The Dynamics of Reliance on EI Benefits: Evidence From the SLID

The Earnings Supplement Project

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Abstract

Relying on data from the Survey of Labour and Income Dynamics (SLID), this study examines the work and Employment Insurance (EI) reliance patterns of a cross-section of Canadian workers who had at least one work interruption in the 1993 to 1995 period or the 1996 to 1998 period. The authors first analyze the factors that contribute to a worker being an intense relier in the first period (1993–1995), defined as receiving regular benefits in at least two of the three years, and then examine the factors that contribute to a worker being an intense relier again in the following period (1996–1998). This unique approach allows workers who remain in EI dependency over the long-term to be distinguished from those who are transitioning into and out of EI dependency.

The findings indicate that only a minority (one third) of claimants who make repeated claims in 1993 to 1995 do so again in 1996 to 1998. The other two thirds claim EI only once or not at all in the second period. The examination of determinants of making repeated claims in two subsequent periods reveals that the employment opportunities of the region in which the worker lives, the lack of a high school diploma, and the type of job held by the worker are all significant contributors to long-term EI dependency. Surprisingly, the study reveals that the factors commonly identified as key contributors to frequent EI reliance, namely gender and region of residence, do not contribute to a worker being reliant on EI in the long-term once the workers' past reliance is accounted for. Workers' exposure to the EI program, preferences, and other unobservable characteristics are also found to be significant determinants of long-term EI dependency.

Introduction

When the Employment Insurance (EI) program was introduced in 1996, claims made by frequent EI claimants represented almost 40 per cent of all claims established in that year. Along with other important changes, the *Employment Insurance Act* introduced several provisions to limit frequent and systematic recourse to EI benefits. For instance, the intensity rule reduced frequent claimants' weekly benefits according to their degree of past reliance on EI. EI benefit repayment rules require claimants to repay any benefits in the amount by which their annual income exceeds a certain threshold. The new EI Act introduced a new repayment schedule for frequent claimants with a lower income threshold and a higher repayment rate that varied according to their past number of claims. Finally, the divisor rule encouraged claimants to work longer, since they would maximize their weekly EI benefits by avoiding a penalty if they worked two weeks more than the minimum entrance requirement applicable to their region of residence.

Despite these unique measures, the proportion of frequent claimants did not decrease significantly after the reform, maintaining a steady 40 per cent share of all claimants from 1996 to 2000. In 2001 the intensity rule and the separate benefit clawback schedule for frequent claimants were repealed on the grounds that they had not been effective in reducing the share of frequent claimants. Meanwhile, the economic downturn over the past two years has translated into a significant increase in claims by occasional claimants (especially among first-time claimants), with the result that the share of frequent claims dropped to 35 per cent of all claims in 2001–2002, even though their actual number has remained quite stable since 1996.

There is a growing body of research documenting the circumstances and characteristics of frequent claimants. Since 1997 Human Resources Development Canada (HRDC) has published its annual EI Monitoring and Assessment (M&A) reports, which include a separate analysis of claims made by frequent claimants — those who have made a minimum of three claims in the five years preceding their current claim. Using administrative data, the report describes frequent claimants' gender, region of residence, and seasonal pattern of claims, and it compares them with non-frequent claimants as well as over time.

The 1998 Survey on the Repeat Use of Employment Insurance (SRUEI) is another important data source on frequent claimants. It provides information on individuals who had initiated a claim and received at least $1 in regular EI benefits in 1996. The SRUEI uses a definition of "repeat" claimant that is similar to HRDC's definition of "frequent" claimant, although the SRUEI definition is based on receiving regular EI benefits in a minimum of *three years* over a five-year period (over the 1992 to 1996 period), rather than having made a minimum of *three claims* in the five years prior to the current claim. According to this definition, 53 per cent of 1996 claimants 25 years of age and older were classified as repeat claimants.

Analyses from the EI M&A annual reports and the SRUEI reveal that frequent (or repeat) EI claimants have different characteristics and labour market outcomes than occasional claimants: they are more likely to be male workers, to be living in Quebec or the Atlantic

provinces, to be living in rural areas, and to have not completed high school. Workers with a seasonal pattern of employment represent a disproportionate share of frequent claimants compared with occasional claimants.[1] However, more in-depth analyses based on the SRUEI reveal a great deal of heterogeneity, even among frequent claimants in the way they work and claim EI. For instance, Gray and Sweetman (2001), using data from the SRUEI combined with EI administrative files, find that a surprisingly high percentage of frequent claimants — well over one third — did not initiate their claims in a consistently seasonal pattern over time. The high degree of non-seasonality of EI claims among frequent claimants suggests that there is a large group of claimants who experience fragmented employment schedules where their work is temporary and unstable. For these workers, being able to work enough to receive EI benefits during the off-season is unpredictable from year to year.

If many frequent claimants have a seasonal pattern of claim, not all workers with seasonal breaks in employment are frequent EI claimants.[2] de Raaf, Kapsalis, and Vincent (2003) highlight the high degree of heterogeneity among workers who do have a seasonal pattern of employment with regards to their reliance on EI benefits. Their findings dispel the myth that all seasonal workers are necessarily frequent claimants, as they find that only a minority of "long-term" seasonal workers — those with at least three paid-job spells that ended within the same three-month "off-season" over a five-year period — receive EI benefits following each of their seasonal job spells, and that almost a fifth of seasonal workers never rely on EI after any of their seasonal job losses.

Most of the above studies attempted to uncover the underlying causes of frequent reliance on EI benefits by looking at work and EI use patterns over a five- or six-year period. However, earlier studies examine claim patterns over even longer periods. For instance, Corak (1993) examines claim patterns over the period of 1971 to 1990 and finds that 40 per cent of unemployment insurance claims were initiated by individuals who were beginning their fifth or more claim. Lemieux and MacLeod (1995) look at "persistent" claimants, defined as those individuals who claimed benefits a minimum of 11 times over the 1972 to 1992 period. They find that these persistent claimants represented almost 25 per cent of the sample. These two studies, using a form of dynamic analysis, find that past experience of unemployment insurance benefits increases an individual's probability to collect benefits again in the future. For instance, Lemieux and MacLeod find that first exposure to the program increases the probability of claiming again in the future by around 10 percentage points over a three-year period or at least by three to four percentage points a year.

Despite the growing body of research on frequent claimants, one area that has received little attention is whether frequent claimants comprise a "stock" of workers who find themselves trapped in a situation where they must rely on EI benefits year after year, or whether they represent "flows" from a larger group of different workers who are cycling into and out of EI dependency according to changes in their employment situation. By exploring the dynamic nature of the phenomenon, our study offers a new perspective on EI dependency

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[1]The patterns described here are in line with those obtained in past work by Corak (1993) and Wesa (1995).

[2]In the 2002 M&A report, Human Resources Development Canada reports that seasonal claimants made 79 per cent of all frequent claims. The definition of a seasonal claim in the M&A involves identifying the start date of previous claims made by frequent claimants, and if one of those claims began within the same 12-week window as the current claim, then the claimant is considered to be a seasonal claimant. Given that the criteria for frequent claimants is having made three or more claims in the five years prior to their current claim, it is therefore not surprising that such a high percentage of frequent claims is identified as being seasonal.

that examines the extent to which — and the reasons why — some workers remain dependent on the EI program over time while others do not. Previous studies have used this type of analysis to describe a number of different phenomena with respect to an individual's participation in the labour market. In works published in recent years, Kuhn and Schuetze (2001) look at the dynamic link between self-employment, paid employment, and non-employment. Hansen and Lofstrom (2001) compare the transitions made by native-born Nordic peoples, immigrants, and refugees between the receipt of welfare benefits, unemployment, and employment, while Stewart and Swaffield (1999) and de Coulon and Zürcher (forthcoming) examine mobility patterns in and out of low-paying jobs among British and Swiss workers, respectively.

To perform our analysis, we rely on data from the Survey of Labour and Income Dynamics (SLID) covering the 1993 to 1998 period. This survey presents two main advantages. First, its longitudinal nature provides information on workers' employment and EI claim patterns over several years. Second, unlike longitudinal EI administrative data, which are restricted to one dimension of individuals' labour market activity — their reliance on EI over time — data from the SLID fully capture workers' labour market experiences both on and off EI.

Beyond examining work and EI use patterns over the entire six years or looking at claim patterns year by year, we divide the SLID six-year panel into two periods and analyze the transitions workers make in and out of different states of EI dependency from 1993–1995 to 1996–1998. More specifically, we analyze transitions workers make into and out of one of three possible states: "non-reliance on EI," "low reliance on EI," and "intense reliance on EI" and distinguish between the probability of remaining in (or moving out of) a particular state and the probability that the individual is in that particular state in the first place (often referred to as the "initial conditions" issue). This approach allows us to gain a better understanding of the characteristics of individuals who are more likely to make successful transitions. It also enables us to find out whether differences in individual probabilities of experiencing different states stem from the intrinsic differences between the observed characteristics of individuals or whether the experience of intense reliance makes claimants more likely to depend on EI again in the future.

Our results suggest that some characteristics or circumstances identified as factors contributing to frequent reliance on EI seem to play a lesser role in explaining transitions into and out of states of intense reliance. Having a job in the primary, trades, and transport (including construction) industries, living in a region with more limited job opportunities and having less than a high school diploma are all factors positively associated with being dependent on EI over the long-term. However, male workers and those living in the Atlantic provinces do not seem to be more likely than their counterparts to remain dependent once they have experienced a period of intense reliance on EI. Our results also suggest that individuals' medium-term dependency on the EI program increases the probability that the individual will become dependent on EI over a longer period.

Receipt of Regular EI Benefits in the SLID

The Employment Insurance (EI) program provides different types of income benefits to unemployed workers depending on the source of their unemployment, including maternity, parental, sickness, fishing, and regular benefits. Of these, regular benefits, which provide temporary income to workers who have involuntarily lost their jobs, is the most significant, accounting for approximately 75 per cent of all income benefits paid by the EI program. The Survey of Labour and Income Dynamics (SLID), the data used for this study, identifies whether individuals received EI benefits during the year but does not identify the type of benefit received.

The process we use to single out the receipt of regular EI benefits among other types of EI benefits is to identify the preconditions that led to spells of EI receipt. Using EI qualifying criteria for regular benefits, we assume that an observed spell of benefit receipt is for regular benefits if, in that year, the individual was a paid employee and if, within the three months prior to the spell of benefit receipt, the individual had a job separation or an absence from work for a reason that would likely qualify him or her for regular benefits. The three-month cushion is necessary since only the receipt of benefits can be observed, not the initiation of an EI claim in the SLID. Individuals may not necessarily claim EI immediately following job loss or, if they do, they may initially accept part-time or temporary work in lieu of receiving benefits.[3]

Another important reason for employing a three-month cushion is the self-reporting nature of the SLID data. While annual EI amounts reported in the SLID are derived from tax records, monthly indicators of EI receipt are based on respondents' recollection of the months in which they received EI benefits. A three-month cushion mitigates the margin of error associated with respondents' recollection of the timing of particular events, such as start or end dates of absences and separations, and months in which EI is received.[4]

In order to establish whether the individual experienced a spell of unemployment that could potentially lead to a spell of receipt of regular EI benefits, we determine whether he or she experienced an absence or separation for reasons considered valid for qualifying for those benefits. While job separations mean a break from a particular job, an absence implies that the individual will most likely return to the job at a later time. Absences that involve a temporary layoff for either seasonal or non-seasonal reasons can qualify the worker to claim regular EI benefits. Job separations that are potentially EI-eligible include separations due to the company moving or going out of business, the seasonal nature of employment, a layoff or business slowdown, or the termination of a temporary contract. Table 1 shows the

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[3]The receipt of benefits may not be observed immediately following the beginning of their unemployment spell for the following two reasons. Under the allowable earnings provision of the EI program, EI claimants are permitted to accept work and maintain an open EI claim. Any benefits above 25 per cent of their weekly benefit rate or $50, whichever is higher, reduce their benefits dollar for dollar. Research by Gray and de Raaf (2002) shows that EI claimants are very likely to accept part-time or temporary work immediately following the beginning of their claim, suggesting that they are initially able to retain significant attachment to the labour market despite their job loss. As well, all claimants must serve a two-week waiting period in which they do not collect benefits and may not work without experiencing a reduction in the benefit amount they receive in the first weeks of their claim.

[4]See Noreau (1996) for an in-depth discussion of this issue.

distribution of self-reported reasons for both absences and job separations over the 1993 to 1998 period among SLID respondents aged 25 to 59 in 1993 who were paid employees at the time of the break in employment.

Table 1: Incidence of Reasons for Breaks in Employment, 1993–1998

Reason	Absences From Work (%)	Job Separations (%)
Potentially valid for claiming regular EI benefits		
Temporary layoff due to seasonal factors	14.3	12.8
Temporary layoff not due to seasonal factors	18.9	18.5
Temporary job or contract expired	–	13.0
Company moved or went out of business	–	5.6
Subtotal	**33.2**	**49.9**
Potentially invalid for claiming regular EI benefits		
Illness or disability	33.7	3.3
Family responsibilities	14.5	2.8
Found a new job	–	13.9
Unsatisfactory working conditions	–	6.4
Concentrate on other job	–	3.0
Unpaid or partially paid vacation	7.1	–
Other	11.5	20.7
Subtotal	**66.8**	**50.1**
All	**100.0**	**100.0**

Source: SLID, 1993–1998.

Note: Other reasons include moving to a new residence, returning to school, dismissal by the employer, retirement, and labour dispute.

Table 1 shows that during the 1993 to 1998 period, job separations were more likely than absences from work to occur for reasons that could potentially qualify the individual for claiming regular EI benefits, with half of all job separations occurring for reasons that were potentially valid for claiming regular EI benefits. Of these, the most common reason was that the individual was laid off due to non-seasonal factors. The second most common reason was that the individual's temporary contract had expired, while the third was that the individual had been laid off from a job due to seasonal factors. In comparison, only one third of absences from work occurred for potentially EI-eligible reasons.

It should be cautioned that while individuals may have stated that their jobs ended due to reasons that could potentially qualify them for regular EI benefits, they may not have actually been able to qualify for benefits had they applied. Some workers may not have accumulated sufficient hours to meet the minimum entrance requirements, while for others, their job separation or absence may not have occurred for reasons deemed valid for claiming regular benefits. Among workers whose job ended for reasons that are potentially invalid for claiming regular benefits, the most common reason was that they had found a new job. The most common reason for experiencing an absence from work involved some form of illness or disability. Unlike job separations, a significant percentage of absences were due to family

responsibilities, including maternity leave and caring for a child or for other family members.[5]

To determine which separations and absences actually led to EI benefit receipt, we use the available information in the SLID on EI receipt, which is restricted to the months in which some form of EI benefits were received over the reference year and the total amount of all EI benefits received over the course of the year. Recognizing that individuals may not actually receive EI benefits immediately following the beginning of their unemployment spell, we count the job separations and absences from work — determined previously as "valid for EI purposes" — as having led to EI receipt if EI benefits are reported in the following three months. Table 2 shows the proportion of absences from work and job separations that led to a spell of EI receipt within three months.

Table 2: Proportion of Potentially EI Eligible Breaks in Employment Leading to Spells of EI Receipt, 1993–1998

Year	Absences From Work Leading to EI (%)	Job Separations Leading to EI (%)
1993	67.0	58.4
1994	73.0	53.7
1995	67.0	50.6
1996	67.8	42.1
1997	67.5	42.8
1998[a]	61.4	38.1

Source: SLID, 1993–1998.

Note: [a]Due to our requirement to examine the three months subsequent to the job separation or absence from work for any receipt of EI benefits, the 1998 figures exclude breaks occurring after October 1, and thus may be downward biased.

Absences from work are substantially more likely than job separations to lead to spells of EI receipt. This may be due to the fact that workers who experience an absence retain significant attachment to their employers. Since these individuals anticipate returning to their job, they may be less likely to seek other employment and, therefore, more likely to remain unemployed — and consequently, receive EI benefits if eligible — until they are recalled to their jobs.

A trend worth noting from Table 2 is the relative decline in the proportion of job separations that led to EI over time, particularly from 1995 to 1996.[6] Compared with the lack of a discernable trend in the proportion of absences leading to EI from year to year, the proportion of job separations leading to EI gradually declined from 58.4 per cent in 1993 to 42.8 per cent in 1997. This trend may be attributed to two factors: the recovery of the

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[5]These figures should not be viewed as providing an indication of the extent to which the unemployed — or the employed — are covered by the EI program. HRDC's analyses of EI coverage rates provide estimates of EI potential eligibility among the unemployed, while our analysis looks at workers who experienced a job separation or absence from work throughout the year, no matter when it occurred and no matter for how long. Our analysis thus includes workers who quickly became re-employed or who left the labour force, and these individuals would not be included in the coverage analysis. See Human Resources Development Canada (2002) for a further discussion of EI coverage issues.

[6]It should be noted that due to our requirement to examine the three months subsequent to the job separation or absence from work for any receipt of EI benefits, the 1998 figures in the table reflect our lack of data beyond the end of that year. We are, therefore, not able to include any job separations or absences that occurred in the last three months of 1998. Since these three months often represent the off-season for workers, particularly those in a seasonal job, the 1998 figures may be downward biased.

Canadian economy during this period and the tightening of EI rules in 1996 and 1997. Improving employment prospects would lead to increased re-employment rates after job separations but not necessarily during job absences. Since the nature of a job absence is such that workers anticipate being recalled by their employers, they would be less sensitive to changes in job opportunities. Another reason why the relationship between absences and EI use may be more stable is that workers who experience absences from work may be able to adjust their employment schedules to ensure that they qualify for EI benefits in response to changes in the program.

To verify that our methodology for identifying the extent of reliance on EI benefits following a break in employment is reliable, we compare our results with those of the SRUEI, since it provides the most recent and comprehensive picture of EI frequent claimants available. The SRUEI sample is all claimants who established an EI claim and received regular benefits in 1996. Claimants are determined to be frequent if they have also received benefits in at least two years from 1992 to 1995. To compare our sample with that of the SRUEI, we create a sample of individuals who claimed EI in a given year.[7] We then identify these claimants as "frequent claimants" if they claimed benefits in at least two additional years over the 1993 to 1997 period, the time frame that best approximates the SRUEI methodology. We follow the same procedure for each of the five years from 1993 to 1997 to compare the proportion of frequent claimants over time. Table 3 shows the results.

Table 3: Proportion of EI Frequent Claimants Receiving Benefits in a Given Year, 1993–1997

Year	Proportion of Frequent Claimants in the SLID (%)	Proportion of Frequent Claimants in the SRUEI (%)
1993	31.5	–
1994	38.7	–
1995	42.9	–
1996	40.8	54.4
1997	42.1	–

Source: SLID, 1993–1998; SRUEI, 1998.

The table shows a definite upward trend in the proportion of frequent claimants over time, particularly from 1993 to 1995. In 1993 frequent claimants represented less than one third of all claimants. By 1995 the proportion had increased to 42.9 per cent, with a slight decrease in the proportion of frequent claimants in 1996, representing 40.8 per cent of all claimants. In comparison, the proportion of frequent EI users in 1996 based on SRUEI is 54.4 per cent.[8]

Our methodology produces a lower estimate of the proportion of frequent claimants than that based on SRUEI. This can be attributable to differences in the sampling structure of the surveys, the period under consideration, and the methodology by which reliance on EI is determined. While the SLID longitudinal sample is representative of workers in 1993 who

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[7]To be more precise, this SLID sample includes paid employees who experienced an EI-valid break in employment, were between 25 and 59 years of age in 1993, were not full-time students over the entire 1992 to 1997 period, and claimed EI in a given year.

[8]Using another methodology, Human Resources Development Canada (2002) reports that frequent claimants represent between 33 and 40 per cent of all claimants of regular EI benefits over the period of interest.

claimed EI in 1996, the SRUEI sample is representative of EI claimants in 1996. Another important distinction is that the SRUEI sample is based on EI administrative data while the SLID surveys all workers, relying on self-reporting for the collection of EI data.

Despite these differences, it is interesting to note that when characteristics of EI claimants are compared, there are many similarities across the two samples. As shown in Table 4, EI claimants appear to be distributed across almost all of the characteristics in a similar pattern in both survey samples. The results show that the SRUEI and the SLID samples of 1996 EI claimants are quite similar in characteristics. With the exception of age, there is no more than a two percentage point difference in the distributions of the two samples.

Table 4: Summary Statistics for Samples of EI Claimants by Selected Characteristics, 1996

	Proportion of 1996 EI Claimants in the SLID (%)	Proportion of 1996 EI Claimants in the SRUEI (%)
Gender		
Male	59.7	57.8
Female	40.3	42.2
Age		
25 to 34	36.2	32.9
35 to 44	31.6	32.3
45 to 54	20.7	22.6
55 and over	11.5	12.2
Region of residence		
Atlantic	15.8	15.6
Quebec	32.2	33.3
Ontario	28.6	27.5
West	23.4	23.6
Living with a partner		
Yes	71.1	71.4
No	28.9	28.6
Total weighted sample	**703,028**	**1,415,944**

Source: SLID, 1996 (cross-section); SRUEI, 1998.

Transitions Analysis

Our primary interest in this study is to examine the determinants of workers remaining dependent on Employment Insurance (EI) over time, given their degree of reliance in the past. Examining reliance over a multi-year period allows us to distinguish one-time occurrences from situations where a worker is required to make repeated claims for EI benefits over a longer period. In this way, the focus of this study is the repetition of a particular pattern of behaviour rather than the likelihood that an individual will initiate another claim for benefits.

To establish a pattern of behaviour, we classify workers according to their number of EI spells over a three-year period: "non-reliance on EI" for workers who never collect EI following any break in employment during a given period (either from a job separation or an absence from work), "low reliance on EI" for workers who collect EI only once during a period, and "intense reliance on EI" for workers who collect EI at least twice during a period.

With these classifications, we are then able to examine the extent to which workers remain trapped in a pattern of behaviour over time by examining their transitions from one period (1993–1995) to the following period (1996–1998). Using our sample of all workers who experienced a break in employment deemed valid for claiming regular EI benefits, the following transition matrix shows the extent to which workers transition between the three states over the two periods.

Table 5: Transition Probability Matrix, All Workers, 1993–1998

1993 to 1995 Period	1996 to 1998 Period		
	Non-reliance (%)	Low Reliance (%)	Intense Reliance (%)
Non-reliance	71.7	24.0	4.3
	(1.41)	(1.37)	(0.49)
Low reliance	68.3	21.5	10.2
	(1.89)	(1.73)	(1.00)
Intense reliance	37.5	28.1	34.4
	(2.79)	(2.47)	(2.54)

Source: SLID, 1993–1998.

Note: Standard errors are in parentheses.

One of the most striking findings is the low degree of stability for the low reliance and intense reliance categories when compared with the non-reliance category. In the dynamics literature, there is generally a high degree of stability within a particular state from one period to the next, with retention rates — or probabilities of remaining in one state from one period to the other — often exceeding 50 and even 75 per cent. For instance, Stewart and Swaffield (1999), in their examination of low pay dynamics in Britain, find that the conditional probability of being in low pay in a particular year is much higher for those who were low paid in the previous period in the order of 10 times the magnitude or higher. These

results suggest a high degree of state dependence among the states being observed, such as being low paid, where being in a particular state increases the probability that the individual will be in that state again in the future.

The relatively low probabilities that we observe for remaining in states of low or intense reliance on EI are, in part, due to the fact that the states are defined in a very different manner. Our definition of intense reliance is based on a three-year period while typical transitions examined in the dynamics literature involve year-to-year transitions. Therefore, our categorical definitions imply much more stringent criteria than those of similar studies, as workers may be more likely to repeat a behaviour, such as claiming EI, in a given year than they are to repeat the act of claiming EI two or three times over a three-year period.

We do observe, however, a very high retention rate among non-reliers. That is, as one would expect, workers who do not rely on EI are very unlikely to rely on EI in the future. Similarly, we see a strong tendency for workers to move from either low or intense reliance in the first period into non-reliance in the second. For workers who experience low reliance on EI in the first period, there is a high probability (68.3 per cent) that they will transition into non-reliance in a subsequent period, while intense reliers are nearly equally likely to move into any of the three states.[9] The observed conditional probabilities demonstrate that the state of frequent reliance is not an absorbing one, with frequent reliers moving freely into non-reliance, low reliance, and intense reliance on EI over time.

Despite the relatively low degree of stability among EI claimants compared with other types of transition analysis, it is important to note that workers who exhibit intense reliance on EI in the first period appear to be very likely to claim EI benefits again in a subsequent period. In fact, they have a greater than 60 per cent probability that they will be EI claimants again, with a greater than 33 per cent probability of once again claiming EI at least twice in the next three years. This suggests that while a high percentage of intense reliers no longer depended on EI intensely in 1996 to 1998, a small yet persistent group of EI intense reliers face barriers to secure, year-round employment and, consequently, have become dependent on EI over time.

Before examining the characteristics and circumstances of workers observed to remain in the state of intense reliance, it is important to gain a better understanding of what the counterfactual represents, in this case, non-reliance on EI benefits. Since our definition of non-reliance is a lack of observed claims for regular EI benefits, this category captures a variety of employment conditions, including situations where workers may be in employment, unemployment, or even out of the labour force. The following figures give a better understanding of the labour market experiences of those in a state of non-reliance in either the 1993 to 1995 or the 1996 to 1998 periods, with low and intense reliers shown for comparison purposes. Since men and women typically have different experiences in the labour market and, consequently, may be non-reliers for different reasons, they are shown separately.

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[9]The state of low reliance on EI shows the lowest retention rate of all three states, with low reliers being much more likely to move into non-reliance in the subsequent period. These results may indicate that the state of low reliance may not be a very meaningful category since it does not appear to reflect a usual pattern of behaviour for EI claimants who are more likely to move into one of the other states over time.

Figure 1: Per Cent Weeks Employed by EI Receipt (Men)
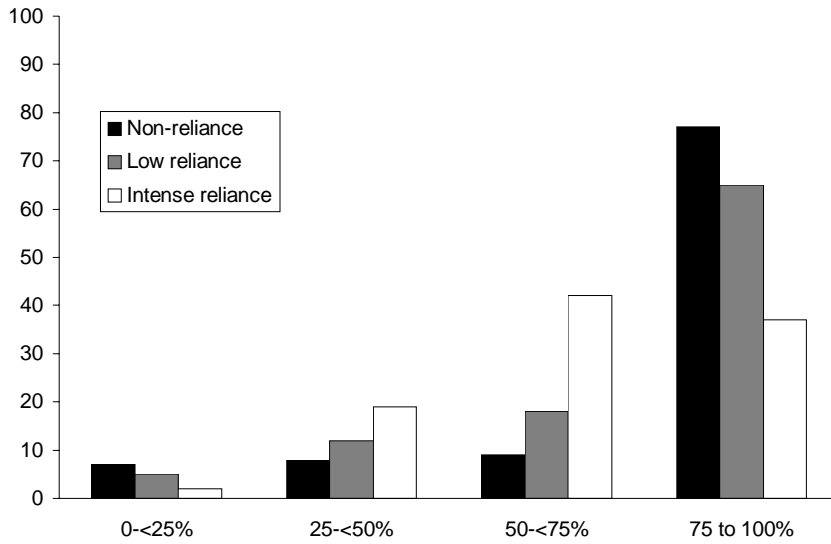
Figure 2: Per Cent Weeks Out of the Labour Force by EI Receipt (Men)
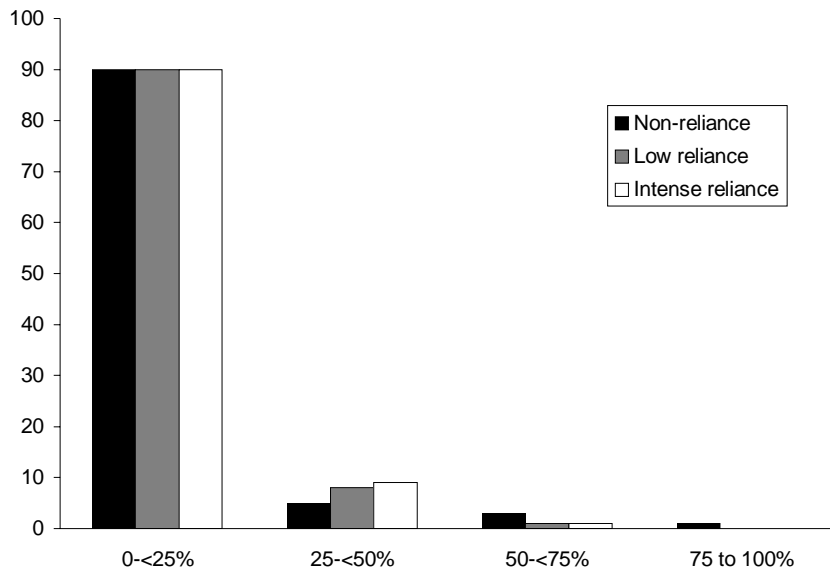
Figure 3: Per Cent Weeks Employed by EI Receipt (Women)
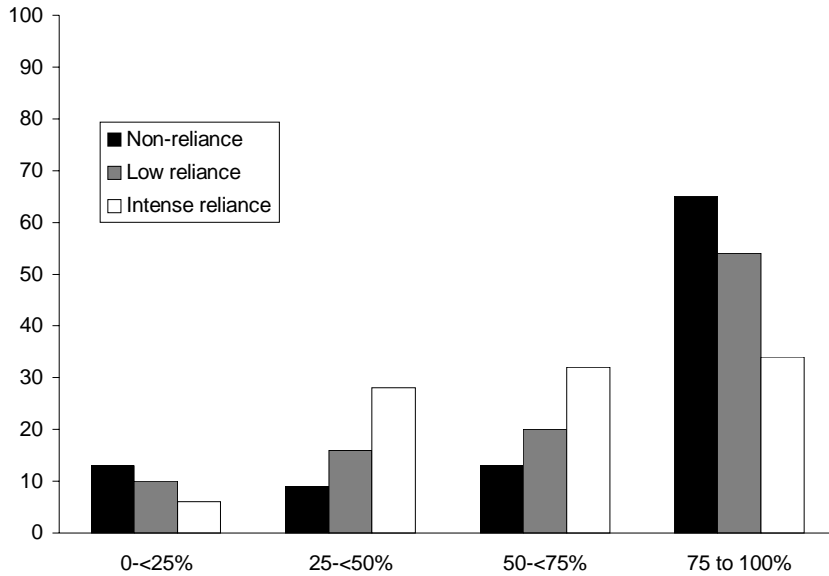
Figure 4: Per Cent Weeks Out of the Labour Force by EI Receipt (Women)
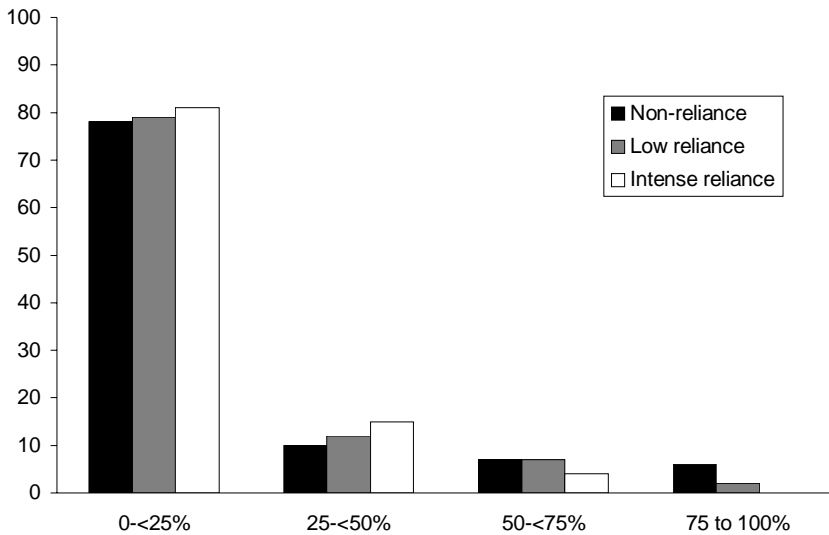
The figures illustrate that overall, non-reliers fare better in the labour market than either low reliers or intense reliers. Nearly 80 per cent of male non-reliers are employed at least 75 per cent of the three-year period (Figure 1), and approximately 90 per cent are out of the labour force less than 25 per cent of the time (Figure 2). Female non-reliers share a similar, although not quite as favourable, story as male non-reliers. They spend about 65 per cent of

their weeks employed (Figure 3), which is, similar to male non-reliers, roughly 10 percentage points higher than low reliers. A large majority also spend most of the time in the labour force, as nearly 80 per cent withdraw from the labour force for fewer than 25 per cent of their total weeks (Figure 4).

While, overall, the labour force experiences of non-reliers are favourable, a caution must be given that not all non-reliers are doing well in spite of their non-reliance on EI benefits. While non-reliers are, on average, the most likely to be employed in almost every week, at the other extreme they are also the most likely to be employed in fewer than 25 per cent of the total weeks. They are also the most likely to be out of the labour force for more than half of the total weeks in a given three-year period. While these results give some confidence to the conjecture that being a non-relier is typically a positive state with respect to labour market outcomes, it does not follow that all non-reliers are better off than workers who rely on EI.

Turning once again to individuals who remain intensely reliant on EI benefits over the two periods, one way to gain a better understanding of their individual characteristics is to compare transition matrices for different subpopulations of EI claimants. Based on findings from prior research (Schwartz, Bancroft, Gyarmati, & Nicholson, 2001) showing that frequent claimants are more likely to be men, we report the transition matrices for male and female workers separately. Table 6 shows that women are less likely to remain in a state of low or intense reliance on EI. Compared with men, they have a higher probability of moving into a lower level of EI reliance over the following period, whether it be from the intense reliance into the low reliance category or from both the intense and low reliance categories into the non-reliance category in the next period.

Table 6: Transition Probability Matrix by Gender, 1993–1998

| 1993 to 1995 Period | 1996 to 1998 Period | | | | | |
| | Male Workers | | | Female Workers | | |
	Non-reliance (%)	Low Reliance (%)	Intense Reliance (%)	Non-reliance (%)	Low Reliance (%)	Intense Reliance (%)
Non-reliance	70.0	24.3	5.7	73.2	23.7	3.1
	(2.02)	(1.95)	(0.80)	(1.97)	(1.93)	(0.60)
Low reliance	65.7	22.4	11.9	72.2	20.3	7.5
	(2.61)	(2.40)	(1.45)	(2.61)	(2.38)	(1.25)
Intense reliance	34.8	27.4	37.8	42.8	29.5	27.7
	(3.28)	(2.85)	(3.22)	(5.08)	(4.72)	(3.80)

Source: SLID, 1993–1998.

Note: Standard errors are in parentheses.

Prior research on frequent claimants (Schwartz et al., 2001) also shows that Quebec has the largest *share* of frequent claimants while the Atlantic provinces have the highest *incidence* of frequent reliance on EI. Table 7 shows transition matrices for workers living in three regions (Atlantic provinces, Quebec, and Ontario and the Western provinces) indicating the dynamics of EI use for each region.[10] As this table shows, there are large regional differences in

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[10]To maintain an adequate sample size, we have combined Ontario, Manitoba, Saskatchewan, Alberta, and British Columbia into one regional category.

transitions between the different states of reliance on EI. Atlantic claimants who experienced non- or low reliance in the first period are much more likely than their counterparts in other regions to move into intense reliance in the next period, while those who were in intense reliance in the first period are more likely than those from other regions to remain dependent on EI over time, having a retention rate of 49.7 per cent compared with 31.2 per cent in Quebec and 28.5 in Ontario and the Western provinces.

Table 7: Transition Probability Matrix by Region of Residence, 1993–1998

| | 1996 to 1998 Period | | | | | | | | |
| | Living in Atlantic | | | Living in Quebec | | | Living in Ontario and West | | |
1993 to 1995 Period	Non-reliance (%)	Low Reliance (%)	Intense Reliance (%)	Non-reliance (%)	Low Reliance (%)	Intense Reliance (%)	Non-reliance (%)	Low Reliance (%)	Intense Reliance (%)
Non-reliance	61.8	26.7	11.5	61.4	34.3	4.3	76.2	20.2	3.6
	(2.79)	(2.58)	(1.74)	(3.65)	(3.61)	(0.90)	(1.59)	(1.52)	(0.62)
Low reliance	55.2	22.3	22.5	57.5	27.7	14.8	77.8	17.7	4.5
	(3.13)	(2.64)	(2.47)	(4.05)	(3.68)	(2.47)	(2.24)	(2.14)	(0.83)
Intense reliance	26.2	24.1	49.7	40.0	28.8	31.2	41.7	29.8	28.5
	(2.75)	(2.92)	(3.16)	(5.40)	(4.93)	(4.39)	(4.44)	(3.78)	(4.50)

Source: SLID, 1993–1998.

Note: Standard errors are in parentheses.

Previous research has shown that claimants living in rural areas and those who did not complete a high school diploma are, on average, more likely to be frequent claimants. Tables 8 and 9 show that living in a rural area and having less than a high school education are not only associated with a higher probability of becoming an intense relier on EI in a subsequent period, but they are also associated with a relatively high probability of remaining in that state over time.

Table 8: Transition Probability Matrix by Rural and Urban Status, 1993–1998

| | 1996 to 1998 Period | | | | | |
| | Living in Rural Areas | | | Living in Urban Areas | | |
1993 to 1995 Period	Non-reliance (%)	Low Reliance (%)	Intense Reliance (%)	Non-reliance (%)	Low Reliance (%)	Intense Reliance (%)
Non-reliance	67.7	25.5	6.8	72.4	23.7	3.9
	(2.39)	(2.24)	(1.19)	(1.62)	(1.58)	(0.54)
Low reliance	61.1	22.9	16.0	70.1	21.2	8.7
	(3.01)	(2.56)	(2.09)	(2.23)	(2.06)	(1.12)
Intense reliance	30.7	25.6	43.7	41.1	29.4	29.5
	(3.42)	(2.95)	(3.39)	(3.83)	(3.44)	(3.40)

Source: SLID, 1993–1998.

Note: Standard errors are in parentheses.

Table 9: Transition Probability Matrix by Degree of Educational Attainment, 1993–1998

| 1993 to 1995 Period | 1996 to 1998 Period | | | | | |
| | Less Than High School | | | At Least High School Graduate | | |
	Non-reliance (%)	Low Reliance (%)	Intense Reliance (%)	Non-reliance (%)	Low Reliance (%)	Intense Reliance (%)
Non- reliance	59.1	33.0	7.9	74.4	22.0	3.6
	(3.23)	(3.19)	(1.50)	(1.55)	(1.51)	(0.50)
Low reliance	64.5	20.6	14.9	69.3	21.9	8.8
	(3.35)	(2.87)	(2.13)	(2.24)	(2.07)	(1.13)
Intense reliance	27.5	31.5	41.0	44.8	25.6	29.6
	(4.09)	(3.98)	(4.32)	(3.64)	(3.15)	(2.92)

Source: SLID, 1993–1998.

Note: Standard errors are in parentheses.

Having analyzed the transition matrices according to a variety of characteristics, it is helpful to understand the implications of observing transition probabilities over the long run. If we assume that a Markov process governs transitions between the three states of reliance on EI, that is, there is no state dependence, then the transition probability matrix will yield a unique steady state equilibrium (or *ergodic distribution*) suggesting what the probabilities will look like if we are able to observe worker behaviour over a long period. Table 10 provides three distributions for the entire sample of workers: the observed probability distribution in the two periods (1993–1995 and 1996–1998) and the ergodic distribution.

Table 10: Observed and Steady State Distributions of Workers by Degree of EI Reliance

	Non-reliance (%)	Low Reliance (%)	Intense Reliance (%)
1993–1995	58.5	28.7	12.8
1996–1998	66.3	23.8	9.9
Ergodic distribution	69.5	23.6	6.9

Source: SLID, 1993–1998.

The table illustrates that the ergodic distribution is fairly similar to the observed 1996 to 1998 distribution and that, over the long run, only 6.9 per cent of the sample should be in intense reliance, 23.6 per cent in low reliance, and 69.5 per cent in non-reliance in any three-year period of observation.

Determinants of Patterns of Reliance on EI Over Time

As the main focus of this study is to understand what explains transitions in and out of intense reliance, we classify claimants according to their long-term reliance on EI. For this purpose, we collapse the non- and low reliers categories together.[11] Aside from individuals who are long-term EI dependent and those who are never in an intense reliance state over the two periods, this classification creates two other groups as shown by Table 11: "entrants" and "leavers." Entrants into intense reliance on EI are those claimants who were low or non-claimants in the first period and intense users in the second, while leavers of intense reliance are those who were in intense reliance on EI in the first period but moved into low or non-reliance in the second.

Table 11: Definition of Four Types of EI Claimants Over a Six-Year Period

1993 to 1995 Period	1996 to 1998 Period		
	Non-reliance	Low Reliance	Intense Reliance
Non-reliance Low reliance	Non-/low reliers		"Entrants" in intense reliance
Intense reliance	"Leavers" of intense reliance		Long-term reliers

The combined category of claimants in non- or low reliance represents the majority (81.8 per cent) of all workers who, during the 1993 to 1996 period, experienced a break in employment for reasons considered valid for qualifying for regular EI benefits, while the combined total number of entrants, leavers, and long-term reliers represents only 18.2 per cent of all workers in the sample.

Table 12 provides a broad set of characteristics for non-reliers, entrants, leavers, and long-term reliers, and compares them with the characteristics of all workers. What is apparent from the table is that workers in intense reliance on EI benefits, at least once during the 1993 to 1998 period, have characteristics that are different from those of all workers who simply experienced a potentially EI eligible break in employment. Compared with all workers, they are proportionally more likely to be men (even more so among long-term reliers), be French-speaking (especially male long-term reliers), and live in the Atlantic provinces and in Quebec. Leavers (especially female leavers) are more likely to reside in Quebec, live in rural areas (even more so among long-term reliers), not be a high school graduate, and work in an unskilled blue collar job (this is remarkably true among female long-term reliers). The household composition of workers who relied intensely on EI at least once also differs from that of all workers in that they are more likely to live with a partner and to have children. This finding is particularly true among female leavers.

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[11]It is clear that collapsing categories implies a loss of efficiency; however, as non- and low reliers are quite similar in terms of their descriptive characteristics, it is reasonable to assume that estimation results will still be consistent. To confirm this hypothesis, we perform a Hausman-type test comparing coefficients and covariance matrices of an ordered probit model with three categories (non-, low, and intense reliers) with a probit model with two categories (combined non-/low and intense reliers). As the differences between the two sets of coefficients are not systematic, we can thus join non- and low reliers together with a high degree of confidence. The test results also indicate that it would not be feasible to combine low and intense reliers together as they are systematically different.

Table 12: Summary Statistics by Patterns of Reliance on EI, 1993–1998

	Distribution of "Non-reliers" (%)			Distribution of "Entrants" (%)			Distribution of "Leavers" (%)			Distribution of "Long-Term Reliers" (%)			Distribution of All Workers (%)		
	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
All	77.3	86.8	81.7	6.8	3.9	5.4	9.9	6.7	8.4	6.0	2.6	4.4	100.0	100.0	100.0
Gender															
Male	–	–	50.7	–	–	66.8	–	–	62.9	–	–	72.9	–	–	53.6
Female	–	–	49.3	–	–	33.2	–	–	37.1	–	–	27.2	–	–	46.4
Age															
25 to 34	44.4	38.4	41.5	37.6	39.8	38.3	43.1	38.6	41.5	39.3	26.5	35.9	43.5	38.2	41.1
35 to 44	28.6	36.5	32.5	36.1	34.0	35.4	26.8	32.7	29.0	37.0	41.3	38.2	29.5	36.3	32.6
45 and older	26.9	25.0	26.0	26.3	26.3	26.3	30.0	28.6	29.5	23.7	32.2	26.0	27.0	25.5	26.3
Region of residence															
Atlantic	7.9	8.5	8.2	26.2	19.8	24.1	19.7	14.2	17.7	28.4	46.2	33.3	11.6	10.3	11.0
Quebec	28.8	22.7	25.8	37.0	35.6	36.5	33.5	51.5	40.2	37.5	27.5	34.7	30.3	25.3	28.0
Ontario and West	63.3	68.8	66.0	36.9	44.6	39.4	46.9	34.2	42.2	34.1	26.3†	32.0	58.1	64.4	61.0
Education															
Less than high school	21.2	16.0	18.6	38.3	22.1	32.9	35.3	42.7	38.0	52.3	45.3	50.4	25.6	18.8	22.5
High school diploma	14.7	17.0	15.8	11.9	18.9†	14.3	15.5	15.0	15.3	10.2†	16.2†	11.8	14.3	16.9	15.5
Some post-secondary education	64.1	67.0	65.5	49.8	58.9	52.9	49.3	42.3	46.7	37.5	38.5	37.7	60.0	64.3	62.0
Partner															
No	31.5	31.2	31.3	24.2	32.0	26.8	27.3	15.6†	23.0	20.2	15.4†	18.9	29.9	29.8	29.8
Yes	68.5	68.8	68.7	75.8	68.0	73.2	72.7	84.4	77.0	79.8	84.6	81.1	70.1	70.2	70.2

(continued)

Table 12: Summary Statistics by Patterns of Reliance on EI, 1993–1998 (Cont'd)

	Distribution of "Non-reliers" (%)			Distribution of "Entrants" (%)			Distribution of "Leavers" (%)			Distribution of "Long-Term Reliers" (%)			Distribution of All Workers (%)		
	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All	Male	Female	All
Children															
No	46.6	32.6	39.7	38.3	36.3	37.7	37.9	20.2	31.3	33.5	34.9	33.9	44.4	32.0	38.7
Yes	53.4	67.4	60.3	61.7	63.7	62.3	62.1	79.8	68.7	66.5	65.1	66.1	55.6	68.0	61.3
Urban/Rural															
Urban	82.0	85.0	83.5	73.8	67.2	71.6	72.6	66.4	70.3	56.7	54.5	56.1	79.0	82.3	80.5
Rural	18.0	15.0	16.5	26.2	32.8	28.4	27.4	33.6	29.7	43.3	45.5	43.9	21.0	17.7	19.5
Mother tongue															
English	59.8	62.7	61.2	53.3	49.5	52.0	52.0	42.4	48.4	49.5	55.4	51.1	58.0	60.6	59.2
French and other	40.2	37.3	38.8	46.7	50.5	48.0	48.0	57.6	51.6	50.5	44.6	48.9	42.0	39.4	40.8
Occupation status															
White collar	23.3	22.6	23.0	16.6†	27.4†	20.2	9.7	18.2†	12.8	6.0†	8.5†	6.7	20.5	22.1	21.2
Skilled blue collar	27.0	17.8	22.5	24.9	18.9†	22.9	33.7	15.9†	27.1	31.2	16.2†	27.1	27.8	17.7	23.1
Unskilled blue collar	33.1	39.8	36.4	42.6	33.2	39.5	51.7	63.4	56.1	49.3	70.1	54.9	36.6	41.9	39.1
Not reported	16.6	19.8	18.2	15.9	20.5	17.4	4.9†	2.5†	4.0	13.5†	5.2†	11.3	15.2	18.3	16.6

Source: SLID, 1993–1998.

Note: † Indicates unreliable unweighted cell size.

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The descriptive statistics shown above give some indication of the differences between claimants who become and remain dependent on EI over time and those who are able to transition out of it in a subsequent period. These indicators point to observable characteristics and life circumstances (e.g. gender, educational attainment, region of residence, and occupation) that may contribute to remaining dependent on EI and, as such, move beyond the typical snapshot of EI frequent claimants at one point in time that is the basis of prior research on EI frequent claimants.

The descriptive analysis also illustrates that there is a high degree of mobility into and out of intense reliance on EI. However, it also demonstrates that a significant proportion of claimants remain dependent, relying on EI year after year. Previous research has provided evidence that individuals who have claimed EI benefits at least once have a much higher probability of relying on EI again in the future than those who have not collected EI at all, independent of their personal and other observable characteristics and circumstances.

If there is a "state dependence" effect among EI frequent claimants, a frequent claimant in the first period who possesses a particular set of characteristics would be more likely to be a frequent claimant again when compared with another individual with the same set of characteristics but who had not frequently relied on EI in the first period. Such a state dependence effect can reflect the fact that the individual's time spent in receipt of EI benefits may result in depreciated or reduced opportunities for accumulating human capital, thereby reducing the individual's ability to secure year-round employment. It could also reflect the possibility that employers believe a person who has been dependent on EI is not as productive as an identical person who has not (referred to as "signalling"), also reducing the individual's ability to obtain year-round employment. Finally, individual preferences themselves may be affected by a first participation in the EI program, making dependence on EI an attractive alternative to year-round employment.

If the differences in individual propensities to rely intensely on EI benefits are correlated over time but not properly accounted for, then previous experience may be incorrectly seen as a determinant of future behaviour, since it is acting as a proxy for unobserved individual heterogeneity. It is important, therefore, to control for unobserved heterogeneity when explaining EI dependency by accounting for any conditional relationship that exists between relying on EI from one period to the next. In our following analysis of transitions into and out of intense reliance, we account for the circumstances that led to intense reliance in the first place. This allows us to determine whether remaining dependent on EI is due to claimants' observable characteristics or state dependence, stemming from their experience of having relied on EI intensely in the previous period.

DETERMINANTS OF INTENSE RELIANCE ON EI

Our analysis of the dynamics of intense reliance on EI benefits is based on the assumption that the factors that contribute to an individual remaining an intense relier over time are different from those of becoming an intense relier in the first place. To distinguish between the two, we first begin by understanding the determinants of observing an individual intensely relying on EI in one particular period. We then extend our analysis to two periods, modelling the probability that an individual remains in a state of intense reliance, conditional on the individual's past degree of reliance on benefits.

To perform this analysis, we rely on two extensive sets of literature. The first examines the incidence and determinants of repeat reliance on unemployment insurance benefits. Research on this subject has examined the probability that an individual will claim benefits again within 14 weeks, one year, three years, or five years (Corak, 1993; Gray, 2001; Lemieux & MacLeod, 1995). While several studies have attempted to account for the degree of past reliance in explaining claimants' present behaviour, very little attention has been given to examining the determinants of repeating an intense claim pattern over a multi-year period. Analyzing patterns of behaviour over multi-periods is important to distinguish situations where claimants are unable to transition successfully to stable full-year employment from where they return to EI benefits one more time as part of their progress toward achieving employment stability.

To find a methodology appropriate for the study of how workers move between states of dependency on EI, we turn to a growing body of literature on the dynamics of labour market behaviour. These studies have used transition analysis to describe a number of different phenomena with respect to individual participation in the labour market and reliance on income assistance. In an approach we follow closely, Stewart and Swaffield (1999) model mobility patterns between low- and high-paid workers in Britain by separating the probability of remaining in, or moving out of, a particular state from the probability that the individual is in that particular state in the first place (often referred to as the "initial conditions" issue). By following this approach, we will gain an understanding of the characteristics of individuals who are more likely to remain dependent on EI benefits over time.

The first step of the methodology employed by Stewart and Swaffield (1999) is to estimate the probability that an individual is an intense relier over a particular period of time using a standard probit specification.[12] Although our primary analysis is of intense reliance defined over a three-year period, we first estimate the probability of being a frequent claimant over the entire six-year period for comparison purposes, and these results are presented in the first column of Table 13. For this analysis, "frequent" is defined as receiving EI benefits in at least four of the six years. Marginal effects, as opposed to estimated regression coefficients, are given in the table.[13] This specification acts as a benchmark due to its similarity to previous research on individuals who repeatedly claim EI benefits. It also serves to illustrate the benefits of our main empirical approach: estimating the probabilities of being in intense reliance conditional on individuals' past reliance on EI. Our main two-step approach is then given in columns 2, 3, and 4. The ordering of the explanatory variables illustrates how the relative magnitude and significance of each changes once the definition of intense reliance is restricted and past reliance is accounted for in the specifications.

The second column of Table 13 reports the results from the estimation of the probability of being an intense relier using a tighter definition of intense reliance. In this specification,

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[12]A complete description of our empirical strategy is provided in Appendix A.

[13]For continuous variables, such as age, regional unemployment rate, or income, the reported marginal effect gives the percentage point change in the probability of being an intense relier in the first period that arises from a one-unit change in the explanatory variable. For discrete variables such as language spoken or whether or not the individual has graduated from high school, the marginal effect gives the percentage point change in the probability of being an intense relier that arises from the explanatory variable taking the value one instead of zero. Since the marginal effects are functions of all the estimated coefficients and explanatory variables, it is necessary to assign a value to each explanatory variable to compute them. We adopt the conventional approach used in the literature and compute marginal effects for a hypothetical individual with "average" characteristics. That is, the marginal effect is computed assuming that all other variables are evaluated at the sample means for continuous variables and sample proportions for dichotomous variables.

intense reliers are defined as having received EI benefits two or three times out of the three years from 1993 to 1995. A comparison of the results from this model in the second column with those of the more conventional definition in the first column illustrates that restricting the definition of intense reliance from a six- to a three-year period does not significantly alter the number of explanatory variables that affect the probability of being an "intense" or "frequent" relier.

Table 13: Determinants of Intense Reliance

	Intense Reliance		Transition Into Intense Reliance in 1996–1998	
	1993–1998	1993–1995	Intense in 1993–1995	Not Intense in 1993–1995
EI region unemployment rate[a]	0.002***	0.003**	0.027***	0.006***
Sector of occupation[b]				
Primary industries	0.071***	0.104***	0.266***	0.105***
Trades, transport, and construction	0.043***	0.093***	0.234***	0.058***
Processing industries	0.005	0.069***	0.127*	0.067***
Administration and sciences	-0.006	-0.011	0.144*	-0.001
Sales and services	–	–	–	–
Occupation not reported	-0.012	-0.061***	0.009	-0.047***
Hours worked[a,c]	0.037***	0.099***	0.088*	0.035***
Educational attainment[b]				
Less than high school	0.031***	0.054***	0.158***	0.024*
High school graduate	0.002	0.011	0.032	0.006
Post-secondary education	–	–	–	–
Region of residence[b]				
Atlantic	0.052***	0.071***	0.027	0.051***
Quebec	0.009	0.005	-0.077	0.011
Ontario and West	–	–	–	–
Living in rural area[b]	0.014**	0.024**	0.082*	0.002
Home ownership[b,d]	0.016**	0.026*	0.064	0.014
Non-individual income ($\div$1,000)[a,e]	0.000	-0.001**	-0.004***	0.000
Member of a union[b,f]	0.015**	0.036***	0.075	0.016
Female	-0.031**	-0.079***	-0.053	0.002
Household composition				
Change in household composition[g]	-0.012**	-0.023**	-0.005	-0.012
Living with a partner[b]	0.011	0.005	0.072	0.005
Female living with a partner[b]	0.010	0.063**	0.138	-0.017
Living with children[b]	0.002	0.022	0.033	0.006
Language				
English	–	–	–	–
Other than English	0.012	0.035**	0.028	0.013
Age				
Age	-0.001	0.004	0.000	0.000
Age squared ($\div$100)	0.001	-0.006	–	–
Instrumental variables				
Parents' education	-0.016***	-0.028**	–	–
Immigrant	-0.006	-0.029	–	–

(continued)

Table 13: Determinants of Intense Reliance (Cont'd)

	Intense Reliance		Transition Into Intense Reliance in 1996–1998	
	1993–1998	**1993–1995**	**Intense in 1993–1995**	**Not Intense in 1993–1995**
Observed probability	0.063	0.129	0.347	0.063
Predicted probability	0.032	0.087	0.332	0.047
Correlation between periods (rho)	n.a.	n.a.	0.522**	-0.205
Sample size	4,167	4,167	4,159	4,128
Log likelihood	-773.2	-1,304.7	-1,283,122.0	-1,616,976.0

Source: SLID, 1993–1998.

Notes: One asterisk indicates statistical significance at the 10 per cent level, two asterisks at the 5 per cent level, three asterisks at the 1 per cent level.

[a]The variable is an average over the 1993–1995 period for the first two specifications and over the 1996–1998 period for the last two specifications.

[b]The value of the variable in 1993 is used for the first two specifications while the 1996 value is used for the last two.

[c]Binary variable indicating that the individual worked less than 1,365 hours per year on average within one period.

[d]Binary variable indicating that the individual owned a house.

[e]Non-individual income is defined as the difference between an individual's and his or her household's total income.

[f]Member of a union is a binary variable that also includes workers covered by a collective bargaining agreement.

[g]Binary variable indicating that household composition changed between 1993 and 1995 for the first two specifications or 1996 and 1998 for the last two specifications.

Not surprisingly, both specifications illustrate that indicators of the local economic conditions are found to have an impact on the probability of being an intense relier on EI. Both living in a rural area as well as the regional unemployment rate are significantly and positively related to an individual's intensity of EI reliance. The average regional unemployment rate is the same rate used to determine EI eligibility and entitlement rules. Therefore, it reflects the conditions of the local labour market as well as the generosity of the EI program in the region of residence.

Consistent with prior research, there is a strong relationship between not having completed a high school education and relying intensely on EI benefits, when compared with individuals with some post-secondary education. We also included in the specifications the parents' educational attainment, which capture, to some degree, family influences on EI behaviour to account for potential learned behaviour between generations. The findings suggest a negative relationship between parents' educational achievement and reliance on EI benefits, as individuals with parents who received a high school diploma are less likely to rely intensely on EI benefits over the period.

Two other employment-related indicators included in the specifications are average hours worked on an annual basis and being a member of a union or covered by a collective bargaining agreement. Hours worked represents an indicator of whether or not the individual worked fewer than 1,365 hours per year (nine months at 35 hours per week). We chose this threshold to reflect situations where individuals were employed less than full-year and full-time on a consistent basis. Working fewer than 1,365 hours per year appears to have a strong relationship with relying intensely on EI benefits. Also, both specifications show that being a member of a union or working under a collective bargaining agreement is positively associated with being in intense reliance on EI benefits.

Another strong indicator of EI reliance is the sector of occupation in which the individual is employed. For our analysis, we use the Standard Occupation Classification (SOC91) system with 10 occupational categories (collapsed into 5 categories to maintain adequate sample sizes), providing a picture of both workers' occupations and, to some extent, the industries in which they are employed. The results show statistically significant and positive relationships between EI reliance and working in the primary industries, in trades, transport, and construction, and in the processing industries when compared with working in the sales and services sectors. Not reporting any occupation, indicating in most cases a lack of employment, has a significant and negative effect, most likely reflecting an inability to qualify for EI benefits due to the lack of insurable hours.

Consistent with previous research on EI dependency, there is a strong relationship between region of residence and reliance on EI benefits. Residing in Atlantic Canada, compared with living in Ontario, increases the probability of relying on EI intensely in 1993–1995, and this estimated impact is significant at the one per cent level. Living in Quebec does not have a statistically significant relationship with EI reliance, when everything else is held constant.

We included in our specifications two variables that reflect the financial circumstances of the individual. The first, the average non-individual income over the entire period, gives some indication of other financial resources in the form of other family members' incomes that are available to buffer any unemployment spells the individual may experience over the period. The results show that individuals living in households where there are other sources of income are less likely to rely intensely on EI benefits, everything else being held constant. Individuals who own their home are more likely to rely on EI intensely, indicating that home ownership may imply reduced flexibility to take risks that may lead to better employment outcomes, such as returning to school to increase human capital or moving to another region with better employment opportunities.

The results from both specifications show that women are less likely than men to rely intensely on EI, a finding that is in line with previous findings. While, regardless of gender, living with a partner (in 1993) is not found to have a significant impact on the probability of being an intense relier on EI in either the 1993 to 1998 or the 1993 to 1995 periods, the relationship women have with the EI program does seem to vary according to marital status. When gender is interacted with marital status, the specifications show that the negative impact of being female on the probability of being in intense reliance is mitigated, although this impact is only significant for intense reliers over the 1993 to 1995 period.

DETERMINANTS OF TRANSITIONS FROM AND INTO INTENSE RELIANCE ON EI

We now consider the probability of being in a state of intense reliance in the second period, 1996 to 1998, given the individual's state of reliance in the 1993 to 1995 period. It is possible to model this transition using a simple probit of being in the state of intense reliance for individuals who were already intense reliers in the previous period. However, the problem with this approach is that it assumes that the transition into a particular state is completely independent of being in that state in the first period. If there is any dependence between the two periods, as we assume there will be, then the results will reflect some degree of sample selection bias.

Since we assume that there is a correlation between the two periods of time, estimating the probability that an individual will remain an intense relier given that he or she was an intense relier in the first place, requires us to take into account the endogenous selection process. To do this, we present a bivariate probit model with endogenous selection of being a long-term relier for those individuals who were already intense reliers in the first period. This model is one of partial observability, treating low reliers in 1993 to 1995 as if they were not available to us in 1996 to 1998. This analysis requires additional information in the form of suitable instruments for the selection into the initial state. The assumption here is that there are variables that affect the probability that an individual will be in a state of intense reliance in the first period but would not affect the probability of being in that state again in the second period, given that the individual was already intensely dependent on EI.

The instrumental variables that we use for endogenous selection into the initial state are parents' educational attainment and immigrant status. The inclusion of instrumental variables assumes they capture selection into a particular state in the initial period but not subsequent transitions. Indeed, these variables have a significant joint effect on the probability of being an intense user in 1993 to 1995 but not on the probability of becoming an intense relier in the second period or remaining an intense relier over the two periods.[14]

The third and fourth columns of Table 13 provide the estimation results of the bivariate probit model with endogenous selection for two distinct samples reflecting individuals' degree of reliance on EI in the 1993 to 1995 period. This model allows the correlation between the unobservable characteristics in the first period and those of the second period to be different from zero. For the bivariate estimation on the sample composed of intense reliers in 1993 to 1995, the assumption that there is no correlation between the two periods is rejected at the five per cent level, while for the sample of workers who did not rely intensively on EI in 1993 to 1995, this assumption cannot be rejected. Therefore, estimating two separate probits (one for each period) would lead to biased estimates for only our sample of intense reliers.[15]

At first glance, when we compare the third and fourth columns of Table 13 with the second column, we can see that there are fewer variables that seem to have a significant impact on the probability of either remaining an intense relier (column 3) or becoming an intense relier (column 4) in the second period. Only the average regional unemployment rate, some sectors of occupations, the number of hours worked, and the educational attainment are found to have a significant impact in all three specifications. This finding shows that identifying the factors of an individual transitioning into intense reliance — whether from low reliance or intense reliance — is more restrictive when controlling for selection into intense reliance.

For individuals who are intense reliers in both periods, the average regional unemployment rate has a strong impact on the probability of being intensely reliant on EI again. Every percentage point increase of the local unemployment rate above the average is estimated to increase the individual's probability of remaining dependent over the 1993 to

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[14]A larger set of instrumental variables would be preferable; however, we are limited by the set of variables available in the SLID. For example, Stewart and Swaffield (1999) have access to a much richer dataset, which enables them to include 36 parental binary variables in their specification.

[15]For comparison purposes, Appendix B provides the coefficients from the endogenous selection model and the coefficients from the simple probit model for both samples of claimants.

1998 period by 2.7 percentage points. This is a much larger impact than on those who were not intense reliers in the previous period. For them, the regional unemployment rate increases their probability of becoming intense reliers in the second period by 0.6 percentage points.

As expected, the educational attainment of workers impacts greatly on their reliance on EI benefits. For those who were intense reliers in the first period, the impact of not having a high school education is estimated to increase their probability of being long-term reliers by 16.3 percentage points when compared with those with some post-secondary education. Much smaller, although still significant, is the impact of not having a high school education on the probability of entering into intense reliance, as individuals who do not have a high school diploma are observed to be 2.4 percentage points more likely to transition into intense reliance.

Once again, the occupation held by an individual is found to be a major determinant of the conditional probability of intensely relying on EI in the second period, whether or not the individual relied intensely on EI in the previous period. When compared with the sales and services sector, jobs in the primary industry or in trades, transport, and construction are estimated to increase the probability of being a long-term relier by 26.6 and 23.4 percentage points respectively, while having a job in the management, health, and science sectors increases the probability by 14.4 percentage points. Among those who did not rely intensely on EI previously, jobs in trades, transport, and construction as well as the primary and processing sectors all significantly increase the probability of transitioning into intense reliance on EI.

Another labour market activity indicator that has significant impact on the conditional probability of being an intense relier is the number of hours worked. Individuals working fewer than 1,365 hours per year are 8.8 percentage points more likely to remain in intense reliance over six years and 3.5 percentage points more likely to move from low or non-reliance into intense reliance in a subsequent period.

As shown in Table 13, the region of residence and living in a rural area have only a limited impact on intense reliance transitions. Living in the Atlantic provinces is estimated to increase the probability of transitioning into intense reliance on EI by 5.1 percentage points among those who did not rely on EI intensely in the first period, while living in a rural area has a positive impact of being in intense reliance, although this impact is only significant at the 10 per cent level.

Having access to other sources of income only significantly impacts on the probability of being a long-term relier, although our estimates suggest that every thousand-dollar increase in other household members' income reduces the probability of being in intense reliance in 1996 to 1998 by less than one percentage point.

STATE DEPENDENCE VERSUS HETEROGENEITY

Having determined the characteristics of individuals who are more likely to remain dependent on EI over time, it is possible to estimate the extent to which it is the observed characteristics, as opposed to the actual experience of intense reliance, that traps individuals in their state of intense reliance. The state dependence effect is calculated using a simple difference-in-difference approach that calculates state dependence as the residual that is not

explained by observed heterogeneity. It is therefore the difference between the difference in the observed aggregate conditional probabilities and the difference between predicted probabilities of being an intense relier in 1996 to 1998. Since the model equates the state dependence effect with the residuals, which represent everything else the model omits including unobserved heterogeneity, the less the model explains, the higher the state dependence effect.

The calculations determining the extent to which state dependence and observable characteristics account for remaining dependent on EI are shown in Table 14. As indicated in the third row of the table, there is a 28.4 percentage point difference between the two observed conditional probabilities of being an intense relier in 1996 to 1998. To evaluate what share of the difference is explained by state dependence, the predicted conditional probability of being in a state of intense reliance given that the individual was an intense relier in the previous period is imputed for all individuals, given their own set of observable characteristics. The individual probabilities are then averaged over, first, those individuals who were intense reliers in 1993 to 1995, and, second, over those who were *not* intense reliers in that period. We calculate these averages for both the simple probit model and the endogenous selection model. The difference between the two predicted probabilities can be interpreted as the contribution that is not due to state dependence.

Table 14: State Dependence Effect of Remaining Intensely Reliant on EI, 1993–1998

Conditional Probabilities	%
Observed aggregate transition probabilities	
(1) From intense reliance in 1993–1995 to intense reliance in 1996–1998	34.7
(2) From non- and low reliance in 1993–1995 to intense reliance in 1996–1998	6.3
(3) Difference	28.4
Predicted probability of intense reliance on EI in 1996–1998 given intense reliance in 1993–1995, simple probit model	
(4) Averaged over intense reliers in 1993–1995	34.6
(5) Averaged over non- and low reliers in 1993–1995	23.2
(6) Difference	11.4
(7) State dependence effect (3)-(6)	17.0
(8) (7)/(3)	59.9
Predicted probability of intense reliance on EI in 1996–1998 given intense reliance in 1993–1995, endogenous selection model	
(9) Averaged over intense reliers in 1993–1995	34.5
(10) Averaged over non- and low reliers in 1993–1995	27.4
(11) Difference	7.1
(12) State dependence effect	21.3
(13) (12)/(3)	75.0

Source: SLID, 1993–1998.

Our calculations produce a relatively high state dependence effect. From the predicted probabilities of the endogenous model, state dependence explains 75 per cent of the difference between the observed probability of being in intense reliance in 1996 to 1998 given one was in intense reliance in 1993 to 1995 and the observed probability of being in intense reliance in 1996 to 1998 given one was not in intense reliance in 1993 to 1995. This finding suggests that the observable heterogeneity in individual characteristics captured by our data plays a minor role in explaining long-term EI dependency.

The factors that can explain state dependence among EI claimants are well documented in previous research. One important factor may be the learning effect identified by Lemieux and MacLeod (1995) in their research on the 1971 unemployment insurance reforms. They found evidence that Canadian workers, after first exposure to more generous UI benefits, became more likely to claim again over the next two decades as a consequence of their experience of receiving benefits.

More recently, studies of the 1996 reforms have discovered similar evidence of learned behaviour among EI claimants. A study by Green and Riddell (1995) shows how changes to EI entrance requirements influenced the length of time workers remained employed, particularly for individuals in seasonal industries. Friesen and Maki (2000) find that the change to an hours-based system in 1996 influenced claimants to opt for longer workweeks, with the share of 15 to 40 hour weeks declining in favour of 40+ hour weeks.

There is also considerable evidence that firms adjust their workplace practices to the parameters of the EI program, thereby potentially contributing to the state dependence effect. Research based on the SRUEI supports the growing body of evidence that firms and workers establish "implicit contracts" whereby firms that lay off workers agree to rehire them again when business resumes (Schwartz et al., 2001). According to the SRUEI, almost all frequent claimants who received EI benefits in 1996 worked in the following year, and 60 per cent of them expected to return to the same job. By comparison, only about 25 per cent of occasional claimants had similar "recall expectations," suggesting that, to a large extent, implicit contracts characterize much of EI frequent claimant behaviour.[16]

Although our estimations of the state dependence effect do not represent a direct measure of any behavioural changes brought about by exposure to the EI program, our finding that unobserved heterogeneity and state dependence dominate any observed differences among long-term reliers suggests that these workers, and the firms that employ them, have adjusted their behaviour to EI program rules over time. For this set of workers, long-term dependency on EI is a fact of life, and they are either unable or maybe unwilling to change their own circumstances to be in a position to transition to full-year and full-time employment following the loss of a job.

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[16]The SRUEI findings on recall expectations reflect earlier observations made by Corak (1995), who shows that from 1979 to 1989 a large proportion (40 per cent) of extensive frequent claimants (five or more claims during the 12-year period) supported their claims by working for the same employer. As well, 76 to 83 per cent of all layoffs in 1988 were workers who expected to be recalled by the firm that laid them off.

Conclusion

In this study we investigate long-term Employment Insurance (EI) dependency, whereby claimants who are observed to rely on EI intensely over a three-year period do so again in the following three years. Although we do find a sizable group of claimants who are long-term dependent on EI, surprisingly they represent only one third of workers who were observed to be in intense reliance in the 1993 to 1995 period. This finding undermines a commonly held belief that frequent claimants represent a stable group of workers who return to EI year after year. Instead, our examination of EI reliance at the individual level reveals that EI dependency is an unstable state, with only a minority of frequent claimants remaining dependent on EI over the longer term.

While previous research has examined the determinants of frequent reliance on EI benefits, what sets our study apart is the use of a longitudinal data set to determine the extent to which claimants repeat a particular pattern of reliance over two periods of time. To perform this analysis, we turn to a unique data set, the Survey of Labour and Income Dynamics (SLID), which enables us to observe not only the characteristics and circumstances of claimants who are in receipt of EI benefits, but also their circumstances when they are off claim. Using this unique dataset, we are also able to compare claimants with non-claimants, allowing us to analyze what leads to a claimant remaining an intense relier or moving out of intense reliance into a state of non-receipt.

When we examine the characteristics and circumstances of intense claimants (those who claimed EI in at least two of three years) we find that the determinants of EI reliance over the medium term (three years) are similar to the determinants of longer-term (five years or more) frequent reliance, as shown by past research. While it is instructive to determine what contributes to a worker becoming dependent on EI benefits over the longer period, our analysis builds on previous research and provides further insights into any dynamics that may occur within that time frame. For instance, by examining intense reliance according to a three-year period, we are able to determine whether a claimant who claimed three times, and typically would have been considered a "frequent" claimant, may in fact be a worker in the process of transitioning out of reliance on EI, possibly into full-year and full-time employment. This approach allows us to differentiate between claimants who remain dependent on EI over the long-term from those transitioning into or out of medium-term EI dependency.

One key insight from our dynamic approach to examining EI reliance is that once past reliance is accounted for, there is a much smaller list of determinants of remaining dependent on EI over time. Key factors include living in a rural area and having higher local regional unemployment (reflecting not only poorer local employment conditions but also the increased relative generosity of the EI program in a particular region), not having a high school diploma, and working in primary, processing, trades, transportation, and construction industries.

Conspicuously absent in this list are two typically consistent determinants of frequent reliance: region and gender. As is often assumed, both being male and living in Atlantic

Canada are found to be significant determinants of being in intense reliance over a three-year period. However, they lose their significance once past reliance is accounted for in our model.

The policy implications from our research should lead to a reconsideration of long-term EI dependency as necessarily a regional or gender issue. Our finding, consistent with previous research, that being male is an important determinant of being an intense relier in the medium term could reflect an access issue whereby men more easily qualify for benefits that would lead them to claim EI benefits repeatedly in the first place. However, the fact that the gender differential disappears once we control for past reliance suggests that gender has no direct bearing on whether frequent claimants will repeat their claim pattern. This finding also holds true for workers living in Atlantic Canada. Although these workers are more likely to become frequent claimants in the medium term, their place of residence does not appear to make them more likely to remain an intense relier over a longer period. Policies aimed at reducing long-term individual dependency on EI would best be directed to any regions across the country where employment opportunities are poor.

Our research shows that while long-term dependency on EI benefits can be attributed to a few key factors, a much more important determinant is the actual experience of relying on EI benefits that makes some claimants likely to remain on EI over the longer term. For these workers who are already at great disadvantage in the labour market, the barriers to full-year and full-time employment only increase the longer they depend on EI.

Appendix A

This section summarizes the approach developed by Stewart and Swaffield (1999) in their study of transitions into and out of low pay used in our study of EI reliance. The first step of the empirical strategy consists of defining the probability of being in the state of intense reliance in the initial period. Let $y_{i9395}=1$ if an individual i relies intensely on EI benefits between 1993 and 1995 and $y_{i9395}=0$ in the case where individual i does not.[17] We can estimate the probability of relying intensely on EI benefits in the 1993 to 1995 period using a simple probit model:

$$\Pr(y_{i9395} = 1) = \Phi(x'_{i9395} \beta) \tag{1}$$

where Φ denotes the standard normal cumulative distribution function, x_{i9395} is a vector of covariates explaining the intense reliance on EI benefits of individual i, and β is the vector of slope coefficients. For most covariates, we use the values taken by the variables in 1993. The variables "non-individual income" and "EI region unemployment rate" are averaged over the 1993 to 1995 period. The error terms are assumed to be normally distributed, since equation (1) describes a simple probit.

The probability of being in intense reliance on EI in both periods is given by

$$\Pr(y_{i9395} = 1, y_{i9698} = 1) = \Phi_2(x'_{i9395} \beta, z'_{i9698} \gamma; \rho) \tag{2}$$

where Φ_2 is the cumulative of the bivariate normal distribution, z_{i9395} is a vector of covariates explaining the intense reliance on EI benefits for individual i in 1996-1998, γ is the vector of slope coefficients, and ρ is the correlation term. Again, the error terms $(\varepsilon_{i9395}, \varepsilon_{i9698})$ are assumed to follow a bivariate normal distribution, with correlation ρ:

$$\begin{bmatrix} \varepsilon_{i9395} \\ \varepsilon_{i9698} \end{bmatrix} \sim N\left[\begin{pmatrix} 0 \\ 0 \end{pmatrix} \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix} \right].$$

The conditional probability of being in intense reliance in 1996–1998 given one was in intense reliance in 1993–1995 is given by

$$\Pr(y_{i9698} = 1 \mid y_{i9395} = 1) = \Phi_2(x'_{i9395} \beta, z'_{i9698} \gamma; \rho) / \Phi(x'_{i9395} \beta) \tag{3}$$

If the information for the 1996 to 1998 period is used only for individuals who were in intense reliance in 1993–1995, the model described in equation (3) is a bivariate probit model with endogenous selection.

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[17]We define y_{i9698} similarly.

The contribution of individual i to the log likelihood function is given by

$$\ln L_i = y_{i9395}\, y_{i9698} \ln \Phi_2(x'_{i9395}\, \beta,\, z'_{i9698}\, \gamma; \rho) \tag{4}$$

$$+ (1 - y_{i9698})\, y_{i9395} \ln \Phi_2(x'_{i9395}\, \beta,\, -z'_{i9698}\, \gamma;\, -\rho)$$
$$+ (1 - y_{i9395}) \ln \Phi(-x'_{i9395}\, \beta)$$

Note that when $\rho = 0$ (when there is no correlation between the two periods), we can treat the first period as exogenous and thus estimate a simple probit model on the sample of individuals who were in intense reliance in 1993–1995. In this case we estimate the following equation:

$$\Pr(y_{i9698} = 1 \mid y_{i9395} = 1) = \Phi_2(z'_{i9698}\, \gamma) \tag{5}$$

Finally, for the purpose of explaining a transition into intense reliance, we also estimate equations (3) to (5) for the sample of individuals who were not intense reliers in the 1993 to 1995 period.

Appendix B

Table B.1: Determinants of Intense Reliance on EI Benefits (Simple Probit Specifications)

	Four Years or More Between 1993–1998		Two Years or More Between 1993–1955	
	Marginal Effect	**t-statistic**	**Marginal Effect**	**t-statistic**
EI region unemployment rate[a]	0.002***	2.87	0.003**	2.50
Sector of occupation[b]				
Primary industries	0.071***	4.03	0.104***	3.81
Trades, transport, and construction	0.043***	3.49	0.093***	4.28
Processing industries	0.005	0.47	0.069***	2.83
Administration and sciences	-0.006	-0.63	-0.011	-0.66
Sales and services	–	–	–	–
Occupation not reported	-0.012	-1.00	-0.061***	-2.91
Hours worked[a,c]	0.037***	5.41	0.099***	7.75
Educational attainment[b]				
Less than high school	0.031***	3.63	0.054***	3.50
High school graduate	0.002	0.25	0.011	0.67
Post-secondary education	–	–	–	–
Region of residence[b]				
Atlantic	0.052***	4.26	0.071***	3.95
Quebec	0.009	0.90	0.005	0.28
Ontario and West	–	–	–	–
Living in rural area[b]	0.014**	2.01	0.024**	1.97
Home ownership[b,d]	0.016**	2.27	0.026*	1.87
Non-individual income (÷1,000)[a,e]	0.000	-0.52	-0.001**	-2.19
Member of a union[f]	0.015**	2.05	0.036***	2.59
Female	-0.031**	-2.35	-0.079***	-3.26
Household composition				
Different household[g]	-0.012**	-1.99	-0.023**	-1.96
Living with a partner[b]	0.011	1.11	0.005	0.22
Female and living with a partner[b]	0.010	0.65	0.063**	2.03
Living with children[b]	0.002	0.27	0.022	1.39
Language				
English	–	–	–	–
Other than English	0.012	1.60	0.035**	2.31
Age				
Age	-0.001	-0.21	0.004	0.61
Age squared (÷100)	0.001	0.14	-0.006	-0.67
Instrumental variables				
Parents' education	-0.016***	-2.57	-0.028**	-2.21
Immigrant	-0.006	-0.47	-0.029	-1.53

(continued)

Table B.1: Determinants of Intense Reliance on EI Benefits (Simple Probit Specifications) (Cont'd)

	Four Years or More Between 1993–1998		Two Years or More Between 1993–1955	
	Marginal Effect	t-statistic	Marginal Effect	t-statistic
Observed probability	0.063		0.129	
Predicted probability	0.032		0.087	
Sample size	4,167		4,167	
Log likelihood	-773.2		-1,304.7	

Source: SLID, 1993–1998.

Notes: One asterisk indicates statistical significance at the 10 per cent level, two asterisks at the 5 per cent level, three asterisks at the 1 per cent level.

[a]The variable is an average over the 1993–1995 period.

[b]The value of the variable in 1993 is used.

[c]Binary variable indicating that the individual worked less than 1,365 hours per year on average between 1993 and 1995.

[d]Binary variable indicating that the individual owned a house.

[e]Non-individual income is defined as the difference between an individual's and his or her household's total income.

[f]Member of a union is a binary variable that also includes workers covered by a collective bargaining agreement.

[g]Binary variable indicating that household composition changed between 1993 and 1995.

Table B.2: Determinants of Intense Reliance on EI Benefits in the 1996 to 1998 Period by Degree of Reliance on EI in the 1993 to 1995 Period

	Intense Reliance in 1993–1995				Non- and Low Reliance in 1993–1995			
	Endogenous Model		Simple Probit		Endogenous Model		Simple Probit	
	Coef.	t-statistic	Coef.	t-statistic	Coef.	t-statistic	Coef.	t-statistic
EI region unemployment rate[a]	0.075***	4.60	0.070***	3.94	0.062***	5.16	0.060***	5.04
Sector of occupation[b]								
Primary industries	0.630***	2.81	0.588**	2.37	0.660***	3.77	0.644***	3.63
Trades, transport, and construction	0.577***	3.00	0.566***	2.65	0.459***	3.18	0.440***	3.04
Processing industries	0.321*	1.66	0.282	1.31	0.490***	2.93	0.475***	2.80
Administration and sciences	0.382*	1.77	0.475**	2.00	-0.013	-0.10	-0.011	-0.08
Sales and services	–	–	–	–	–	–	–	–
Occupation not reported	0.024	0.07	0.076	0.19	-0.797***	-4.80	-0.819***	-4.87
Hours worked[a,c]	0.240*	1.72	0.182	1.14	0.360***	3.41	0.355***	3.35
Educational attainment[b]								
Less than high school	0.403***	2.58	0.297*	1.85	0.216*	1.93	0.184*	1.75
High school graduate	0.085	0.50	0.055	0.29	0.063	0.52	0.056	0.46
Post-secondary education	–	–	–	–	–	–	–	–
Region of residence[b]								
Atlantic	0.072	0.39	-0.094	-0.49	0.396***	3.30	0.370***	3.08
Quebec	-0.220	-0.90	-0.381	-1.41	0.104	0.82	0.093	0.74
Ontario and West	–	–	–	–	–	–	–	–
Living in rural area[b]	0.214*	1.64	0.175	1.21	0.022	0.25	0.005	0.06
Home ownership[b,d]	0.180	1.15	0.153	0.87	0.148	1.19	0.143	1.16
Non-individual income (÷1,000)[a,e]	-0.011***	-2.60	-0.009*	-1.95	-0.002	-0.87	-0.002	-0.86
Member of a union[f]	0.200	1.52	0.173	1.17	0.150	1.48	0.145	1.43
Female	-0.375	-1.40	-0.305	-1.01	-0.014	-0.10	0.007	0.03

(continued)

Table B.2: Determinants of Intense Reliance on EI Benefits in the 1996 to 1998 Period by Degree of Reliance on EI in the 1993 to 1995 Period (Cont'd)

	Intense Reliance in 1993–1995				Non- and Low Reliance in 1993–1995			
	Endogenous Model		Simple Probit		Endogenous Model		Simple Probit	
	Coef.	t-statistic	Coef.	t-statistic	Coef.	t-statistic	Coef.	t-statistic
Household composition								
Different household[g]	-0.014	-0.10	0.012	0.08	-0.127	-1.40	-0.121	-1.33
Living with a partner[b]	0.205	0.99	0.215	0.92	0.056	0.37	0.060	0.40
Female and living with a partner[b]	0.362	1.19	0.300	0.86	-0.185	-0.80	-0.198	-0.87
Living with children[b]	0.091	0.59	0.025	0.15	0.057	0.55	0.047	0.46
Language								
English	–	–	–	–	–	–	–	–
Other than English	0.167	0.93	0.151	0.78	0.143	1.36	0.136	1.28
Age	0.001	0.15	0.001	0.13	-0.003	-0.70	-0.003	-0.67
Constant	-2.985***	-5.30	-2.057***	-3.69	-2.599***	-8.30	-2.600***	-8.34
Observed probability	0.347		0.347		0.063		0.063	
Predicted probability	0.332		0.331		0.047		0.041	
Correlation between periods (rho)	0.522**	2.22	0.000		-0.205	-0.79	0.000	
Sample size	4,159		716		4,128		3,414	
Log likelihood	-1,283,122.0		-415.0		-1,616,976.0		-683.2	

Source: SLID, 1993–1998.

Notes: One asterisk indicates statistical significance at the 10 per cent level, two asterisks at the 5 per cent level, three asterisks at the 1 per cent level.

[a]The variable is an average over the 1993–1995 period.

[b]The value of the variable in 1996 is used.

[c]Binary variable indicating that the individual worked less than 1,365 hours per year on average between 1996 and 1998.

[d]Binary variable indicating that the individual owned a house.

[e]Non-individual income is defined as the difference between an individual's and his or her household's total income.

[f]Member of a union is a binary variable that also includes workers covered by a collective bargaining agreement.

[g]Binary variable indicating that household composition changed between 1996 and 1998.

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