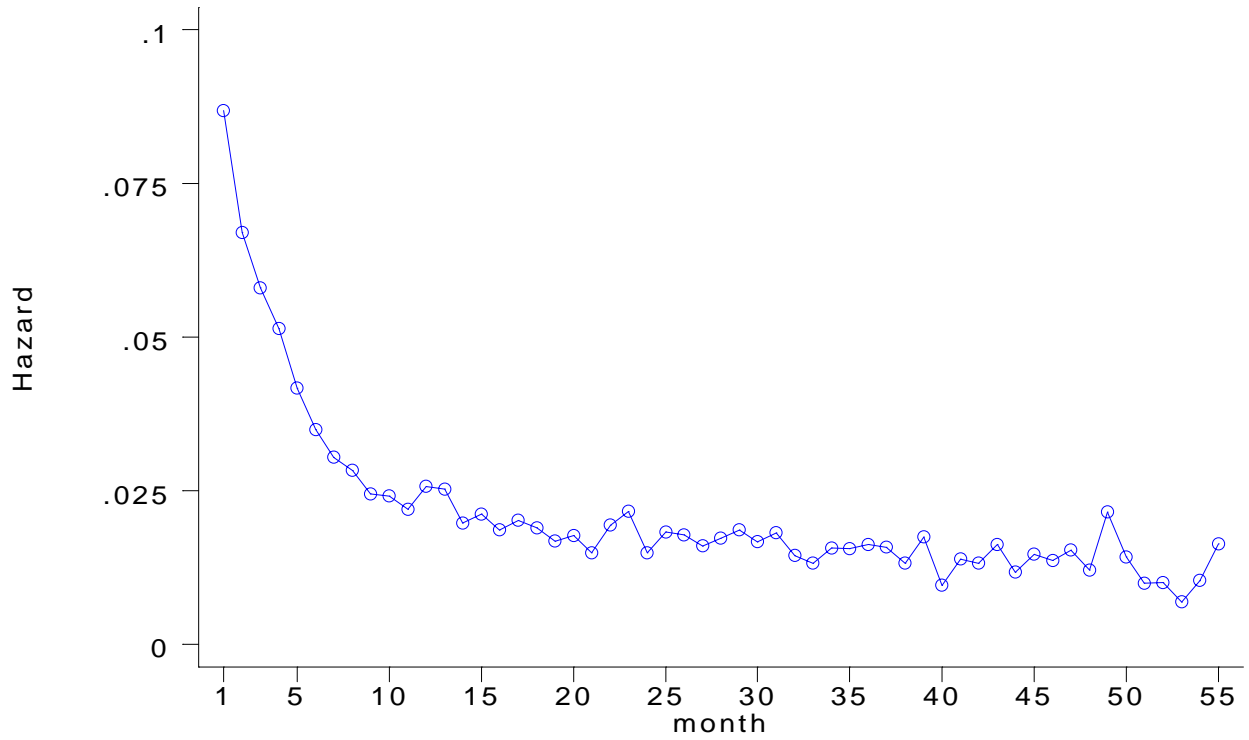


Fig. 1 Empirical Hazard Function for On Welfare Spells

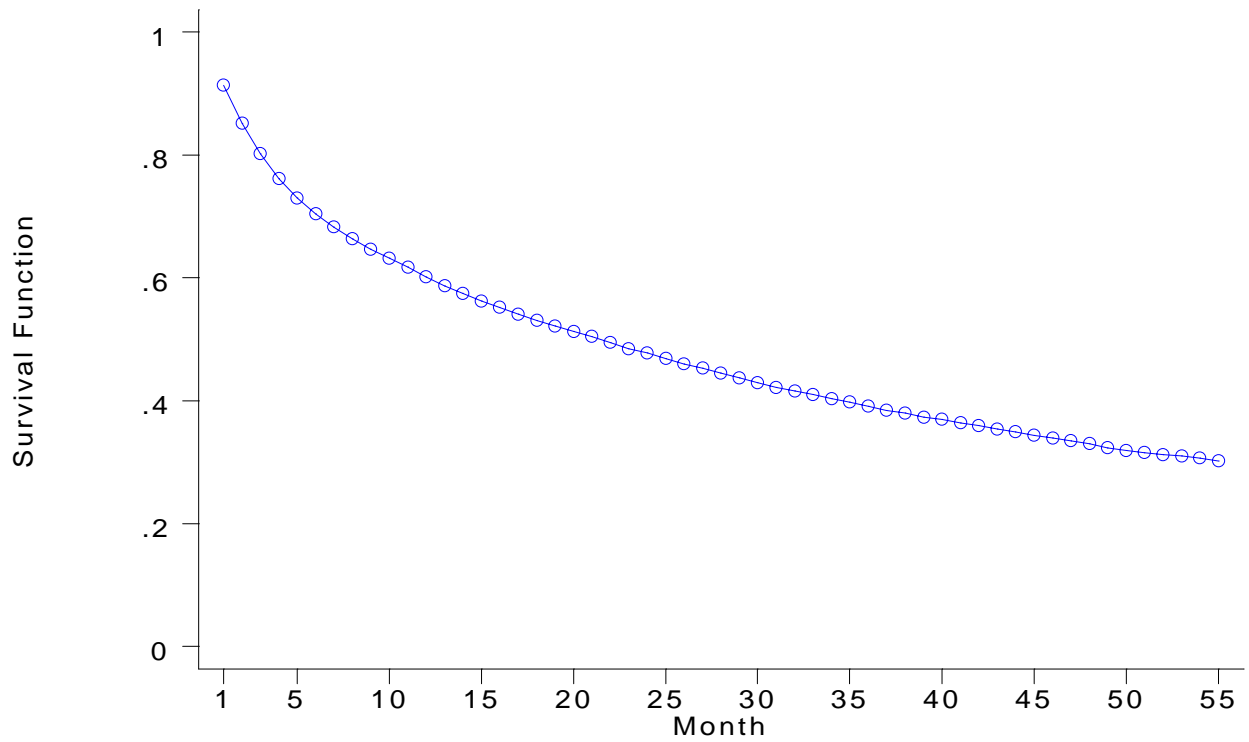


Fig 2. Survival Function for On Welfare Spells

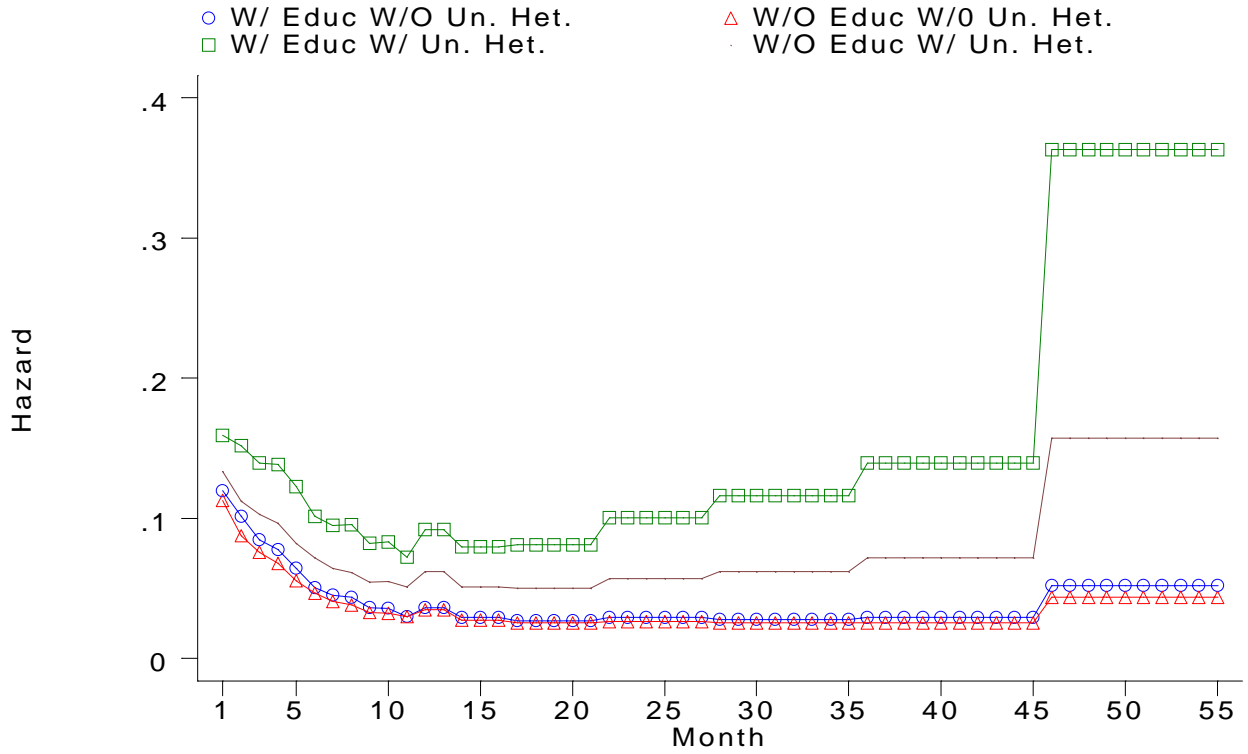


Fig.3 Baseline Hazards for On Welfare Spells

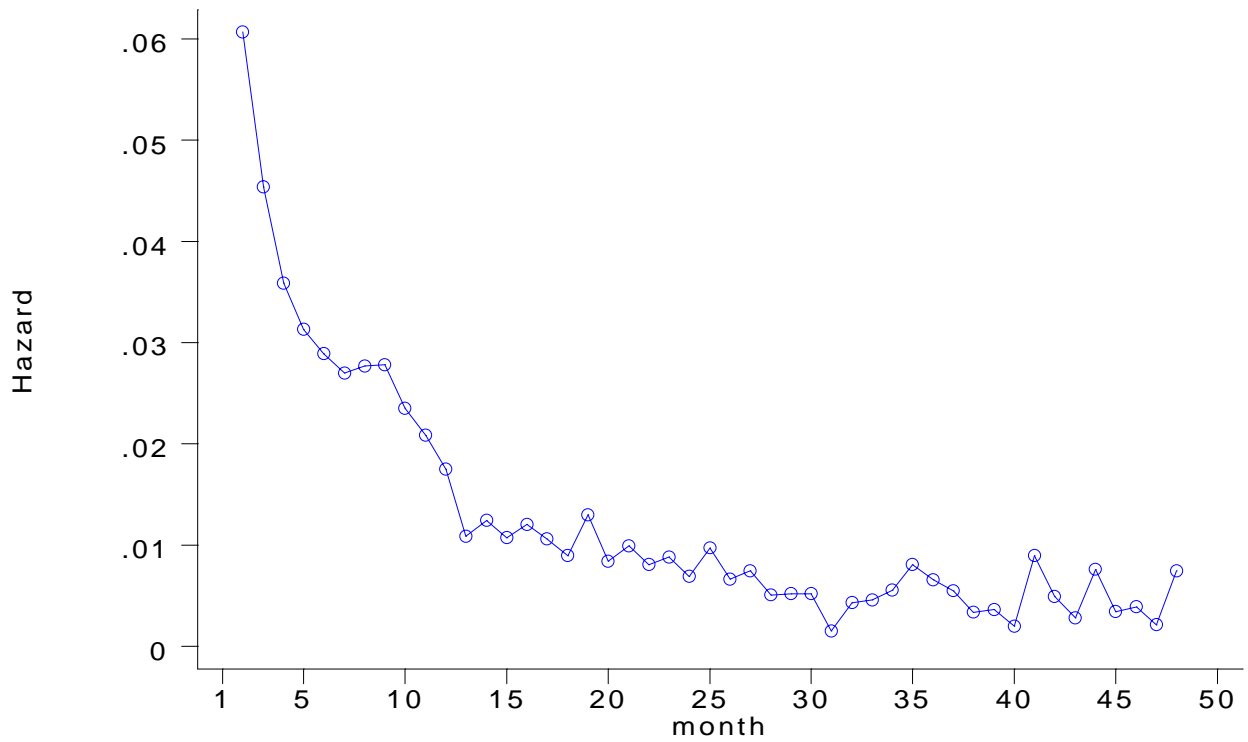


Fig 4. Empirical Hazard Function for Off Welfare Sp

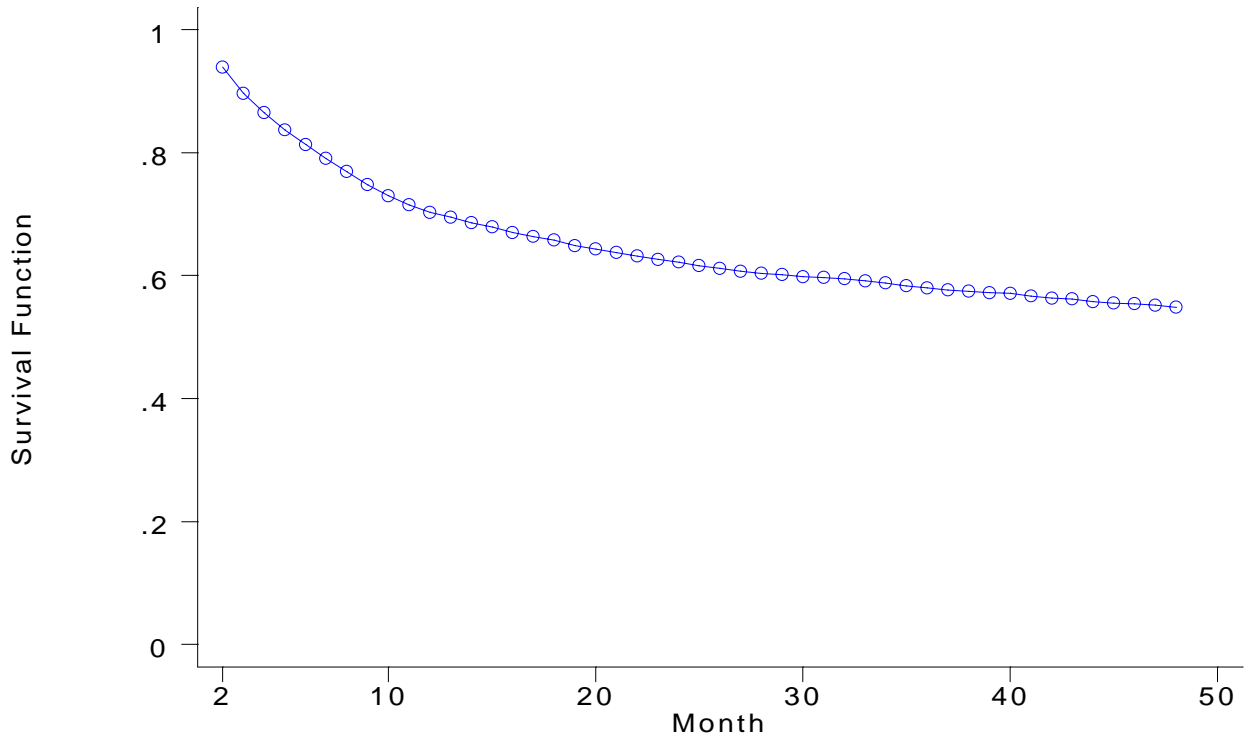


Fig 5. Survival Function for Off Welfare Spells

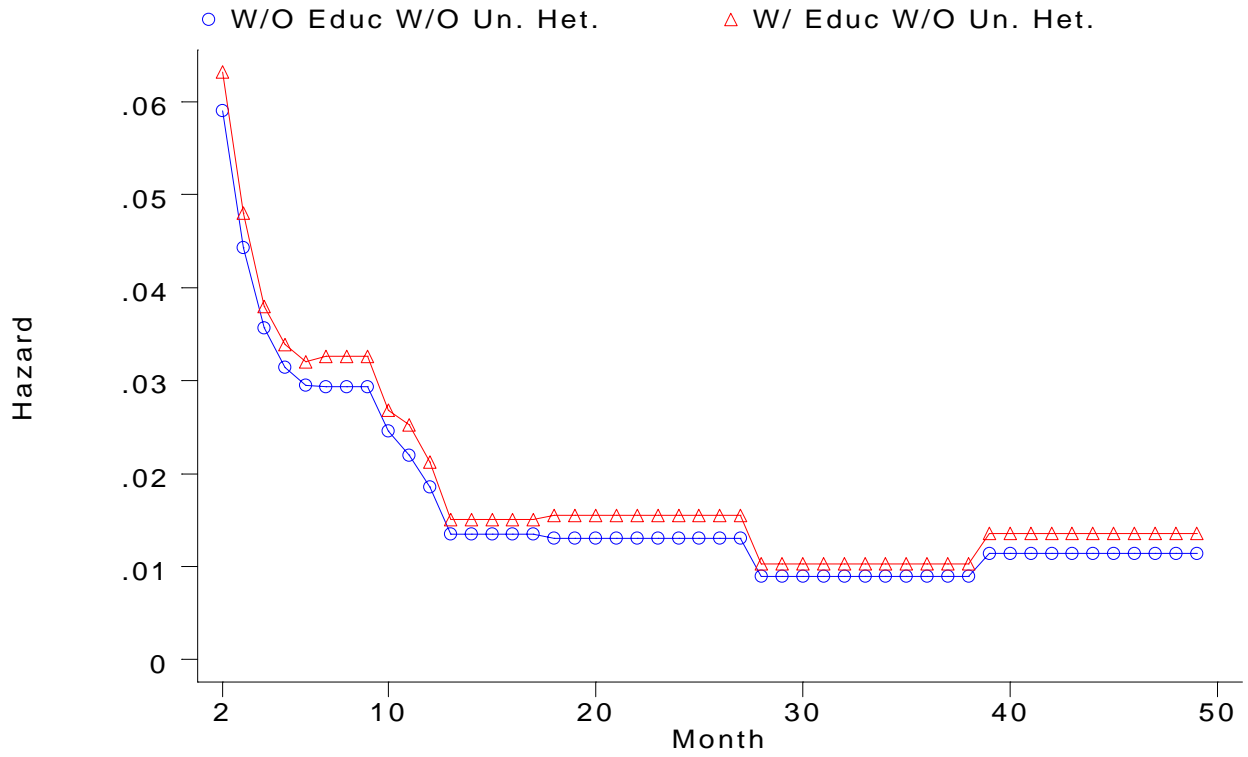


Fig.6 Baseline Hazard for Off Welfare Spells

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