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Lori J. Curtis, Kate Rybczynski

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Exiting Poverty: Does Sex Matter?

LORI J. CURTIS

Department of Economics, University of Waterloo

KATE RYBCZYNSKI

Department of Economics, University of Waterloo

Nous savons peu de choses sur les facteurs liés à la durée de la pauvreté au Canada et sur des facteurs qui pourraient avoir un effet différent chez les hommes et chez les femmes. De plus, la recherche s'intéresse peu à tout ce qui entoure la sortie de la pauvreté au Canada : par exemple, certains Canadiens ne s'éloignent que légèrement du seuil de pauvreté, alors que d'autres réussissent à avoir un revenu réellement supérieur au seuil de pauvreté. Dans cet article, nous explorons les déterminants de la durée de la pauvreté chez les hommes et chez les femmes au Canada. L'une des contributions majeures de cette recherche est que nous y examinons la durée de la pauvreté en lien avec différents scénarios de sortie de la pauvreté, vers un revenu légèrement au-dessus du seuil de pauvreté et vers un revenu réellement supérieur au seuil de pauvreté. Nous montrons que près d'un quart des périodes de pauvreté se terminent par une sortie qui se situe autour de 110 pour cent du seuil de pauvreté (donc très près de la pauvreté) ; et plusieurs Canadiens qui en sortent de cette façon vivent de nombreux épisodes de pauvreté. Nos résultats, prévisibles, indiquent qu'un degré supérieur de scolarité augmente la probabilité d'une sortie de la pauvreté vers un revenu réellement supérieur au seuil de pauvreté, mais que peu de facteurs sont associés à une sortie de la pauvreté vers un revenu légèrement au-dessus du seuil de pauvreté. Par ailleurs, plus les périodes de pauvreté sont longues, plus la probabilité d'en sortir est faible, et particulièrement vers un revenu réellement supérieur au seuil de pauvreté. De plus, les coefficients ne permettent pas d'établir de réelles différences entre les sexes ; il y a toutefois des différences dans les caractéristiques associées à une sortie de la pauvreté vers un revenu légèrement au-dessus du seuil de pauvreté et vers un revenu réellement supérieur au seuil de pauvreté.

Mots clés : pauvreté, durée, travail, femmes, sexe, Canada

Little is understood about the factors associated with poverty duration in Canada, or which factors, if any, may affect women and men differently. Moreover, research pays scant attention to how far Canadians transition out of poverty. For example, some may exit poverty only marginally, while others exit much further above the poverty line. We investigate the determinants of poverty duration among women and men in Canada. A major contribution of this article is the examination of poverty duration across different exit destinations (competing risks): exits to just above the poverty line versus exits to further above the poverty line. We find that nearly one-quarter of poverty spells end within 110 percent of the poverty line (near poverty). Many of those who exit to near poverty experience multiple spells. As expected, we find that higher education increases the probability of transitioning further out of poverty, but very little is correlated with exits to near poverty relative to remaining in poverty. The longer the poverty spell, the lower the probability of exit, particularly to higher income levels. We find few significant gender differences in the coefficient estimates. Differences are present in the characteristics associated with exits close to or further away from the poverty line.

Keywords: poverty, duration, labour, women, gender, Canada

Introduction

Women are identified by the government of Canada as one of the groups at high risk of poverty.¹ Actually, they are identified twice: women and female lone parents are both identified as high-risk groups (Collin and Jensen

2009). The "feminization of poverty" became high profile in the early 1990s: several publications, a conference, and a movie on the topic were in circulation (Dooley 1994). The examination of women in poverty continued in the subsequent two decades with a plethora of studies

indicating that women, particularly lone mothers, continued to be at high risk of living in poverty in general and, more specifically, experiencing longer-term poverty (see, for example, Burstein 2005; Collin 2007; Collin and Jensen 2009; Finnie and Sweetman 2003; Laroche 1997; Lochead and Scott 2000; Morissette and Drolet 2000; Morissette and Zhang 2001).

Between 1992 and 1996, over 60 percent of the long-term poor were women (Finnie and Sweetman 2003). Moreover, 29 percent of all women and 66.7 percent of lone mothers were poor at least once in the period, in contrast to 23.6 percent of all men and 40 percent of male lone parents (Finnie and Sweetman 2003). These statistics are consistent with historical data showing that a strong contributor to the feminization and juvenilization of poverty from the 1970s to the 1990s was the increase in the proportion of female-headed lone-parent families (Crossley and Curtis 2006; Dooley 1994). Currently, lone mothers and both male and female non-elderly unattached persons have the distinction of being the demographic groups at highest risk of living in poverty (Collin 2007; Collin and Jensen 2009; Murphy, Zhang, and Dionne 2012).

With respect to broad population trends, Murphy et al. (2012) demonstrate that poverty statistics changed little between 1976 and 2009 when the Low Income Measure (LIM) is used.² Although durations have decreased somewhat since the late 1990s, lone parents and the non-elderly unattached still face particularly long spells; almost one in three lone parents and one in four non-elderly unattached persons spent four years living with incomes under the LIM, while one in six lone parents and non-elderly unattached persons spent six years living in similar circumstances (Murphy et al. 2012).

The Canadian experience of poverty has been relatively easy to document across time, given access to cross-sectional data with an abundance of measures (market income, net income, consumption) and demographic variables repeated over long periods.³ Examining the persistence of poverty spells in Canada has been more difficult because of data limitations. There are Canadian longitudinal data containing excellent income data over many years but few demographic variables (Longitudinal Administrative Databank), or data that contain excellent income and demographic information but cover short time frames (Survey of Labour and Income Dynamics [SLID]).

Initial investigations into longer-term poverty in Canada, using the first panel of SLID, found that low levels of education, work limitations, minority and immigration status, and family type (lone parent or unattached) were important factors associated with whether or not an individual would be poor for several years (Morissette and Drolet 2000; Morissette and Zhang 2001; Fortin 2008 uses the third panel [1999–2004]). Antolin, Dang,

and Oxley (1999), Finnie (2000), Finnie and Sweetman (2003), and Picot, Hou, and Coulombe (2007) added to the preliminary evidence on longer-term poverty by providing the first detailed analyses of poverty dynamics among men and women in Canada. Employment status was found to be one of the major factors associated with exiting poverty (Antolin et al. 1999); family dynamics, age, the length of time already in poverty, immigrant status, and minority language also contributed to the probability of exiting (Finnie 2000; Finnie and Sweetman 2003; Picot, Hou, and Coulombe 2007). These early studies provided the first insights into why some individuals/families spend more time in poverty than others; however, the investigations were somewhat limited by the short time frame of the SLID or by the paucity of explanatory variables contained in the Longitudinal Administrative Databank. Studies of social assistance participation in Canada and of poverty in the United States demonstrate the importance of factors such as education and early life events on duration probabilities (see Choudhury and Leonesio 1997; Fortin, Lacroix, and Drolet 2004; Stevens 1999; Stewart and Dooley 1999).

Moreover, not all poverty experiences or exits from poverty are equal. For example, Morissette and Zhang (2001) report that not all at-risk groups experience severe poverty gaps, and Finnie and Sweetman (2003) document that those most likely to return to poverty are those who exit to just above the poverty line, that is, to near poverty.⁴ Thus, the determinants of poverty duration may be different for those who exit to near poverty and those who exit to further above the poverty line. Despite the severity and persistence of poverty in Canada, we know relatively little about the determinants of poverty duration. Moreover, we have little understanding of the characteristics, or gender differences in characteristics, associated with the probability of exiting to near poverty versus exiting further above the poverty line.

This study expands on the literature by using the five complete panels of SLID (1993–1998, 1996–2001, 1999–2004, 2002–2007, 2005–2010) to provide background on poverty duration among Canadian women and men, and to examine how characteristics such as education, employment status, disability status, and the presence of children impact the probability of exit from poverty. We further investigate poverty spells in a competing-risks framework, differentiating between characteristics associated with exiting to near poverty (just above the poverty line) and characteristics associated with exits to further above the poverty line.

While it is important to implement policies that prevent poverty, policy-makers should be interested in understanding the characteristics associated with the (in)ability to escape poverty or to move beyond near poverty. The article proceeds as follows: the second section discusses the methodology, the third section de-

scribes the data, the fourth and fifth sections present the descriptive statistics and estimation results, and the final section offers a summary/discussion.

Methodology

Subsequent to a descriptive analysis of poverty spells, we employ hazard analysis to investigate the determinants of poverty spell duration and exit. A hazard rate gives the probability of exiting a spell at year t , conditional on being in the spell up to year $t - 1$, and on a set of characteristics. Because our spell data are annual, we use the discrete-time (interval) proportional hazard rate model popularized by Prentice and Gloeckler (1978). Using a complementary log-log transformation (see, for example, Allison 1982; Bergström and Edin 1992; or Jenkins 2005), the resulting discrete-time hazard rate is written as

$$h(t; X) = 1 - \exp(-\exp(X'\beta + \lambda(t))). \quad (1)$$

The hazard rate, $h(t; X)$, at any year t , therefore depends on a set of individual characteristics, X , and a base probability, $\lambda(t)$. Specifically, $\lambda(t)$ represents the base probability of exiting poverty in a given year t , conditional on still being in poverty in year $t - 1$.⁵ Included in X are known correlates of poverty such as household type, education, and employment status.⁶ In addition, we incorporate controls for characteristics which change at the start of the poverty spell, and for characteristics which change just before exit from the poverty spell.

Rather than reporting coefficient estimates, β , we report $\exp(\beta)$, which are called hazard ratios or relative risks. For example, if the hazard ratio for a given characteristic is equal to 1.05, there is a 5 percent increase in the probability of exit, at any time t , for each unit increase in the associated characteristic (see further discussion and derivations of the proportional hazard model in Jenkins 2005).

We note that some poverty spells may end because income rose to just above the poverty line (near poverty), while other spells end with incomes much further above the poverty line. Treating both destinations the same may result in aggregation bias of the coefficients, as different characteristics may be associated with different types of exits (see, for example, D'Addio and Rosholm 2005; Dolton and O'Neill 1996; Jenkins 2000; Narendranathan and Stewart 1993). We estimate destination-specific hazard ratios using a multinomial logit estimator.⁷ We examine exits to less than 1.1 times the poverty line, to between 1.1 and 2 times the poverty line, and to more than twice the poverty line. We then report the hazard ratio/relative odds of exit (relative to non-exit) of each characteristic, by destination. All variables, including our poverty line and destination categories, are described in detail in the following section.

Data

We use all five complete panels (1993–1998, 1996–2001, 1999–2004, 2002–2007, 2005–2010) of the SLID for this study. The SLID's target population is all individuals in Canada excluding persons living on Indian reserves, institutionalized individuals, and some northern communities (less than 3 percent of the population). The sampling frame is taken from the Labour Force Survey. The survey is voluntary and is collected by computer-assisted telephone interviews and from administrative records. Households participating in the SLID are interviewed every year between January and March regarding their labour market experiences, income, education, family relationships, and other demographics (Statistics Canada 2009).

SLID contains personal and job characteristics for Canadian individuals and their families over a six-year period in each of the five panels. Variables of particular interest to this study include after-tax family income, as well as several socio-demographic characteristics found to be associated with longer-term poverty: household type, employment, education, disability, immigrant status, and area of residence. SLID is useful not only because it captures a plethora of information on individual characteristics that are known correlates of poverty but also because it incorporates administrative income data (see Hotz and Scholz 2002 for the strengths and weaknesses of administrative and survey data).

Income data in the SLID are primarily drawn from tax files (Jocelyn and Duddek 2008); as discussed by Finnie and Sweetman (2003), income tax filing rates are very high in Canada among both high- and low-income groups because filing is required for higher incomes and can be lucrative for individuals with lower incomes. Income data are imputed for a fraction, typically less than 20 percent, of the respondents in SLID (see Jocelyn and Duddek 2008 for further details). An even smaller fraction, typically less than 10 percent, of individuals in the SLID provide income data during the survey interview. Survey-provided data are likely to be rounded. However, the Statistics Canada (2006) Community Profiles indicate that similar earnings estimates may be found among the census, SLID, and national accounts. Specifically, census estimates of earnings are approximately 3 percent higher than the SLID and 1 percent higher than national accounts. Heisz (2007) provides further relevant discussion on the quality and shortcomings of income data.

A drawback to using any longitudinal survey data is attrition; however, as the panels in the SLID are restricted to six years, attrition rates are kept relatively low. Unfortunately, the price of short panels is that we are unable to provide a comprehensive analysis of poverty spells lasting six or more years. By necessity, we examine char-

acteristics associated with poverty duration for spells up to five years in length. We keep respondents who drop out of or join the SLID during the panel period, and, as such, the panels are unbalanced.

To examine poverty durations, one must construct a poverty line. There are several poverty lines used in the literature and much debate over what constitutes the “correct” measure (see, for example, Brzozowski and Crossley 2011; Brzozowski et al. 2010; Crossley and Curtis 2006). We use half of the median equivalent family income as the poverty line in any given year. Family income is adjusted using the square root of family size. The half-median (60 percent of the median in Europe) is clearly a relative measure of poverty; however, it is one of the more commonly used measures in the poverty literature (see Cappellari and Jenkins 2004; Crossley and Curtis 2006; Finnie and Sweetman 2003; Milligan 2008).⁸

Because we employ duration analysis, the appropriate unit of analysis is the poverty spell. A spell starts if equivalent family income is above the poverty line in one year and below the poverty line the next year. A spell ends when equivalent family income moves from below the poverty line to above the poverty line. The data are arranged such that we have one observation per poverty spell. While most respondents have only one spell, we observe a few who experience two or three spells within the panel. As such, standard errors are adjusted by clustering on the person’s (head of household’s) identifier in all regression results.

A unique feature of our article is that we examine poverty exits to three exit destinations: to within 1.1 times the poverty line (near poverty), to between 1.1 and 2 times the poverty line, and to over 2 times the poverty line. We chose these cut-offs to be consistent with the poverty literature. Although there is no uniform definition of near poverty, several studies consider exits that are within 10 percent of the poverty line not to be true exits (see, for example, Bane and Ellwood, 1986; Devicienti, 2002; Jenkins 2000). Twice our poverty line is the median equivalent income. Exits between these two extremes are considered mid-range exits.

The SLID contains a separate observation for each individual in the household who is over the age of 15. Thus, we restrict analysis to poverty spells of heads of household. The household head is, by construction, the family member with the highest earnings, and as such, the individual who is the household head may change over time. Furthermore, because a household (husband-wife) breakup may result in poverty spells occurring asymmetrically across men and women, each poverty spell is associated with the individual who is the household head in the first year of the spell.

The characteristics associated with the poverty spell are those of the household head and are recorded the

year before the spell starts. An individual is considered a lone parent if they reported being a lone parent and live with at least one child under the age of 18. Likewise, a household head is categorized as married with (or without) children if they reported being married or common law and had at least one child (or no children) under the age of 18 (married with children is the comparator). Highest level of education achieved is categorized as less than a high school graduate (the comparator), a high school graduate, some college (anyone who has attended college or university and may have obtained a certificate but did not obtain a degree), and bachelor’s degree or above. The number of children, presence of preschool children, age, age squared, disability status, immigrant status, and social assistance receipt are as reported by the household head. We further control for province of residence and spell start year.

To account for the potential effects of characteristics which change as the poverty spell starts, or which change over the course of a poverty spell, we consider several dynamic or change variables. For example, indicator variables are included for changes in household head, gain or loss of income earners in the family, increases or decreases in the number of children in the family, and changes from employed full year to not employed full year, not employed full year to employed full year, disabled to not disabled, not disabled to disabled, unmarried to married, and married to previously married (divorced, widowed, or separated). Changes which occur at the start of the spell are considered as potential reasons that the poverty spell occurred in the first place (e.g., marital dissolution or job loss). Changes that occur over the course of the spell may result in shorter or longer spells depending on the characteristic (e.g., adding an income earner is likely to increase income, but marriage may or may not increase equivalent household income depending on whether additional family members are income earners). The changes are self-explanatory except perhaps the change in household head. If the household head at the start of a poverty spell was not the household head the year before the start of the spell, we consider this a change in household head at the start of the spell. If the household head at the start of the spell is no longer the household head at the end of the poverty spell, we consider this a change in household head mid-spell.

We want to capture the fact that Canadians who transition in and out of poverty may be different from those with single spells, so we construct a dummy variable (multiple spells) that is equal to one if the household head has more than one spell observed in the data (be it with their current family or a different family). Not all of the multiple spells need be in the sample as some of the spells may be left-censored. The multiple-spells variable will likely be correlated with a higher probability of exit because to have multiple spells within a six-year

panel, an individual must transition in and out of poverty relatively quickly. Note that because spell characteristics are recorded in the year before *each* spell starts, the characteristics may differ for the same household head across different spells. For example, the head may have had one child before the first spell but two children before the second spell.

Households headed by individuals under 25 years of age or by students may be poor given their current income, but their long-term outlook may be very different from that of prime-aged adults living in poverty.⁹ Household heads over the age of 59 may have entered early retirement, be receiving government provisions (Old Age Security and/or Guaranteed Income Supplement), or have very high wealth relative to income.¹⁰ We exclude these spells. We also exclude spells of household heads claiming family types categorized as “other” because household relationships may be complex and it is unclear who has claims on the household income/wealth (e.g., intergenerational families where one member may have low income but much wealth). Finally, spells with missing information are also excluded.¹¹ Spell start dates are unknown when the poverty spell begins before or in the first year of the panel or when information is missing about the year before the poverty spell (some respondents drop out of the panel for one or more years and then return). Spell end dates are unknown when equivalent family income remains below the poverty line in the last year of the panel or when the respondent exits the panel. These spells are flagged as left-censored and right-censored respectively.¹² As is common in the literature, right-censored spells are retained, while left-censored spells are omitted from the sample because we cannot accurately observe the spell start date nor the baseline characteristics before the start of the poverty spell (see Figure 1 for a diagrammatic example of spell types). Thus, our analysis focuses on the conditional probability of exit for poverty spells which start within the six-year windows of each panel. Our resulting sample contains 3,426 poverty spells, 1,821 experienced by women and 1,605 by men.

Summary of Spell Characteristics and Exit Destinations

Table 1 presents the characteristics of the poverty spells in our sample. The first three columns of summary statistics present our main sample (3,426 spells; 53 percent female and 47 percent male), and columns 5 through 7 present the sample excluding right-censored observations (2,290 spells; 52 percent female and 48 percent male). The latter columns represent spells of poverty that are at most four years long and are wholly observed within our panel. As expected, spell durations are shorter for spells with observed exits (1.4 years) compared to the main sample (1.9 years). Spells lasting only one year

comprise 1,654 (almost three-quarters) of the completely observed spells and 1,731 (over half) of the spells in our main sample. For both the main sample and the spells with observed exits, longer-duration spells represent smaller fractions of the sample. The small differences between male and female spells are not significant at conventional levels.

Table 2 presents the mean characteristics (and standard deviations) of household heads associated with poverty spells for the pooled sample and by gender. Over one-third of poverty spells are experienced by those who have had or will have another poverty spell, but very few actually experience multiple spells in our panel (140) because previous or subsequent poverty spells may be left-censored or have missing information. The average age in the sample is close to 42 years with females slightly younger than males. Just over 40 percent of the spells are experienced by couples with children, followed by unattached households, couples without children, and lone parents. Gender differences among the unattached and lone-parent household types are large and statistically significant, with more male-unattached poverty spells than female-unattached spells, and fewer male-lone-parent spells than female-lone-parent spells. Close to one-fifth of the spells are experienced by social assistance recipients, and the gender difference is both substantial and statistically significant (20.5 percent female vs 14 percent male). We further note that male-headed spells are associated with a lower average number of children, a higher probability of being employed full year, and lower levels of education; these gender differences are statistically significant.

There are some interesting gender differences in characteristics which change as the household head enters poverty; for example, female-headed spells are more likely than male-headed spells to have corresponded with a change in household head as the spell began (42.5 percent versus 11.7 percent; the difference is statistically significant).¹³ The dynamic characteristics are omitted from Table 2 for brevity; see Curtis and Rybczynski 2013 for the full set of characteristics. Because individuals may experience more than one poverty spell in our sample, we examined the characteristics of household heads for the first poverty spell in which we observe them (single-spell data). The means are almost identical to those presented herein; most differences are observed at the third decimal place and are omitted for brevity.

Poverty exits to just above the poverty line may not generate substantial gains in well-being and are almost certainly different from exits to twice or three times the poverty line. Figure 2 shows the distribution of the ratio of equivalent after-tax family income to the poverty line for all, male-headed, and female-headed poverty spell exits observed in our sample. Approximately 23 percent

Household Head	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Case 1	No	No	No	No	No	No
Case 2	No	Poverty	Poverty	Poverty	Poverty	No
Case 3	No	No	Poverty	Poverty	Poverty	Poverty
Case 4	Poverty	Poverty	No	No	No	No
Case 5	Poverty	Poverty	Poverty	Poverty	Poverty	Poverty
Case 6	Poverty	No	Poverty	Poverty	Poverty	No
Case 7	Poverty	No	Poverty	Poverty	Poverty	Poverty
Case 8	missing data	Poverty	Poverty	Poverty	Poverty	No
Case 9	Poverty	No	Poverty	No	Poverty	No
Case 10	Poverty	No	missing data	Poverty	No	Poverty

- Case 1 no poverty spells—not in main sample
- Case 2 one spell, not censored in any way—in main sample
- Case 3 one spell, right censored only—in main sample
- Case 4 one spell, left censored—not in main sample
- Case 5 one spell, left and right censored—not in main sample
- Case 6 spell 1 left censored—not in main sample;
spell 2 no censoring—in main sample
(has multiple spells, but only second spell is in main sample)
- Case 7 spell 1 left censored—not in main sample;
spell 2 right censored—in main sample
(has multiple spells, but only second spell is in main sample)
- Case 8 one spell, missing data year prior to poverty spell—not in main sample
- Case 9 spell 1 left censored—not in main sample;
spell 2 no censoring—in main sample;
spell 3 no censoring—in main sample
(has multiple spells, spells 2 and 3 are in the main sample)
- Case 10 spell 1 left censored—not in sample;
spell 2 missing data year prior to spell—not in sample
spell 3 starts in last year of panel and by construction is right censored at 1 year—not in main sample
(has multiple spells, none of which are in main sample)

Figure 1: Examples of Possible Spell History in a Single SLID Panel
 Note: Left-censored spells resulting from missing data constitute about 14 percent of all left-censored spells.
 Source: Authors' compilation.

Table 1: Spell Duration with and without Right-Censored Observations

	Main Sample			Spells with Observed Exits (excludes right-censored spells)		
	All	Female	Male	All	Female	Male
Mean duration in years (SD)	1.915 (1.159)	1.928 (1.167)	1.901 (1.151)	1.388 (0.707)	1.380 (0.708)	1.398 (0.706)
Duration distribution (%)						
1 year	50.53	50.19	50.90	72.27	73.16	71.30
2 years	24.17	23.94	24.42	18.65	17.89	19.47
3 years	13.13	13.45	12.77	7.07	6.77	7.40
4 years	7.62	7.74	7.48	2.01	2.17	1.83
5 or more years	4.55	4.67	4.42			
Observed to exit poverty (%)	66.84	65.68	68.16	100	100	100
Right-censored (%)	33.16	34.32	31.84	0	0	0
Multiple spells (%)	36.25	36.52	35.95	36.46	36.62	36.29
Total spells (no.)	3,426	1,821	1,605	2,290	1,196	1,094

Notes: Gender differences are statistically insignificant in all cases. Duration patterns are significantly different for spells with observed exits versus the main sample. Statistical significance is measured as a p -value of 0.1 or below.

Source: Authors' calculations.

Table 2: Mean Characteristics (SD) Associated with Low-Income Spells

	All		Female		Male	
Male	0.468	(0.499)				
Age	41.88	(9.638)	41.45	(9.580)	42.38	(9.682)
Age squared	1,847	(825)	1,810	(816)	1,890	(833)
Married with children (base)	0.422	(0.494)	0.427	(0.495)	0.414	(0.493)
Unattached	0.259	(0.438)	0.201	(0.401)	0.326	(0.469)
Lone parent	0.105	(0.307)	0.164	(0.370)	0.039	(0.194)
Married, no children	0.214	(0.410)	0.208	(0.406)	0.221	(0.415)
Receipt of social assistance	0.175	(0.380)	0.205	(0.404)	0.140	(0.347)
Number of children	1.047	(1.232)	1.174	(1.255)	0.902	(1.188)
Presence of preschool child	0.211	(0.408)	0.209	(0.406)	0.214	(0.410)
Employed full year	0.565	(0.496)	0.530	(0.499)	0.604	(0.489)
Number of earners	1.418	(0.746)	1.473	(0.769)	1.356	(0.714)
Less than high school grad (base)	0.284	(0.451)	0.235	(0.424)	0.34	(0.474)
High school grad	0.189	(0.391)	0.202	(0.401)	0.174	(0.380)
Some college	0.447	(0.497)	0.478	(0.500)	0.412	(0.492)
Bachelor's degree or higher	0.080	(0.271)	0.085	(0.278)	0.074	(0.262)
Immigrant	0.096	(0.295)	0.089	(0.285)	0.104	(0.305)
Disability	0.239	(0.427)	0.236	(0.425)	0.243	(0.429)
Rural	0.357	(0.479)	0.332	(0.471)	0.386	(0.487)
Right-censored (%)	0.332	(0.471)	0.343	(0.475)	0.318	(0.466)
Total spells (no.)	3,426		1,821		1,605	
Single-spell observations (no.)		3,286		1,746		1,540
Household heads with a second spell in the sample (no.)		140		75		65

Notes: Values reported for all variables are proportions, except for age (in years) and those marked as (no.), for which total numbers are reported. Values of characteristics are those of the household head and are recorded in the year before the start of the spell. For each multi-category variable, we include statistics for the base case; however, to conserve space, we do not include base-case statistics for binary variables (omitted categories are female, married with children, native-born Canadian, no preschool children, less than high school education, not employed full year, not disabled, and living in urban Ontario in 1994). Time-varying characteristics are omitted for brevity (see Curtis and Rybczynski 2013 for these details). Gender differences are significant for all baseline covariates except married household types, preschool child, less than high school, bachelor's degree or higher, immigrant, disability.

Source: Authors' calculations.

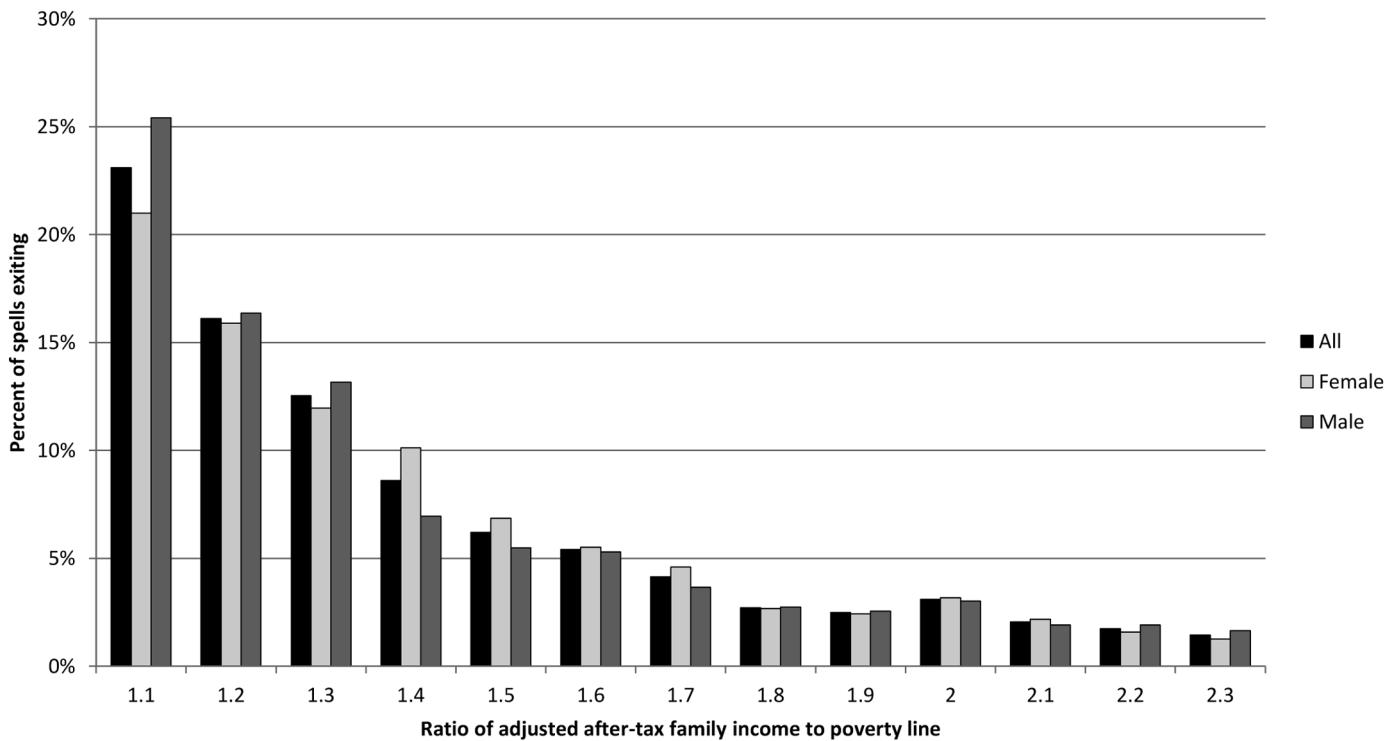


Figure 2: Distribution of the Ratio of Adjusted After-Tax Family Income to the Poverty Line, on Exiting Poverty, by Gender of Household Head
 Source: Authors' calculations.

of the spells exit to just over the poverty line (21 percent of female spells and 25 percent of male spells), another 16 percent of the spells end between 110 percent and 120 percent of the poverty line, and 13 percent end between 120 and 130 percent of the poverty line. Clearly, the majority of poverty spells exit to income levels that are not very far above the poverty line. There are spells that exit poverty to income categories over 2.3 times the poverty line, but the proportions are so small that they cannot be released due to privacy issues. With the exception of exits to less than 110 percent, and to between 130 and 140 percent of the poverty line, gender differences in exit rates are insignificant at conventional levels.

In Table 3, we present spell characteristics by our three broad exit categories. Table 3 indicates that for both sexes, the largest share of spells end in a mid-range exit, just under two-thirds of exits; and approximately 16 percent of poverty spells end with equivalent family incomes more than twice the poverty line (above median income). However, almost one-quarter of poverty spells end with equivalent family incomes less than 1.1 times the poverty line. Male-headed spells are more likely to end in near poverty than female-headed spells (25 percent versus 21 percent), and the difference is statistically significant at conventional levels. Spells that eventually exit to near poverty have longer durations than spells exiting to middle or higher ranges and are also more

likely to be experienced by household heads who have multiple spells; this subset appears to be staying in poverty longer and returning to poverty relatively quickly after exiting. These differences across exit destination are statistically significant at conventional levels and are consistent with the results of Finnie and Sweetman (2003), who report that those who exit to lower incomes are more likely to re-enter poverty.

Results of Proportional Hazard Analysis

In Table 4, we report the relative risks of exit estimated from Equation (1) for the entire sample (all) and separately for female and male spells. We present the exit probabilities for representative household heads (the base case) in the penultimate row. We obtain base-case exit probabilities by setting each characteristic at the base category for binary variables (female [for entire sample], married with children, native-born Canadian, no preschool children, less than a high school education, not employed full year, not disabled, and living in urban Ontario in 1994), number of children at one, household earners at zero, and all other variables evaluated at their group-specific means.

The relative risks are reported for two specifications. Specification 1, the first three columns of results, controls for observed characteristics the year before the start of the poverty spell. Specification 2 includes the dynamic

Table 3: Spell Duration by Exit Category (for all observed exits)

	(1) Near Poverty (greater than 1 × poverty line but less than 1.1 × poverty line)			(2) Mid-Range Exits (1.1 × poverty line to less than 2 × poverty line)			(3) Higher Exits (2 × poverty line or above)		
	All	Female	Male	All	Female	Male	All	Female	Male
Mean duration in years (SD)	1.488 (0.769)	1.482 (0.792)	1.493 (0.749)	1.387 (0.712)	1.380 (0.709)	1.397 (1.089)	1.244 (0.550)	1.243 (0.550)	1.244 (0.553)
Multiple spells (%)	46.88	47.81	46.04	35.97	36.24	35.65	23.00	23.28	22.62
Spells exiting by category (no.)	529	251	278	1,404	756	648	357	189	168
Exiting to category (%)	23.10	20.99	25.41	61.31	63.21	59.23	15.59	16.00	15.36

Notes: Gender differences are statistically insignificant for all groups except the percentage exiting to near poverty. The gap in average duration between (1) and (3) is statistically significant.

Source: Authors' calculations.

Table 4: Proportional Hazards Models

	Specification 1			Specification 2		
	All	Female	Male	All	Female	Male
Year 2 of spell	0.464***	0.440***	0.498***	0.632***	0.605***	0.682***
Year 3 of spell	0.342***	0.323***	0.374***	0.524***	0.499***	0.580***
Year 4+ of spell	0.140***	0.147***	0.136***	0.237***	0.248***	0.236***
Male	1.108**			1.097*		
Age	0.965	0.971	0.952	0.966	0.976	0.938
Age squared	1.000	1.000	1.001	1.000	1.000	1.001*
Unattached	0.762***	0.779*	0.803	0.682***	0.655***	0.791
Lone parent	1.030	1.056	1.026	1.008	1.067	0.948
Married, no children	0.921	0.995	0.895	0.921	0.962	0.970
Receipt of social assistance	0.657***	0.624***	0.739***	0.706***	0.681***	0.767**
Number of children	1.000	0.988	1.025	1.001	0.974	1.061
Presence of preschool child	0.833***	0.801**	0.866	0.855**	0.815**	0.924
Employed full year	1.116**	1.152**	1.088	0.824***	0.875	0.742***
Number of earners	1.169***	1.159***	1.202***	1.528***	1.501***	1.622***
High school graduate	1.117*	1.200**	1.053	1.059	1.071	1.062
Some college	1.152***	1.204**	1.123	1.121**	1.172*	1.073
Bachelor's degree or higher	1.148	1.368***	0.965	1.079	1.286*	0.922
Immigrant	0.804***	0.772**	0.814*	0.826**	0.824	0.827
Disability	0.883**	0.947	0.797***	0.850**	0.864	0.799**
Rural	1.000	1.028	0.987	0.993	0.964	1.021
Constant	1.643	1.676	1.948	2.348	2.395	3.260
Provincial fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Start-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time-varying characteristics				Yes	Yes	Yes
Representative household-head exit probability (%)	49.78	51.11	49.84	62.47	67.89	55.73
Total spells (no.)	3,426	1,821	1,605	3,426	1,821	1,605

Notes: The probability of exit for a representative household head is calculated by setting each characteristic at the base (omitted) category¹⁵ for binary variables (omitted categories are first year of spell, female, married with children, native-born Canadian, no preschool children, less than high school education, not employed full year, not disabled, and living in urban Ontario in 1994), number of children at one, household earners at zero, and all other variables evaluated at their means. Because of the use of a quadratic in age, probability calculations are highly sensitive to rounding of the hazard ratio on the quadratic term. Standard errors (not presented) are adjusted by clustering on person identification. Across both specifications, gender differences in the hazard ratios are statistically insignificant with the exception of a bachelor's degree or higher education.

* $p = .1$. ** $p = .05$. *** $p = .01$.

Source: Authors' calculations.

variables and an indicator for multiple spells. We control for spell start date and provincial fixed effects in each specification and adjust standard errors for clustering on the person identifier. In Specification 1, the probability of exit for the representative household head is nearly identical for female and male spells (51 percent versus 50 percent). Rows 2 to 4 indicate negative duration dependence; the longer a spell of poverty lasts, the lower the probability that it will end. In the pooled sample, we note that spells with current durations of two, three, and four or more years experience a decrease in the probability of exit, by 54 percent, 66 percent, and 86 percent, relative to spells in their first year. For Specification 2, these figures are 37, 48, and 76 percent and are all statistically significant at the 1 percent level. Unlike Finnie and Sweetman (2003) we find that the drop in the probability of exiting after the fourth year (76 percent) is substantially greater than the drop in probability associated with the third year of poverty (48 percent).

Characteristics strongly associated with a decrease in the probability of exiting poverty (for the pooled sample) are being unattached, receiving social assistance, having preschool children, being an immigrant, and being disabled. Conversely, being a male household head or having one additional earner in the household increases the probability of exit by just over 10 percent. Spells of household heads who are employed full year or have a high school or some college education are also more likely to end. Although significance sometimes wanes, the trends are similar across sexes except for the highest level of education. These results are robust to a variety of sensitivity analyses (single-spell analysis, alternative measures of poverty, unobserved heterogeneity models).

The results posted in the last three columns of Table 4 (Specification 2) indicate that the addition of the dynamic variables does not change the basic results substantially. Although dynamic variables are omitted from Table 4 for brevity (see Curtis and Rybczynski 2013 for the full model results for Specification 2), we note that spells that start with the household head transitioning out of full-year employment have a substantially and significantly higher probability of exiting poverty for pooled and male samples (32 percent and 59 percent higher respectively), consistent with poverty spells resulting from short-term low-income shocks caused by reduced employment. It is not surprising that those who are employed full year before the spell start, and who remain employed full year in the first year of poverty, have a lower probability of exit relative to those who change employment status. Previous research suggests that those who are employed while poor (the working poor) tend to be very low earners with little prospect of escape from poverty (Dunifon, Kalil, and

Danziger 2002; Green and Ferber 2005; Johnson and Corcoran 2002).

Marital dissolution in the first year of the spell and loss of earners reduce the likelihood of exit by almost 17 percent and 29 percent, respectively, consistent with short-term shocks to income. Gaining earners or changing disability status increases the probability of ending a spell relative to a household head who did not change status or gain earners. An increased probability of exit for those who become disabled upon entering a poverty spell may seem odd, but a household head may have a temporary shock to income and then qualify for disability benefits, and this may raise the family income enough to exit poverty.

With the exception of getting married, which is insignificant, any change in characteristics occurring within the spell (after the first but before the last year of the spell) decreases the probability of exiting poverty. The decrease in probability associated with gaining full-year employment and gaining earners may seem counterintuitive; however, becoming employed full year or gaining earners *within a poverty spell* means that the increased income is not sufficient to raise the household out of poverty, and these types of low-wage jobs tend to have lower earnings trajectories, resulting in a lower probability of transitioning to higher income (Dunifon, Kalil, and Danziger 2002; Green and Ferber 2005; Johnson and Corcoran 2002).

Interpreting changes in household composition can be complex. For example, gaining children will increase the family size, lowering the equivalent family income. Also, additional children, particularly newborns, may reduce the work hours of the parent(s), lowering household income. Because gaining children reduces the probability of a spell ending, the negative association between poverty exit and decreases in the number of children may seem counterintuitive. However, child support payments may be lost when children leave, or the children who have left may have been old enough to be contributing to household income. Sen, Rybczynski, and VanDeWaal (2011) showed that teen income represents a significant share of household income for many families living below the Low Income Cut-Off. Finally, as expected, those who experience multiple spells have a higher conditional probability of exit. With the exception of bachelor's degree or higher education, the gender differences in hazards are predominantly insignificant at conventional levels.

Tables 5 and 6 extend our analysis of poverty duration to consider whether there is a difference in the characteristics associated with exits to near poverty versus exits to further above the poverty line. We present the hazards for each exit destination relative to the base case, no exit; however, marked differences in the hazard

Table 5: Competing-Risks Framework: Specification 1

	(1) Near Poverty			(2) Mid-Range Exits			(3) Higher Exits		
	All	Female	Male	All	Female	Male	All	Female	Male
Year 2 of spell	0.478***	0.415***	0.551***	0.369***	0.338***	0.412***	0.261***	0.293***	0.229***
Year 3 of spell	0.348***	0.306***	0.414***	0.298***	0.306***	0.300***	0.127***	0.090***	0.172***
Year 4+ of spell	0.137***	0.138***	0.148***	0.089***	0.093***	0.086***	0.024***	0.047***	0.000***
Male	1.532***			1.176**			1.113		
Age	0.921	0.986	0.852**	0.946	0.922*	0.962	1.027	1.056	0.962
Age squared	1.001	1.000	1.002	1.001	1.001	1.000	1.000	0.999	1.000
Unattached	0.766	1.187	0.616*	0.647***	0.565***	0.725	0.833	0.596	1.149
Lone parent	1.043	1.374	0.760	1.171	1.130	1.370	0.968	0.781	1.810
Married, no children	0.822	1.087	0.681	0.717**	0.665**	0.810	1.318	1.251	1.317
Receipt of social assistance	0.657***	0.635**	0.716	0.704***	0.691***	0.740**	0.283***	0.281***	0.296***
Number of children	1.096	1.013	1.160**	0.975	0.972	0.984	0.855*	0.788*	0.955
Presence of preschool child	0.859	0.836	0.893	0.759***	0.727**	0.846	0.739	0.715	0.775
Employed full year	1.154	1.221	1.042	1.181**	1.332***	1.033	1.212	1.161	1.249
Number of earners in family	1.124	1.319**	1.025	1.340***	1.396***	1.285***	1.322***	1.421**	1.197
High school graduate	1.175	1.163	1.244	1.248**	1.289*	1.254	1.033	1.279	0.814
Some college	1.128	1.036	1.254	1.158*	1.140	1.220*	1.323*	1.616**	1.132
Bachelor's degree or higher	0.988	0.889	1.013	0.976	1.401*	0.645**	2.297***	3.049***	1.843**
Immigrant	0.715*	0.659	0.717	0.745***	0.723**	0.739*	0.628**	0.434**	0.827
Disability	0.802*	0.906	0.662**	0.851*	0.899	0.757**	0.917	1.060	0.726
Rural	0.982	0.985	1.035	1.026	0.963	1.134	0.861	0.824	0.886
Constant	1.049	0.204	8.549	1.909	3.365	1.456	0.155	0.081	0.654
Provincial fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Representative household-head exit probability (%)	9.27	6.07	14.99	27.62	29.45	27.54	10.53	9.69	10.67

Notes: Number of spells same as in Table 3: all: 3,426; female: 1,821; male: 1,605. See Table 4 note for description of a representative head. Across both specifications, gender differences in the hazard ratios are statistically insignificant with the exception of a bachelor's degree or higher education. The probabilities of not exiting poverty are 52.58, 54.78, and 46.79 for all, female, and male spells. Gender differences in the hazard ratios are significant for full-year employment and for a bachelor's degree or higher in (2) and year 4+ in (3).

* $p = .1$. ** $p = .05$. *** $p = .01$.

Source: Authors' calculations.

ratios across exit destinations are discussed. Results from Specification 1 are presented in Table 5 and Specification 2 in Table 6.

Duration dependence is evident across both specifications, and the probability of exiting further above the poverty line, relative to no exit, decreases substantially as years spent in poverty increase. Specifically, Table 5 demonstrates that, in the pooled sample, the probability of a poverty spell exiting to the highest range, relative to not exiting, drops by 98 percent at four or more years in poverty (the largest drop is for males), whereas the probability of exiting to mid-range drops by 91 percent, and the probability of exiting to near poverty drops by only 86 percent after four or more years. The differences across exit destinations are statistically significant for men and the pooled sample.

In the pooled sample, being male increases the chances of exit to near poverty and to the middle category (relative to no exit) by 53 percent and 18 percent respec-

tively. Both immigrant and disability status lower the odds of transitioning to near poverty and to the middle category, relative to no exit, but only immigrant status remains significant for exits to over twice the poverty line. Social assistance receipt decreases the probability of exiting to near poverty, to the middle range, or to twice the poverty line by 34 percent, 30 percent, and 72 percent, relative to no exit. Moreover, for social assistance recipients, the large decrease in the probability of exiting to over twice the poverty line, relative to near poverty, is statistically significant at conventional levels.

Social assistance receipt, years in spell, immigrant status, and disability status are the only characteristics associated with exits to near poverty when the entire sample is used. When the sample is divided by gender, the relative risks remain fairly stable for most characteristics, but significance changes asymmetrically across the sexes. Social assistance receipt is no longer significant for males, disability status is no longer significant

Table 6: Competing-Risks Framework: Specification 2

	(1) Near Poverty			(2) Mid-Range Exits			(3) Higher Exits		
	All	Female	Male	All	Female	Male	All	Female	Male
Year 2 of spell	0.547***	0.488***	0.631***	0.418***	0.383***	0.472***	0.289***	0.319***	0.263***
Year 3 of spell	0.414***	0.381***	0.481***	0.322***	0.336***	0.326***	0.130***	0.094***	0.171***
Year 4+ of spell	0.182***	0.189***	0.189***	0.100***	0.107***	0.096***	0.024***	0.049***	0.000***
Male	1.347***			1.123			1.148		
Age	0.913*	0.991	0.841**	0.934*	0.914*	0.945	0.995	1.008	0.947
Age squared	1.001	1.000	1.002**	1.001*	1.001*	1.001	1.000	1.000	1.000
Unattached	0.538***	0.695	0.523**	0.505***	0.399***	0.622**	0.679	0.494	1.312
Lone parent	0.802	1.019	0.731	1.063	1.025	1.400	0.969	0.868	2.047
Married, no children	0.702*	0.865	0.614*	0.620***	0.534***	0.758	1.085	0.933	1.705
Receipt of social assistance	0.574***	0.530***	0.606**	0.670***	0.649***	0.679**	0.301***	0.296***	0.321***
Number of children	1.129*	1.006	1.241**	0.947	0.924	0.991	0.775**	0.734**	0.888
Presence of preschool child	0.741*	0.775	0.765	0.750***	0.712**	0.829	0.846	0.755	1.042
Employed full year	0.902	0.884	0.806	0.812**	0.949	0.669***	0.968	0.934	0.932
Number of earners	1.525***	1.852***	1.357**	1.954***	2.055***	1.890***	1.702***	1.882***	1.641***
High school graduate	1.126	1.010	1.250	1.189*	1.123	1.233	0.968	1.093	0.765
Some college	1.128	0.972	1.334*	1.157*	1.075	1.236*	1.339*	1.546*	1.078
Bachelor's degree or higher	0.960	0.796	1.058	0.952	1.310	0.642**	2.233***	2.847***	1.830**
Immigrant	0.707**	0.660	0.704	0.754**	0.730**	0.742*	0.645**	0.466**	0.815
Disability	0.942	0.987	0.803	0.811**	0.834	0.718**	0.735	0.849	0.562*
Rural	0.920	0.923	0.991	0.982	0.894	1.122	0.849	0.809	0.903
Constant	1.925	0.399	10.69	3.616*	7.087*	2.256	0.512	0.393	1.007
Provincial fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Start-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time-varying characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Representative household-head exit probability (%)	12.03	9.73	15.35	31.50	36.86	28.81	11.99	11.36	9.45

Notes: Number of spells same as in Table 3: all: 3,426; female: 1,821; male: 1,605. See Table 4 note for description of a representative head. The probabilities of not exiting poverty are 44.48, 42.05, and 46.39 for all, female, and male spells respectively. Gender differences in the hazard ratios are statistically insignificant except for employed full year (2), bachelor's degree or higher (2), year 4+ in (3), and a handful of the dynamic variables such as no longer employed full year at start (2), no longer married mid-spell (1), newly married mid-spell (3), newly disabled mid-spell (2)–(3), and more kids mid-spell (1)–(3).

*p = .1. **p = .05. ***p = .01.

Source: Authors' calculations.

for females, and immigrant status is no longer significant for both subpopulations. However, being older and being unattached now significantly decrease the probability of exiting to near poverty for males and to the middle range for females.

Individual and family characteristics play an important role in determining whether a household head exits poverty to between 1.1 and 2 times the poverty line (our middle-range exit). Characteristics that decrease the odds of exiting to the middle range, relative to non-exit, are being unattached (by 35 percent), being married with no children (by 28 percent; being married with children is the comparator), being an immigrant (by 26 percent), being disabled (by 15 percent), receiving social assistance (by 30 percent), and having preschool-aged children in the household (by 24 percent). Those that increase the odds of exit to the middle range are being male (by 18 percent), being employed full year (by 18

percent), living in a household with more earners (by 34 percent), being a high school graduate (by 25 percent), and having some college education (by 16 percent). Contrasted with exits to near poverty, the number of earners has a statistically significant increase in odds for exit to mid-income.

For the most part, the characteristics remain significant for the female subsample. In the male sample, significance is lost for married with children, presence of preschool children, full-year employment, and graduation from high school. Surprisingly, having some college education is associated with increased odds of exit to the middle range, relative to non-exit, for males but not females, while having a bachelor's degree (or more) increases the odds of exit to mid-range, relative to non-exit, for females by 40 percent but decreases it for males by 35 percent; the difference is statistically significant. Some college can include trades designations, which

tend to be male dominated, and it has been shown that returns to higher education are diminishing for males (Conference Board of Canada 2013).

Higher levels of education are also more important for female exits to our highest category. A bachelor's degree is estimated to increase the odds of exits to furthest above the poverty line (relative to non-exit) threefold for females but only 1.8 times for males. A similar result is found when contrasting higher incomes to other exit destinations. These results suggest that the rise in the percentage of prime-aged women obtaining university degrees between 1990 and 2009 (Turcotte 2011) could explain some of the decline in poverty rates among unmarried women (across different measures of poverty) that was observed over roughly the same period.

Table 6 presents results for Specification 2. We note that, in general, the results presented in Table 5 are robust to the inclusion of change variables (see Curtis and Rybczynski 2013 for complete results); however, it is worth highlighting that, consistent with results from the single-exit analysis and with descriptive statistics in Finnie and Sweetman 2003, having multiple spells strongly increases the probability of exiting to near poverty and to between 1.1 and 2 times the poverty line, but reduces the probability of exiting to over twice the poverty line. For most characteristics, with the exception of fourth year in spell, bachelor's degree, employed full year, and a few of the dynamic variables, the gender differences (in terms of magnitude and significance) are small to zero.

Extensive sensitivity analyses were completed, including single-spell analysis, alternative measures of poverty, alternative sampling weights, and more refined exit categories.¹⁴ We examined differences in poverty duration and exits across marital status as well as gender, but sample sizes became problematic, and preliminary results were not different from our general results. We also conducted an in-depth examination of the possible consequences of left-censoring for the results. While there are relatively few robust gender differences in characteristics in the main sample, left-censored spells exhibit far greater male-female disparities. However, annual exit models, on a sample that includes left-censored spells, suggest that the determinants of exit from poverty do not differ substantially from those reported in Tables 4 through 6. As such, our key findings are robust to these sensitivity analyses (see Curtis and Rybczynski 2013 for a full discussion).

Discussion and Conclusions

In sum, we used available full panels of the SLID to examine poverty spells of Canadian women and men. The descriptive statistics demonstrate that nearly one-third of poverty spells do not end in the panel windows.

The average duration of poverty spells is almost two years, and over one-third of poverty spells are experienced by household heads who have multiple spells. Of the spells that do end, over 23 percent exit to near poverty, 61 percent exit to within 1.1 to 2 times the poverty line, and only 16 percent exit to over twice the poverty line. Results from the duration analyses indicate that several factors may improve the probability of exiting poverty for Canadian men and women. We find that higher education, especially for women, is a significant determinant of exit. Moreover, we find that participating in social assistance, being an immigrant, and having younger children are characteristics associated with a lower probability of exiting poverty. Consistent with previous studies, we find a negative duration dependence; the probability of exit falls as the years in poverty increase. Hazard ratios on dynamic variables, characteristics that change at the start of a spell or mid-spell, are also worth noting. We find that spells that are associated with a loss of full-year employment as the spell starts are more likely to end, particularly for men. In contrast, leaving a marriage (at the start of or within a spell) is associated with a lower probability of exiting poverty.

Recognizing the heterogeneity of transitions out of poverty, we investigate a competing-risks framework. We find that, compared to not exiting, few characteristics are associated with exiting to near poverty; those on social assistance before entering poverty are less likely to exit to near poverty, as are immigrants and those with disabilities. Being an immigrant, receiving social assistance, having any preschool children, and having more children are negatively associated with leaving poverty to further above the poverty line. In contrast, full-year employment before spell start and a high school diploma or some college (compared to less than a high school education) are associated with moving to between 1.1 and 2 times the poverty line. Those with a bachelor's degree or above are more than twice as likely to exit to twice the poverty line (relative to non-exit), a result that is masked when we consider exits in a single category only and that is more substantial for females. This education result is consistent with the decline in poverty rates among unattached women over the same period in which educational attainment for prime-aged women is rising (Turcotte 2011).

The largest and most robust gender differences are seen in education. For spells experienced by women, a bachelor's degree is associated with higher rates of exit to the categories beyond near poverty, whereas for men a bachelor's degree reduces the probability of exiting to between 1.1 and 2 times the poverty line but increases the probability of exiting beyond that. A bachelor's degree seems to be more beneficial for a female than a male when exiting to the highest income levels. Being

employed full year before the start of the spell is significant for female spells exiting to the mid-range category, whereas no longer being employed full year is associated with a higher probability of exits to mid-range and to twice the poverty line for male spells. These results suggest that differences in the labour market conditions, attachment, and/or preferences among men and women may differentially influence poverty exit rates across the sexes.

With the exception of education, employment, and changes in marital status, we find very few other characteristics with robust gender differences. However, while there are relatively few robust gender differences in the main sample, the sensitivity analyses highlight that left-censored spells exhibit far greater male-female disparities in characteristics. The relatively short panel windows of the SLID do not allow us to fully investigate the determinants of these longer-term spells. Yet annual exit models suggest that these determinants do not differ substantially from those reported in the hazards analysis. Similarly robust findings across duration and annual exit models are reported in Finnie and Sweetman (2003).

The results suggest that policies directed at increasing education and improving employment opportunities for the poor may not only increase the probability of transitioning out of poverty but also allow individuals to exit further above the poverty line. Social assistance participation is a strong barrier to exiting poverty, indicating that social assistance benefits are low relative to median incomes. Policies which raised social assistance benefits would assist families in exiting poverty; however, such policies have negative labour market consequences. A combination of policies that provided more generous incomes for individuals who are not able to work while assisting those who are able to work to re-enter the labour force might address this concern. Changes in marital status (particularly marital dissolution for women) hinder poverty exits. Fairer redistribution of family resources and stronger penalties for non-payment of child support payments may be remedies for these issues.

Both our descriptive analysis and the competing-risks framework demonstrate that exiting poverty is not the same experience for all Canadians. For example, while male household heads are more likely to exit poverty, they are also more likely to transition to near poverty than females. As such, our results suggest that when reporting on poverty incidence and duration, researchers should distinguish between exits to near the poverty line versus exits further above the poverty line. Exit destinations are likely to represent very different experiences for individuals and their families and are also strong indicators of whether a family will experience multiple poverty spells.

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Notes

- 1 Although it is recognized that poverty is multidimensional (Morrell 2011), both the terms *low income* and *poverty* are often used to describe the situation of living with an income that is below some determined line. Collin (2007, 1) explains that "low income is the most commonly used indicator of poverty" and uses the Low Income Cut-Off (LICO) as a poverty line. Finnie and Sweetman (2003) base their poverty measure on income (as opposed to consumption) and thus use the terms *low income* and *poverty* interchangeably (see Finnie and Sweetman 2003, 292n1). Milligan (2008) uses Statistics Canada's LICO and Low Income Measure (LIM) as "poverty measures," recognizing that Statistics Canada does not report an official poverty line due to the lack of legislative guidance. We agree that the "restriction on terminology while understandable for a statistical agency, does not limit researchers in describing the measures they choose to use" (Milligan 2008, 91). Like Milligan, we use the term *poverty* in our study. Following Crossley and Curtis (2006), our poverty line is half the equivalent median family income. Our equivalence scale is the square root of family size. Those falling below our poverty line are considered to be living in poverty. We will use the term *poverty* throughout the article, even when describing studies that use the term *low income* to describe household income that falls below some predetermined value (e.g., LICO, LIM, half the equivalent median income).
- 2 The LIM is closest to the poverty line that we use. See Murphy, Zhang, and Dionne (2012) for an excellent presentation on the LICO, Market Based Measure, and LIM and the possible consequences of using the different measures.
- 3 For example, Dooley (1994) uses the Survey of Consumer Finances to track poverty in Canada from 1973 to 1990, and Crossley and Curtis (2006) use the Family Expenditures Survey and the Survey of Household Spending to report child poverty trends from 1986 to 2000. Collin and Jensen (2009) and Milligan (2008) report findings from the Survey of Consumer Finances and cross-sections of the Survey of Income and Labour Dynamics.
- 4 The term *near poverty* or *near poor* has entered the poverty literature recently (see, for example, Lipman and Offord 1994; Richards 2007; Food Banks Canada 2010). The definition of *near poverty* in the literature ranges from 1.1 to 2 times the poverty line.
- 5 $\lambda(t)$ is the log of the difference between the integrated baseline hazard at the start versus the end of year t . Because our time intervals (years) are of unit length, we can index the hazard function with t ($t = \text{year}$). The baseline hazard, with all other characteristics set to zero, will thus still

change with the number of years in the spell. As is common in the literature, we employ a fully non-parametric baseline hazard by incorporating interval-specific dummies (indicator variables for each year the poverty spell continues beyond the first [our base group]). One benefit of using the hazard rate model is that we can identify duration effects. Moreover, a non-parametric baseline hazard places no restrictions on duration dependence, and it also tends to produce coefficient estimates which are stable and perform well even with high levels of aggregation (Bergström and Edin 1992). An underlying assumption of the proportional hazard model is that personal characteristics have the same proportional effect on $\lambda(t)$, at any time t .

- 6 A key benefit of this model is that the base probability can follow a complex pattern (it does not have to monotonically increase or decrease, or remain constant), while personal characteristics then proportionally increase or decrease this base probability. Note that we are not presenting models which control for unobserved heterogeneity. However, we did run alternative models which incorporated unobserved heterogeneity using two approaches. First, we employed the non-parametric Heckman-Singer (Heckman and Singer 1984) approach (discrete-mixture distribution) on single-spell data, which failed to converge, as is common (see, for example, Finnie and Sweetman 2003; Fortin, Lacroix, and Drolet 2004), and a parametric approach using Jenkins's (2008) `pgmhaz.ado` (gamma distributed unobserved heterogeneity) on single-spell data. With both the Heckman and Singer (1984) and Jenkins (2008) approaches we achieved convergence for the pooled sample (men and women) if we omitted spell start year indicators from the specification. The coefficients were substantively similar in the models which incorporated unobserved heterogeneity relative to those that did not. This result is not surprising since coefficient estimates are typically robust to misspecification of unobserved heterogeneity when a flexible, non-parametric baseline hazard is employed (Meyer 1990; Fortin et al. 2004).
- 7 With intrinsically discrete spells and independent risks, we can estimate destination-specific hazard ratios using a multinomial logit model (Allison 1982). If spells are not intrinsically discrete, the multinomial logit model of competing risks still provides a close approximation as long as the continuous time hazard rate is constant within the interval and intervals are not overly large (Jenkins 2005).
- 8 We considered alternative measures of poverty, such as the LICO and a constant poverty line (the half-median in 2002 in real Canadian dollars, as 2002 is near the mid-point of our sample), and, although not shown herein, the results are substantively similar. Crossley and Curtis (2006) also find that changes in definitions of poverty lines or equivalence scales (except for per capita) make little difference when examining child poverty rates in Canada.
- 9 We did worry about eliminating young lone mothers, but there are very few in this age group in the sample. Extending the age down to 19 did not change results substantively except for predictably small changes in the age coefficients.
- 10 Restricting the sample to less than 65 years of age did not change the results appreciably.
- 11 Sensitivity analysis was completed using an added category in the dummy variable when missing values constituted a

large portion of the sample (e.g., instead of dummy variables for low, middle, and high education levels, an added missing category was included so the education dummies included low, middle, high, and missing). Our major findings were not changed substantively.

- 12 There is also a handful of respondents for whom income information is missing within the panel period. Unfortunately, we cannot tell whether the respondent is experiencing a singular long spell or multiple short spells. Thus, when income information is missing at the end of a spell, the spell is treated as right-censored at the year in which we lack income data. When income information is missing at the start of a spell, the spell is considered as left-censored (and therefore omitted from the main sample).
- 13 Examination of the data indicates that the majority of the cases arise either because the poverty spell resulted from a family breakup or because the male partner was no longer the primary earner (income or job reduction), and thus female-headed spells are also more likely to be associated with divorce at the start of a spell and a loss of earners in the household.
- 14 In our competing-risks specification, the income categories are quite broad. For example, Cappellari and Jenkins (2004), who investigate characteristics associated with low-income transition probabilities, use five states of initial income defined by the thresholds 60 percent (poor), 80 percent, 100 percent, and 150 percent of median income. We considered a more detailed set of cut-offs as well (with thresholds at 110 percent, 125 percent, 150 percent, and 200 percent of our poverty line) and find results that are substantively similar (cut points near poverty exhibit similar characteristics to the 110 percent cut-off, and cut points of higher income exhibit similar characteristics to the 200 percent cut-off).
- 15 Because of the change variables in Specification 2, one should interpret the full-year employment indicator as "employed full year prior to the start of the spell and in the first year of the spell," in contrast to "not employed full year prior to spell start and not employed full year in the first year of the spell," "become employed full year," and "no longer employed full year." The same concept applies for the disability indicator.

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