UI

Income Distributional Implications of Unemployment Insurance and Social Assistance in the 1990s: A Micro-Simulation Approach

by Lars Osberg, and Shelley Phipps

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Unemployment Insurance Evaluation Series

Human Resources Development Canada (HRDC), in its policies and programs, is committed to assisting all Canadians in their efforts to live contributing and rewarding lives and to promote a fair and safe workplace, a competitive labour market with equitable access to work, and a strong learning culture.

To ensure that public money is well spent in pursuit of this mission, HRDC rigorously evaluates the extent to which its programs are achieving their objectives. To do this, the Department systematically collects information to evaluate the continuing rationale, net impacts and effects, and alternatives for publicly-funded activities. Such knowledge provides a basis for measuring performance and the retrospective lessons learned for strategic policy and planning purposes.

As part of this program of evaluative research, the Department has developed a major series of studies contributing to an overall evaluation of UI Regular Benefits. These studies involved the best available subject-matter experts from seven Canadian universities, the private sector and Departmental evaluation staff. Although each study represented a stand alone analysis examining specific UI topics, they are all rooted in a common analytical framework. The collective wisdom provides the single most important source of evaluation research on Unemployment Insurance ever undertaken in Canada and constitutes a major reference.

The Unemployment Insurance Evaluation Series makes the findings of these studies available to inform public discussion on an important part of Canada's social security system.

I.H. Midgley
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Evaluation Branch

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Abstract

What is the appropriate role of Unemployment Insurance in the social security framework? UI has traditionally not been regarded as an anti-poverty instrument. However, studies of the 'new poverty' in Europe indicate that there has been a change in the compostion of the poor in Europe – a major reason for this change is the increase in the proportion of the poor who are unemployed or in poorly-paid or insecure jobs. Thus, it is appropriate to evaluate the relationship between UI, poverty and the income security framework.

In conducting this evaluation, three themes seemed especially worth pursuing:

- What are the links between UI, unemployment, poverty and Social Assistance?;
- How does the poverty alleviation performance of the Canadian UI system compare with that of the United States or European countries?; and
- Do people have sufficient assets to sustain basic living standards through a spell of unemployment?

In order to study the relationships among Unemployment Insurance, Social Assistance and poverty, two consequences of potential changes to the 1994 Canadian UI system, were simulated:

- The addition of 5 weeks to the minimum necessary to establish a claim for UI; and,
- The extension of UI coverage to weeks of self-employment and weeks with short hours of work.

Our results suggest that increasing the weeks required to establish eligibility for UI would increase the incidence of poverty in Canada and would simply shift income maintenance expenditures from UI to Social Assistance. On the other hand, extending UI benefits to workers with low hours and low wages appears to be a relatively low-cost policy option which would provide benefits to a small number of poor individuals but would not introduce significant enforcement burden. However, given the high cost and the greater difficulties of administration associated with extending UI benefits to the self-employed, this option appears to be more problematic and would not particularly benefit the poor.

This report also examines the poverty-alleviation role of Canadian UI relative to the UI systems in of a wider set of affluent industrialized countries (Australia, Finland, Germany, Sweden and the United States) using microdata from the Luxembourg Income Study. Since it is difficult to say how much poverty alleviation is 'enough', studying other countries provides a benchmark for evaluation. Perhaps the most important point to take from this analysis is that UI appears to be much more important in Canada as a poverty-alleviation tool than in the other countries studied.

The evidence is fairly clear that the liquid asset holdings of Canadian households – particularly of those households that experience unemployment – is rarely sufficient to finance an average duration unemployment spell, even at a poverty line level of living.

UI appears to be much more important in Canada as a poverty-alleviation tool than in the other countries studied.

Introduction

UI has not traditionally been regarded as an anti-poverty instrument.

What is the appropriate role of Unemployment Insurance in the social security framework? UI has not traditionally been regarded as an anti-poverty instrument. However, studies of the 'new poverty' in Europe indicate that there has been a change in the composition of the poor in Europe — a major reason for this change is the increase in the proportion of the poor who are unemployed or in poorly-paid or insecure jobs (O-Higgins and Jenkins, 1988). Given the growth of non-standard employment in Canada (see for example, Economic Council of Canada, 1990), it is possible that the changes observed in Europe have also occurred in Canada. Certainly, unemployment will deepen the poverty of the 'working poor' — even if earnings are UI-covered, 55 percent of minimum-wage earnings would place almost any household below the poverty threshold. Moreover, with an increasing number of part-time and temporary jobs, it is possible that an increasing fraction of the unemployed are poor because they are not entitled to Unemployment Insurance. Thus, while UI has not traditionally been viewed as an anti-poverty policy, it is appropriate to re-evaluate the relationship between UI, poverty and the income security framework.

In conducting this evaluation, three themes seem especially worth pursuing. First, when examining the links among UI, unemployment and poverty, it seems natural also to examine the additional link with Social Assistance. UI and Social Assistance may originally have been conceived as programs meeting the needs of separate clienteles, but the trends described above have somewhat eroded such distinctions.

Second, how does the poverty-alleviation performance of the Canadian UI system compare with that of the United States or with European countries?

Finally, do people have sufficient assets to sustain basic living standards through a spell of unemployment? If individuals experiencing unemployment have enough assets to sustain a basic standard of living despite losing employment income, then the policy role for UI in preventing hardship would be less central. However, analysis in the United States (Ruggles and Williams, 1989) using the SIPP data suggest that many poor households do not have assets to cover even relatively short periods of unemployment.

Individual sections of the report differ in terms of methodology, in part because the data available to answer these questions come from different data sources. Section 1 of the report, focussing on the development of a new micro-simulation model of the Canadian economy for the 1990's, unquestionably consumed the major part of our research time and effort. While this model follows much of the same structure as our earlier '1980's model', many new features have been incorporated and over 60 new behavioural equations were econometrically estimated. Section 2 discusses the results of our simulation of potential changes to the UI program.

Section 3 provides a fairly detailed Canadian/American comparison using the 1980's version of the micro-simulation model. The approach taken is to ask what would happen to the level and distribution of income in Canada if we were to adopt an American-style UI system? This section also evaluates the poverty-

alleviation role of Canadian UI relative to the UI systems of a wider set of affluent industrialized countries (Australia, Finland, Germany, Sweden and the United States) using microdata from the Luxembourg Income Study. Since it is difficult to say how much poverty-alleviation is 'enough' in any absolute sense, looking at other countries provides a benchmark for evaluation.

Section 4 of the report makes use of microdata from the 1983/84 Statistics Canada Survey of Assets and Debts to ask a very simple question: *"Do people need UI to protect them from deprivation during a spell of unemployment or do most people have enough liquid assets to carry them through?"*

The conclusion attempts to draw together all of the results obtained to provide a picture of the role played by the UI system in the Canadian income security framework.

1. Development of the Micro-Simulation Model

In this report, we use this latest version of the model to explore the links which exist between unemployment and Social Assistance in Canada.

Earlier reports from this research project have summarized the advantages of a micro-simulation model as a tool for policy analysis, discussed the distributional implications of Unemployment Insurance revisions over the business cycle of the 1980's and tested the sensitivity of the 1980's version of the Dalhousie micro-simulation model to alternative modelling assumptions.[1] The discussion of these papers will not be repeated here. Osberg, Erksoy and Phipps (1995) is the first of our papers to outline a new 1990's version of the micro-simulation model, estimated using microdata from the 1988-90 Labour Market Activities Survey. In that report, we focussed on modelling 'non-standard' employment — specifically self-employment and weeks of paid employment with short hours. In this report, we discuss further development of the 1990's model to incorporate demographic and Social Assistance modules and use this latest version of the model to explore the links which exist between unemployment and Social Assistance in Canada.

All but the most recent of our previous papers (i.e., Osberg, Erksoy and Phipps, 1995) have been based on what we call the "1980's version" of our micro-simulation model. In previous work, we estimated behavioural equations using the 1986/87 Labour Market Activity Survey and based our analysis of the impacts of UI during the 1981-1989 business cycle on simulating the behaviour of the respondents to the 1983 Statistics Canada Survey of Assets and Debts. That model remains in existence, and remains useful for issues which require a link to the wealth of households, and/or which refer to the business cycle of the 1980's. However, in order to take advantage of the additional information on personal characteristics (e.g. disability status, minority group membership, foreign born/Canadian born, employer size, etc.) captured in the 1988-90 LMAS and in order to provide a more reasonable basis for modelling labour market developments in the 1990s, we have rebased our micro-simulation model to the population of respondents to the 1990 Labour Market Activity Survey.

1 See:
(1) S. Erksoy, L. Osberg and S. Phipps, "The Distributional Implications of Unemployment Insurance — A Micro-simulation Analysis", April 1994 (Interim Report, November, 1993);
(2) S. Erksoy, L. Osberg and S. Phipps, "Panel Data and Policy Analysis", paper presented at the Annual Meeting of the Canadian Economics Association, Calgary, June 1994, mimeo, Department of Economics, Dalhousie University, Halifax, June 1994;
(3) S. Erksoy, L. Osberg and S. Phipps, "The Distributional Implications of Unemployment Insurance Revisions", paper presented at the Annual Meetings of the Canadian Economics Association, Calgary, June 1994, mimeo, 1994, Department of Economics, Dalhousie University, Halifax;
(4) L. Osberg, S. Erksoy and S. Phipps, "The Distribution of Income, Wealth and Economic Security: The Impact of Unemployment Insurance Reforms in Canada", July, 1994, Dalhousie University, Department of Economics Working Paper, #94-08;
(5) L. Osberg, S. Erksoy and S. Phipps, "Labour Market Impacts of the Canadian and American Unemployment Insurance Systems", Dalhousie University, Economics Department, Working Paper #94-12, December 1994.

Since the 1988-1990 LMAS contains information on the type of employment and hours per week of respondents, one can distinguish self-employment and employment at hours less than 15 hours per week from other employment weeks, enabling us to model the implications of extension of Unemployment Insurance coverage to these types of employment weeks.

Any micro-simulation model has three key components —

(1) Micro-data on a sample of individuals whose behaviour is to be simulated;

(2) A set of behavioural equations which predict the deterministic and stochastic elements of individual behaviour; and,

(3) The computer code and accounting relationships which link individual behaviours in a consistent way.

Since each data set has its own peculiarities in the coding and availability of data, changes in the data base require corresponding changes in estimating equations and computer code. However, since policy interest in the results of micro-simulation is likely to be greater if the model can claim to be representing the behaviour of the current population, it was considered worthwhile to use in the 1990's version a sample which is relatively recent — i.e. the respondents to the 1990 LMAS — rather than continuing to use the 1983 Asset and Debt sample.

Since the 1988-1990 LMAS contains information on the type of employment and hours per week of respondents, one can distinguish self-employment and employment at hours less than 15 hours per week from other employment weeks, enabling us to model the implications of extension of Unemployment Insurance coverage to these types of employment weeks. With greater detail on household characteristics and greater possibilities for the calibration of our simulation results to observed microdata, we re-estimated all our behavioural equations, incorporating the greater information now available on the determinants of labour market outcomes. However, this was a major piece of work, since the model now consists of 54 labour-market equations in eight separate behavioural modules. The demographic module adds an additional six estimated behavioural equations. Altogether, we have 60 estimated relationships together with many lines of detailed accounting relationships — over 18,000 lines of code in SAS at present.

In addition to up-dating and disaggregating behavioural equations estimated for the 1980's model, the current model now predicts the probability and duration of self-employment and the probability and duration of employment with weekly hours less than 15. Drawing a distinction between these types of employment and employment weeks with paid hours in excess of 15 enables us to distinguish between those employment weeks which are now covered[2] and those which are not covered, under current Unemployment Insurance legislation. This feature of the model is an important one for capturing the new realities of the labour market (and is described in more detail Osberg, Erksoy and Phipps, 1995).

For the purposes of this report, there are two major new developments in the model. The first is the addition of an 'up-front' demographic module; the second is the addition of a Social Assistance module. Demographic characteristics such as age, marital status and number of children play an important role in determining labour market behaviours and outcomes (e.g., participation and unemployment). Earlier versions of our micro-simulation model held these char-

2 Current UI regulations cover weeks of employment in which hours of work are 15 or greater or in which weekly pay exceeds minimum insurable earnings (which are set at 1/5 maximum insurable earnings or $156 per week in 1994). Hence *some* short hours work weeks are already covered - in this paper we are considering the extension of UI coverage to weeks of work with hours less than 15 *and* weekly pay less than $156.

acteristics fixed over time. However, for any individual, it is reasonable to assume that over the eleven-year simulation period many characteristics (such as marital status and number of children) will change. A complete model should take account of *interactions* between demography and labour-market outcomes. For example, suppose we enact a policy change which increases the unemployment experience of some individual. Further, suppose that unemployment increases the probability of divorce in any given year. A divorce changes household income, perhaps meaning that the individual falls into poverty both because of the unemployment *and* because he/she no longer has access to the income of the former spouse. Finally, being divorced may then affect labour-force participation in subsequent years. Thus, a change in policy can set off a very complicated chain of events, but one which the addition of the demographic module to the simulation model allows us to follow. Since both eligibility for Social Assistance and poverty experience are affected by family characteristics (e.g., number of children, income of spouse), taking account of demography is particularly important for this study.

An additional important point is that when we use the model to simulate outcomes over a multi-year time horizon, the population of individuals of labour-force age will change — every year, 65-year olds will turn 66 and 15-year olds will turn 16. As young workers enter the labour market, they will alter the *relative* probability of unemployment of older workers, as they compete with them for jobs. By changing the mix and make-up of the population of individuals in the sample we analyze, the demographic module takes us much further toward 'reality.'

In Canada, Social Assistance is, for many, the program of last resort. Non-elderly individuals in need without any labour-force attachment or without sufficient labour-force attachment to qualify for UI during a period of unemployment must turn to Social Assistance. Thus, changes in UI program parameters can have important implications for the Social Assistance case-loads. If we make it harder to qualify for UI, Social Assistance claims may increase (provided individuals are not all able to modify their labour-market behaviour sufficiently to maintain eligibility for UI). An important question for many policy-makers, particularly given the federal/provincial division of responsibility for UI and Social Assistance, is the extent to which changes in UI lead to changes in Social Assistance claims.

Since in reality, Social Assistance is a program of last resort, we model Social Assistance claims residually. That is, the simulation model assigns individuals Social Assistance if they are non-students, not in receipt of pension income, are either the head or the spouse in the household, and without sufficient other means of support for more than two weeks of any year. Thus, we are really modelling *potential* eligibility for Social Assistance. In practice, the "take up rate" of Social Assistance is less than 100% since some eligible individuals do not actually establish claims.

Model Structure

Figure A.1 (Appendix A) presents a flow chart of the logical structure of our micro-simulation model. Each simulation year starts with individuals whose characteristics are the initial characteristics of individuals sampled in the 1990 Labour Market Activity Survey, as modified by subsequent simulated behaviour — demographic and labour market. In each simulation run, two scenarios are compared, which we typically refer to as the "base" and the "shock" scenario. In this paper, the base and shock scenario differ in the assumed structure of Unemployment Insurance legislation, but have identical estimated behavioural response to Unemployment Insurance parameters, and the influence of personal characteristics.[3]

In both base and shock scenarios, the influence of "chance" is also held identical. In each estimated equation, the unexplained variance in the estimated regression is partitioned into "permanent" and "temporary" luck — currently the ratio is 60% transitory, 40% permanent. We think of "permanent" luck as corresponding to an individual's good (or bad) fortune in drawing from the distribution of unobservable permanent personal characteristics, while temporary luck represents stochastic year-to-year variation in labour market outcomes. Each of our behavioural equations enables us to predict the average, or expected value, of labour market outcome associated with a given set of personal characteristics, labour market history, etc. To assign permanent deviations from the expected value predicted, we draw a random variable from a standardized normal distribution and, after multiplying by (0.4)((unexplained variance), we add it to the predicted (expected value) outcome. Permanent luck is the same in both base and shock scenarios, but differs as between labour market behaviours. To assign the remaining unexplained variation in labour market outcomes in each equation, we assign each year a random variable drawn from standard normal distribution times the "temporary" proportion (0.6) of total unexplained variation. Again, the influence of temporary "luck" is held constant in base and shock scenarios.[4]

Each behavioural equation in the model therefore contains the influence of:

(1) measurable individual characteristics, including personal characteristics, some characteristics of the labour market within which individuals reside and the parameters of Unemployment Insurance legislation relevant to the individual; *plus*,

(2) the influence of unobserved personal heterogeneity in characteristics which causes permanent deviations (above or below) the outcomes to be expected on the basis of observable personal characteristics; and,

(3) stochastic year to year variations in individual outcomes which cannot be explained either in terms of permanent observed characteristics, or in terms of permanent unobserved characteristics.

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3 For the purposes of estimating model sensitivity to particular parameters, it is of course possible to hold the UI system constant, while comparing the implications of alternative estimates of the influence of behavioural parameters. See Osberg, Erksoy and Phipps, 1995 for examples of sensitivity analysis of this type.

4 For a fuller discussion of the sensitivity of our simulation modelling strategy to alternative assumptions, see Erksoy, Osberg & Phipps "Panel Data and Policy Analysis". The 0.4/0.6 split on permanent/temporary luck is based on the results of Lillard and Willis (1978) "Dynamic Aspects of Earnings Mobility" *Econometrica* Sept. 1978, pp. 985-1008.

Modelling Demography

Age

In each year, simulations begin by establishing demographic characteristics for each individual in the sample. The first step of the demographic module is to age individuals. Since the Labour Market Activity Survey only identifies the age group (e.g., 20 to 24 years) to which an individual belongs, we use census information to assign an appropriate percentage of individuals to each of the ages within any age bracket (eg., 20 to 24 years). At the beginning of each simulation year, ages are increased by one. Where appropriate, individuals are re-assigned into the next highest age category. (We need to go back to age categories because estimated labour-market equations, restricted by the way information is provided in the LMAS, use categories rather than specific ages.)

A similar approach is taken for the 'aging' of children. The LMAS gives the number of children in age groups 0-2, 3-5, and 6-15 years. As with adult ages, census information is used to assign the appropriate number of children each age within the brackets at the beginning of the simulation. One year is added for each year of the simulation. Once children reach the age of sixteen, they are no longer included in the total number of children, following the LMAS categorizations.

Now that children 'age' over the simulation period, if a woman starts the simulation with 1 child in the 0 to 2 age category, and has no additional children, she will end the simulation, 11 years later, with 1 child in the 6 to 15 year old category. This change in the age of her child may affect her behaviour. A woman with a child aged 0 to 2 is less likely to participate in the labour market, for example, than a woman with a child aged 6 to 15. Our labour-market equations confirm other research that suggests that the number of children and their ages are important determinants of labour-market activity, especially for women.

Changing Composition of the Population

The only case when an individual does not age is, of course, when that person dies. At the beginning of each simulation year, probabilities of survival by age, sex and province are compared against a random number drawn for each individual. If that random draw is greater than the probability of death, then that individual dies. Those who die are no longer part of the sample for that or future years. However, because the information on the years in which the individual was alive is retained in the data set, they are accounted for in any final analysis.

With aging present in the model, some individuals will reach the age of 65 each year. The model focusses on those who are 16-64, so when an individual reaches age 65 then that person is "retired". Those who do retire are not in the sample of people whose behaviour is modelled in subsequent years but, again, they are not deleted from the data set in order to retain information for the years when they were part of the sample.

While there are those who leave the sample each year there are also new entrants into the 16-65 age group. The 1991 census was used to predetermine how many new entrants there will be each year (i.e. the number of 18 year olds in 1997 is the number of 11 year olds in 1990, less mortality). A pool of potential entrants was obtained from the LMAS (i.e. we assume that "a 16 year old is a 16 year

old" so we take a sample of the 16 year olds surveyed in 1988 and 1989). The predetermined number of new individuals is then selected from this pool every year and entered into the simulation. The same individual will never be selected twice as no one ever re-enters the pool. Young, relatively inexperienced individuals now enter the sample while others exit resulting in a change in the profile of the sample. Once in the sample, individuals age, marry, divorce, have kids, etc.

Marital Status

Marital status is another key predictor of labour-market behaviour. In the 'real world,' people marry[5] and people divorce/separate every year. Therefore, in the model we want the same to happen. Tables C.59 and C.60 of Appendix C, show the estimated coefficients of a logit model of the probability of getting married for men and women, respectively. These equations are estimated using 1988-90 Labour Market Activities Survey. (Individuals who 'get married' were single in 1989 and married in 1990 — 6.4 percent of women and 6.9 percent of men. Note that throughout, 'married' refers both to couples who are legally married and to those who are living together.)

For both men and women, the weekly wage is highly significant and increases the probability of marriage. The number of weeks of paid employment also has a positive effect on the probability of marriage. People in their 20's and 30's are more likely to get married than either old or younger age groups.

We use the estimated probability (i.e. expected value plus random component) of marriage equations to decide whether or not each single individual marries in a particular year by comparing the estimated probability of marriage against a random draw. Since the probability of marriage depends, for example, on labour market factors such as weeks of paid employment, changes in UI which change labour-market outcomes will change the probability of marriage.

The procedure which divorces individuals in the model has, conceptually, the same structure as that which marries people. Coefficient estimates for logit models of the probability of getting divorced for men and women are given in Tables C.61 and C.62. (Again, individuals who 'get divorced' are those who were married/living together in 1989 and single in 1990 — 1.3 percent of women and 1.1 percent of men.)

Perhaps contrary to popular belief, the presence of children does not appear to significantly affect the probability of divorce. Weekly wage again appears significant and positive; weeks of unemployment in the previous year increase the probability of divorce.

Note that since important variables such as weeks of employment and weeks of unemployment are affected by UI incentives, they are not likely to be the same when we simulate major changes to UI. Hence, in our model different labour market experiences can cause different marital status - i.e. an individual could be married in the base case but single in the experiment.

5 We treat legally married and living together as 'married.' In fact, these are not distinguished in the LMAS.

Fertility

We allow the number of children to change using an estimated probability of new births/adoptions.[6] We identify individuals with new births/adoptions by finding cases where there is:

(1) An increase in the total number of children present from one year to the next and at least one child in the 0-2 age category; or,

(2) An increase in the total number of children (in case an older child leaves home).

In 1990, 5.7 percent of women had a new baby and 3.8 percent of men had a new baby (i.e. were in a family unit which had a new baby).

Estimated coefficients of a logit model of the probability of having a new baby are presented in C.62 and C.63 for men and women, respectively (men 'have babies' when their partners give birth or when they adopt). Younger men and women are significantly more likely to have babies than are older groups. An interesting point to note is that, for women, the probability of having a baby falls with the number of weeks of paid employment in the previous year. The same effect is not observed for men. For both men and women, a dummy variable indicating the existence of any other children is positive and significant. However, as the number of children in the family increases, the probability of having a baby falls. This, in part, helps prevent the same individuals from having newborns year after year.

To decide, for simulation purposes, whether a new baby is born in any given year, we compare each individual's calculated probability against a random draw. If the calculated probability of having a baby exceeds the random draw, we add one child in the 0 to 2 age category. (We ignore the possibility of multiple births.) Since labour-market variables affect the probability of having a baby, an individual's child status may differ as we simulate different UI programs.

Modelling Labour-Market Behaviour and Outcomes

Given a person's demographic characteristics (age, marital status, number of children), the next step in modelling labour-market behaviour in the simulation model is to determine the number of weeks (if any) that people want employment — i.e. are in the labour force.[7] Particularly in the macroeconomics literature, there is sometimes a tendency to refer to the labour force participation rate at any point in time as if the population consists of 35% who never work or look for work and 65% who are always either employed or unemployed. In fact, the labour force participation decisions of people who are "occasionally" in the labour force creates a very large margin of labour supply in Canada. Heckman, writing in the May 1993 issue of the American Economic Review, on the subject, "What has been learned about labour supply in the last 20 years?", notes that

6 A limitation of the model at this stage is that we don't deal with changes in the number of children resulting from divorce, separation or marriage.

7 For operational purposes, we adopt the strict Statistics Canada Labour Force Survey conception of unemployment as an individual who does not have work, but is actively looking for employment. The Labour Market Activity Survey in fact includes also a looser conception of unemployment, which we do not use.

People who are part-year labour force participants may move into or out of the labour force for a few additional weeks in a way that can be highly sensitive to economic policy, such as Unemployment Insurance amendments.

the wage elasticity of labour supply for those already working is close to zero, but that elasticities of labour supply at the extensive margin of entry and exit are definitely not zero. Extensive experimentation with our model has convinced us of the crucial importance of the labour force participation decision for analysis of UI.

People who are part-year labour force participants may move into or out of the labour force for a few additional, or fewer, weeks in a way that can be highly sensitive to economic policy, such as Unemployment Insurance amendments. We therefore think it important to distinguish between those individuals who do not participate in the labour force at all, in any week of the year, and those individuals who spend part of the year outside the labour force (i.e. neither working or actively looking for work).

The simulation model therefore starts by computing for each individual their probability of being outside of the labour force for all 52 weeks of the year. The underlying regression is a probit model. Individuals are then ordered in descending order of the probability that they will be outside the labour force for 52 weeks and those with highest probability of complete labour force withdrawal are assigned 52 weeks of not-in-labour force up to the proportion of the population with complete labour force withdrawal (0.184 of the 16 to 65 age group in 1990). This proportion varies over time, as the average labour force participation rate varies, since we fix the proportion with complete labour force withdrawal as the same constant fraction of the future average labour force participation rate as was observed in 1990.[8]

If an individual is, at this stage of the model, assigned 52 weeks of not in the labour force, no further calculations of labour market behaviour are made for that simulation year. Such an individual may still be eligible for Unemployment Insurance benefits, as a continuation of a claim whose duration has not yet expired from the previous simulation year, but it is assumed that someone without any labour force participation has zero earnings and cannot establish a new Unemployment Insurance claim. Individuals without any labour force participation in a given year are retained in the model, since they may re-enter the labour force in a subsequent year, but the LMAS data indicates a high level of state dependence — i.e. the probability of complete labour force withdrawal is heavily influenced by whether there was complete labour force withdrawal in the prior year, and by the number of weeks of labour force withdrawal, if the person was a part year participant. There is a heavy tendency for individuals to remain outside the labour force, once they have left it for an entire year.

For those individuals who are in the labour force for some of the year, the next issue is to determine how many weeks of work they want. Appendix C describes

8 For example, if the average Labour Force Survey measure of labour force participation in 1990 was 0.65, the average non-labour force participation in 1990 is 0.35, but the Labour Market Activity Survey for 1990 indicates that only 0.184 of the population was outside the labour force for the entire year. In simulating the behaviour of the population forward during the simulations, we have to rely on forecast average labour force participation rates from macroeconomic models. If in 1999 the forecast of the average labour force participation rate (i.e. the LFS concept) is, for example, 0.67, we multiply 0.33 by 0.525 (= 0.184 divided by 0.35) to get the proportion (0.173) of the population which is entirely outside the labour force.

our tobit model of the weeks of non-labour force participation, which determines labour force weeks by subtraction. (We use a tobit specification since Labour Force weeks are truncated at 52.)[9] Given that each individual has been assigned an estimate of their desired labour supply, the next issue is whether or not they can get employment for the weeks in which they are willing to supply labour to the labour market.

We take the aggregate unemployment rate from forecasts of the future performance of the Canadian macro economy (see Table 1).[10] Total labour force weeks is given by the product of the average labour force participation rate and the population, and total unemployment weeks in any given simulation year is determined by the product of the forecast unemployment rate and the total number of labour force weeks. As in our other behavioural equations, we estimate the expected probability with which an individual will experience unemployment and added the influence of permanent and temporary luck (as described above) to produce a calculated probability of individual unemployment. All observations are then arranged in order of descending probability of experience of unemployment.[11]

Table 1
Unemployment Rates Used in the Simulation

Year	a	b
1994	11.8	11.6
1995	11.6	11.4
1996	11.4	11.2
1997	11.2	11
1998	11	10.8
1999	10.2	10
2000	10.2	10
2001	10.2	10
2002	10.2	10
2003	10.2	10
2004	10.2	10

Notes:
Informetrica Forecast
Column "b" rates were used for the simulation where an additional 5 weeks of employment are required to qualify for UI. We assume that this decrease in generosity of the system will reduce the aggregate unemployment rate by 0.2% (see Appendix B).

9 The combination of complete non-participants and partial labour force participants gives an average Labour Force Participation rate quite close to the LFS concept.

10 Osberg, Erksoy and Phipps, 1995 presents a sensitivity analysis to an alternative, lower, forecast of unemployment rates through the 1990's.

11 In running our 1980's micro-simulation model, historic data on male and female unemployment rates was available for the 1980's business cycle. Hence, in that model we calculated the probability of unemployment experience separately for males and females and since the model was fitted to historic data, it could not produce a *shift* in the gender incidence of unemployment. By contrast, the 1990's micro-simulation model assigns male and female probabilities of unemployment experience jointly and changes in UI *can* produce shifts in the gender incidence of unemployment.

Conditional on experiencing some unemployment, Tables C.31-C.38 (Appendix C) outline our accelerated failure time model of annual unemployment experience.[12] If, after taking account of deterministic and stochastic influences, an individual's unemployment experience this year is predicted to be greater than that of last year, we assume that the person faces no constraint in increasing their weeks of unemployment experience — unemployment is easy to find. However, given that total labour force weeks have already been assigned, if weeks of unemployment this year are to be less than weeks of unemployment last year, an individual must locate additional employment.

Appendix C (Tables C.39-C.42) outline our logit model of the probability that an individual will be constrained in locating an additional week of employment. We compute, for all individuals with an expected decrease in unemployment, the probability that they will encounter constraints in getting one more week of work. We compare that probability with a random draw from a uniform distribution and assign one more week of employment if the random draw exceeds the estimated probability of constraint. Those who want to increase their labour supply by *more* than one week of work, given that they have been successful in obtaining one additional week of employment, face a certain probability of being able to get the second additional week of employment, etc. We determine whether the individual is constrained in getting a second week of additional work by again comparing a random draw with their probability of constraint. We proceed in this way until the individual has either reached their expected additional employment or encountered a constraint in obtaining an additional week of work. Together, the duration model and underemployment model determine for each person their expected weeks of unemployment, *if* they experience any unemployment.

The influence of a changing macroeconomic environment is incorporated into our model by allowing the macroeconomic total of unemployment weeks to vary over time, in accordance with forecast macroeconomic unemployment rates. Since individuals are ordered in descending order of the probability of experiencing unemployment in a given year and the cumulative sum of unemployment weeks is calculated across individuals, unemployment can be assigned to those with the highest probability of experiencing unemployment, up to the point where the total number of unemployment weeks equals aggregate unemployment experience for the year.

To this point, although a demographic module has been added 'up front,' the modelling of labour market behaviours in the 1990's version of the Dalhousie micro-simulation model is broadly similar to that used in the 1980's version, as extant at July 1994.[13] Conceptually, one major difference is that males and females are jointly ranked in probability of unemployment, and are assigned unemployment weeks from a common aggregate total of unemployment weeks, implying that the distribution of unemployment weeks between men and women is not exogenously specified. Changes in Unemployment Insurance parameters, or in other behavioural assumptions, can therefore shift the gender distribution of

12 Note that here and elsewhere all weeks of unemployment are aggregated into a single "spell" which we refer to as "annual unemployment experience".

13 See S. Erksoy, L. Osberg and S. Phipps (1994) *Panel Data and Policy Analysis*, paper presented to the annual meetings of the Canadian Economics Association.

unemployment, in the 1990's micro-simulation model. A second difference is that, to accommodate the introduction of a demographic module, behavioural equations are substantially more disaggregated in the 1990's version of our micro-simulation model — separate equations have been estimated for single and married males and females, within each age group. Third, the availability of additional information on personal characteristics (e.g., disability, immigrant status) has added to the explanatory variables predicting individual behaviour. Finally, UI-covered and UI-non-covered employment are now explicitly distinguished.

Each individual faces a particular probability of having some self-employment weeks. As Table 2 reports, there is an upward trend in the aggregate rate of self-employment. Hence, individuals are assigned some self-employment weeks if their calculated individual probability of self-employment exceeds the average value of the probability of self-employment, which increases over time as Table 2 would predict. Given that an individual has some self-employment weeks, their duration of self-employment experience is assigned as discussed later in this paper. Since there is no upward trend over time in the incidence of short hours work weeks, we estimate both incidence and duration in a one step procedure (i.e. a tobit model).

Table 2
Self-Employment Trend Regression
Ordinary Least Squares
Dependent Variables = Percentage Self Employed of the Labour Force for Males and Females
1975-1993

	Males		Females	
	Coefficient	Standard Error	Coefficient	Standard Error
Constant	9.6156	0.0897	4.8217	0.1289
Time Trend	0.03011	0.0079	0.1119	0.0113
	Adj R^2=0.431		Adj R^2=0.852	

Self employed includes only unincorporated businesses.

Source: Statistics Canada The Labour Force *Cat. No. 71-001 V. 31-49 Annual 1975-1993.*

Given an individual's experiences of not in the labour force, unemployment, self-employment, short hours work weeks and regular employment, the expected weekly wages of individuals, plus the rules of the Unemployment Insurance system applicable to someone with their work history living in their particular economic region, determine their income from employment and UI payments. Social Assistance income is assigned residually, to those with low annual earnings, for those weeks (if greater than 2) when they have no earnings and no UI.

Estimated Behavioural Equations

Appendix C presents the specific regression results used to form the behavioural equations of the micro-simulation model. All regressions have been estimated using SAS and the 1988 to 1990 LMAS data of Statistics Canada — in most cases using the 1988 and 1989 waves, since 1990 labour market outcomes were influenced by the "natural experiment" of a common entrance requirement for Unemployment Insurance, due to the hold up in the Senate of Bill C-13 to reform

Unemployment Insurance. Since there is no identifying variation in Unemployment Insurance entrance requirements in 1990, and since the problem of sample attrition in the panel will be less acute in 1989 than in 1990, we use the 1988/89 panel years for most of our estimation runs.

In principle, one could estimate a single equation for each labour market behaviour, incorporating dummy variables to pick up the influence of gender, age or marital status on labour force withdrawal, the probability of unemployment, etc. Although this procedure is efficient in minimizing the work input of researchers, we do not follow this approach since it is quite clear from the data that males and females, married and single, and people of different age groups differ structurally in their behaviour, in a way which cannot be picked up by a simple intercept shift through inclusion of a dummy variable for demographic status. We estimate most of our behavioural equations for men and for women separately, due to the substantial structural differences in labour force behaviour between men and women. (Since men and women "compete" for the same aggregate total of unemployment weeks, we use a joint estimate of unemployment probability.) Particularly for labour force participation, it is also important to model carefully the labour market behaviour of youth (24 and under) who may be wholly or partially outside the labour force due to school attendance, and older workers (ages 55-64) who are particularly likely to withdraw from the labour force, especially following a period of unemployment.

Since with the addition of the demographic module, we now predict the probability of marriage (for singles) and the probability of divorce (for marrieds), it is necessary to model separately the behaviour of married and single persons. However, small sample size for some demographic groups (e.g., married under 24) does force the consolidation of some demographic categories. Since the demographic module incorporates mortality probability, retirement and labour force entry/immigration, it enables us to track the implications of changes in labour force composition.

Since the objective of micro-simulation modelling is predictive accuracy, rather than hypothesis testing, and since the micro-simulation model involves the addition of a random error term representing unexplained variation to the expected value of individual behavioural outcomes, we do not necessarily follow the strategy of excluding variables which are not statistically significant at 5% (or other similar confidence levels). Our modelling philosophy is to keep variables in the equation if they add to the overall explanatory power of the regression (i.e. approximately $t > 1$) and if they have a strong reason for inclusion.[14] For example, theory and other common empirical results argue that we have strong reason to expect number and age of children to predict labour force participation patterns, especially for young and middle aged women. Furthermore, in the public use version of the LMAS, Statistics Canada often uses a series of categorical variables, rather than a single continuous variable (e.g. for years of education). In

14 This philosophy is based largely on the theoretical argument that coefficient estimates on included variables will be biased if variables are omitted from the equation which also influence the dependent variable, (albeit with a large standard error). It is also based on practical experience — if we try to run a micro-simulation model in which behavioural equations contain only those variables significant at 95%, the results are not very sensible.

such cases, a single dimension of the underlying data is captured in a set of categorical variables. Since the interpretation of a single dummy variable is, in this context, problematic, we include or exclude education, occupation and industry variables as sets of dummy variables.

The Probability of Complete Labour Force Withdrawal

In Appendix C, Tables C.1 to C.11 present the detailed results of a series of logit models of the probability that an individual will be outside the labour force for the entire year. Our regressions follow a common structure, including education, past labour force experience and the weeks needed to qualify for Unemployment Insurance in the individual's region. We presume that single females aged 55-64 and older males (55-64) are not influenced in their behaviour by the presence of children in the household. Since there is very strong state dependence in complete labour force withdrawal, past labour market history is a strong predictor (particularly for older cohorts) of the probability that an individual will stay completely outside the labour force. In addition, an important advantage of using the 1988/89 LMAS is that there is an observation on the disability status of an individual. Disability status, and the degree of limitation imposed by that disability, is an important predictor for most age cohorts of the probability that an individual will completely withdraw from the labour force, over and above the influence which we observe in the data from the past years weeks of labour force withdrawal and unemployment.

The base case for the dummy variables of occupational status is a blue collar worker. Our base case individual also has a high school education and no children, and is not limited by disability, but is Canadian born and English-speaking.

Weeks of Labour Force Withdrawal

Since individuals who have some labour force participation typically also have an occupation of employment, the regressions summarized in Tables C.12 to C.22 of Appendix C contain broad occupational categories of employment, in addition to the educational, family status, work history and disability status variables discussed in previous paragraphs.

State dependence in labour force withdrawal shows up clearly in the role played by weeks unemployed in the previous year and whether or not the individual was out of the labour force for part of the previous year. Among personal characteristics, disability status plays a clear causal role, but with very significant differences between those who state that they are limited by a disability and those who state that they have a disability but it is not limiting, or it is not known if it is limiting.[15]

The impact of Unemployment Insurance regulations on labour force participation is picked up by the variable "weeks needed to qualify for Unemployment Insurance". In Tables C.12 to C.22, a tobit model of duration of non-labour force experience has been estimated. Among the population of those who have some labour force weeks, the number of labour force weeks is truncated — nobody can

15 The role of disability status in labour force behaviour is examined in much more detail in Lucie Zeman (1994), "The Effects of Disability on the Labour Market Activities of Canadians" M.A. thesis, Department of Economics, Dalhousie University.

The size and strong positive significance of unemployment in 1988 as a predictor of the probability of unemployment in 1989 can be seen as evidence of state dependence ("microhysteresis") in unemployment experience.

have more than 52 — hence a tobit model is appropriate. Among labour force participants, most people have a substantial number of weeks of labour force participation (note the large negative constant element in non-labour force weeks, often in excess of -52). Given the expectation of the number of non-labour force weeks on the basis of other characteristics, weeks needed to qualify for Unemployment Insurance tend to have a positive relationship with the weeks of non-labour force participation, for most cohorts. In short, in all regions, most of those who enter the labour force at all tend to be in the labour force for most of the year, but in regions where fewer weeks are needed to qualify for UI, fewer weeks of labour force participation are observed, on average.

The Probability of Unemployment

Tables C.23 to C.30 present the determinants of the probability of experiencing any unemployment in 1989, estimated separately for men and women, married and single individuals, aged 16 to 24 and aged 25-64.

The influence of unemployment in the prior year (dummy=1 if unemployed in 1988) is very clear. In all cases, the coefficient is positive and highly significant. The size and strong positive significance of unemployment in 1988 as a predictor of the probability of unemployment in 1989 can be seen as evidence of state dependence ("microhysteresis") in unemployment experience.

The Unemployment Insurance benefit/wage replacement ratio is calculated from the weekly earnings of each individual in accordance with UI regulations in place in 1988/89, i.e: equal to (0.6) (earnings) if below maximum insurable earnings; equal to (0.6) (maximum insurable)/(actual earnings) if actual earnings were greater than maximum insurable. It enters with a positive coefficient — i.e. those with a greater benefit/wage replacement ratio are more likely to become unemployed — in all cases except for both married and single females aged 16-24 (although not significant for the singles).

As one might expect, the probability of unemployment is positively correlated to the provincial unemployment rate, and negatively correlated with membership in a white collar occupational group.[16]

Initial simulations indicated there were very few females with unemployment and, as a result, the constants on the probability of unemployment equations for females were multiplied by 0.8 (since the constants are negative this increases the probability). This moved the females higher in the probability queue distributing unemployment in a manner which was closer to observed incidence in the 1990 LMAS.

Duration of Unemployment

Tables C.31 to C.38 present the results of our accelerated failure time (Weibull) model of duration of unemployment spell. Again, the influence of past outcomes is clear. Weeks of unemployment in 1989 are, in each demographic group, positively related to weeks unemployed in 1988.

16 Osberg, Erksoy and Phipps, 1995 reports the results of alternative calibrations of the unemployment probability equations (e.g., changing the relative probabilities of unemployment for men versus women; for old versus young). Basic results concerning the distributional impact of UI change relatively little with alternative calibrations.

In each regression, the UI benefit/wage replacement ratio is negatively correlated with duration of unemployment experience, other things equal. Although, in some cases, this result is not statistically significant at standard confidence levels, this is not the relationship that a standard "disincentives" approach to Unemployment Insurance analysis would have predicted. We have, in fact, tried rather hard to dislodge the negative coefficient on the benefit/wage replacement ratio in the unemployment duration equation. The result is robust to a large number of alternative specifications, and is found as well in the 1986/87 LMAS. We can only note that Jones (1994) found a similar negative coefficient, and Devine and Kiefer (1991) note that the benefit/wage replacement effect is far from settled.

The positive coefficient on maximum *duration* of benefits as a predictor of duration of unemployment is consistent with a standard "disincentives" story and is almost always statistically significant at standard confidence levels (the exception being married males aged 25-64.

Initial passes with the micro-simulation model produced excessively long durations of unemployment, and a correspondingly excessively low incidence of unemployment and UI payments. After trial and error we scaled the constant term in the unemployment duration equations by a factor of 0.666 in order to reproduce observed 1990 LMAS incidence and average durations of unemployment.

Probability of Constraint in Employment Weeks

Tables C.39 to C.42 of Appendix C present the results of a logit model of the probability of wanting, but not getting, an additional week of work in 1989. If these results were being interpreted as some sort of test of whether or not unemployment is "voluntary" or "involuntary", they would tell a somewhat mixed story. The benefit/wage replacement wage ratio enters with a negative coefficient — i.e. those whose UI benefits replace a higher fraction of their employment wage are less likely to want an additional week of work — a result consistent with the disincentives/voluntary unemployment story. However, those with more weeks of unemployment and those who received Unemployment Insurance are more likely to be limited by unemployment constraint in their weeks of work — i.e. they want more employment at the going weekly wage — a result which is consistent with the "constraint" perspective on involuntary unemployment. In both cases, results are highly statistically significant and uniform across demographic groups. Fortunately, for the purposes of predictive accuracy in modelling unemployment experience, it is not necessary to decide between "voluntary" and "involuntary" perspectives.

Probability of Self-Employment

Tables C.43 to C.46 present, for married and single males and females, our logit model of the determinants of the probability of any self-employment, estimated over the population of those with employment weeks in 1989. As one might expect, prior experience of self-employment increases considerably the probability of self-employment. Self-employment probabilities seem to increase with education, with the exception of married women. The probability of self-employment experience is negatively correlated to the provincial unemployment rate, but holding constant the provincial probability, those persons with more weeks of unemployment in 1988 are more likely to turn to self-employment.

Duration of Self-Employment

Tables C.47 to C.50 present our OLS model of the duration of self-employment experience, given that the person had some weeks of self-employment. Although a tobit model would be, conceptually, a better approach than ordinary least squares (due to the censoring at 52 of maximum weeks of self-employment), we use OLS because it provided a better fit to the distribution of self-employment weeks. Both OLS and Tobit specifications predicted mean self-employment experience, within demographic groups, with similar accuracy and both underestimated the variance in self-employment experience, but the OLS model underestimated true variance by less. The top end of self-employment experience is truncated necessarily at 52, but because our OLS results seemed to model better the shorter experiences of self-employment, we used it, despite its recognized econometric imperfections with truncated data.

Our micro-simulation model embeds individual microeconomic behaviour within a time-varying macroeconomic environment. Thus, we simulate the work histories of individuals from 1994 to 2004, presuming that aggregate unemployment follows the Infometrica projections presented in Table 1. Since the growing concern over inadequacies of Unemployment Insurance coverage has been fuelled in part by the increasing percentage of the labour force which is self-employed, we estimate a regression model of the trend in aggregate self-employment (see Table 2). We base our projections of the impact of extending UI to non-covered employment in future years on an extrapolation of these historic trends in the percentage of the labour force which is self-employed (an increase of .03% per year for men, 0.11% per year for women). We initialize our simulation with the observed percentage of self-employment in the labour force in 1990 (as revealed in the 1990 LMAS). Running our simulation out to 2004, the extrapolation of 1980's trends would predict that self-employment would increase over this period by about 6 percentage points as a fraction of the labour force.

Since there appears to be little trend, at least that we can detect in the 1986 to 1990 LMAS, to an increased proportion of the labour force with less than 15 hours of work per week, we hold the proportion with short hours work weeks constant over the simulation.[17] In aggregate, the percentage of the labour force in non-covered employment is the sum of (1) the percentage self-employed (which is increasing over time in the simulation) and (2) the percentage which works less than 15 hours per week, at $145 per week, or less (which we hold constant over the simulation period). As Appendix C indicates, we use different models to predict the probability and amount of self-employment and short hours work weeks.

Modelling Social Assistance

In Canada, Social Assistance is not a national program, since each province has its own plan with varying payments and qualifying conditions. Further, some provinces have a two-tiered system with partial provincial and partial municipal responsibilities. Thus, modelling the receipt of Social Assistance is a complicated

17 Although there may be a positive trend in short hours work weeks over a longer period (the self-employment trend uses 1975-1993), there is insufficient data. When trying to capture job hours per week and not person hours per week (i.e. if the person has more than one job, how many hours in each job), a data set such as the LMAS is essential, but this is only available for the period 1986 to 1990.

undertaking. However, in all cases, Social Assistance is a residual program — claimants are those without sufficient alternative means to support themselves. With this idea in mind, we choose to model receipt of Social Assistance as a residual — assigning benefits to individuals who have more than two weeks (the official UI waiting period) without sufficient alternative means of support. We do not attempt to model the details of eligibility conditions as they would apply in each Canadian province. We also do not attempt to decide which individuals will apply for, and be granted, benefits and which will not (though we know that, in fact, some needy individuals will not apply for Social Assistance and some applicants are in fact refused). Our estimates of Social Assistance receipt are therefore estimates of potential receipts which should, nonetheless, provide important information about the links between UI and Social Assistance.

In Canada, Social Assistance is not a national program since each province has its own plan with varying payments and qualifying conditions. Further, some provinces have a two-tiered system with partial provincial and partial municipal responsibilities.

As illustrated in the flow chart in Figure A.1 (Appendix A), the Social Assistance module is the last in the logical structure of the model. Thus far, in each year individuals with paid employment will receive earnings; individuals with unemployment but entitled to UI (either through eligible employment this year or from a claim not entirely used up last year) will receive Unemployment Insurance benefits. When these weeks are added together for each person, they may total 52 weeks or less each year. If this total is less than 52 then that individual has some weeks with no earnings. It is on this basis that Social Assistance is distributed. Excluding the official UI two week waiting period, Social Assistance is assigned to each needy individual for every week in which that person has no other income (i.e., from employment or Unemployment Insurance).

Clearly, not everyone with weeks of no earnings receives, applies for or is even eligible for Social Assistance. Some of these exclusions can be captured in the model. Based on information from the LMAS, individuals who receive a pension income or who are full-time students are not assigned Social Assistance benefits. Individuals who are not the head or the spouse in the household are not assigned benefits. So, for example, a son or daughter who lives with his or her parents does not receive Social Assistance. A final exclusion is anyone with a family income plus own income which is greater than $10,000 for that year. This excludes a man or woman who works at home but is financially supported by his or her spouse. As well, others who have higher incomes and who simply take time off for any reason will be excluded. Through these means the list of Social Assistance clients is narrowed significantly.

The amount of Social Assistance given to an individual each week, again, is rather difficult to model precisely as each province has a different system. The National Council of Welfare (1990) gives estimates of basic Social Assistance for each province on an annual basis. Simply dividing by 52 gives the weekly income. Unfortunately, this publication only gives incomes for four scenarios: single employable, disabled, single parent with one child and a couple with two children. As a result, figures from Community Services in Nova Scotia were used to obtain a weekly amount per child. For the rest of Canada, an index of generosity relative to Nova Scotia was calculated. This ratio was then multiplied by the Nova Scotia figure for each province. In this way, the situations which the National Council of Welfare publication does not cover, can be given reasonable incomes for each week with no earnings. (See Table 3 for weekly Social

Assistance amounts by province and family situation.) This weekly amount is then multiplied by the number of weeks of no earnings to obtain a Social Assistance income for each individual.

Table 3
Social Assistance Payments Per Person Per Week

Province	Single Employable (no children)	Disabled	Single Adult (with children)	Married Adult	Child
Newfoundland	74.7	120.9	163.6	166.2	27.3
Prince Edward Island	139.3	140.5	163.1	221.2	31.4
Nova Scotia	113.1	155.1	160.6	174.4	27.7
New Brunswick	55.8	111.6	130.3	121.5	21.0
Quebec	127.4	132.2	146.8	197.4	28.1
Ontario	130.8	188.8	208.6	243.8	37.3
Manitoba	109.2	114.4	129.4	220.0	28.3
Saskatchewan	95.8	148.8	164.0	205.7	30.3
Alberta	92.4	114.2	145.1	199.0	28.1
British Columbia	111.1	155.3	168.7	186.5	32.1

2. UI and Social Assistance in Canada

In order to study the relationships among Unemployment Insurance, Social Assistance and poverty, we have chosen to simulate the consequences of two potential changes to the 1994 Canadian UI system:

1) The addition of 5 weeks to the minimum necessary to establish a claim to UI; and,

2) The extension of UI coverage to weeks of self-employment and weeks with short hours of work.

These policies were chosen for study because, in both cases, some individuals will change entitlement status — losing eligibility in the first case and gaining it in the second. Such changes in entitlement status are likely to have the largest implications for Social Assistance claims and for poverty.

Not collecting UI has important implications for an individual's probability of being poor while unemployed — regardless of the policy environment, poverty is significantly higher among those who experience unemployment but do not receive UI benefits (see Table 4).

Further, Table 4 shows that the percentage of the unemployed who receive UI changes markedly as the program is modified. In the base (1994) case, 35 percent of the those with some unemployment during the year were ineligible for benefits in 1994. This increases to 38 percent with an increase of 5 weeks in minimum eligibility conditions and falls to 24 percent with the extension of coverage to 'non-standard' employment. In our model, the percentage of the unemployed who do not receive UI benefit increases over the simulation period, in part as a result of the assumed strong trend increase in self-employment.

Figure 1
The Unemployed Who Do Not Collect Unemployment Insurance for Each Policy Scenario

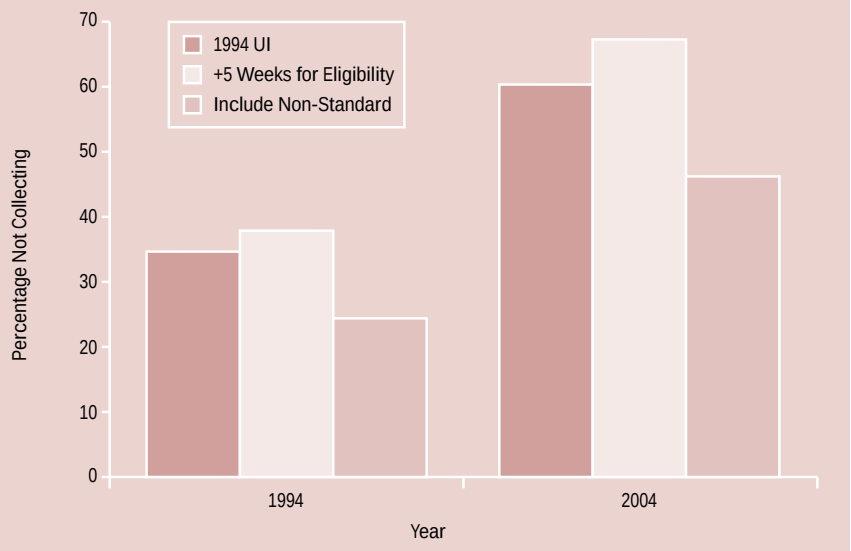
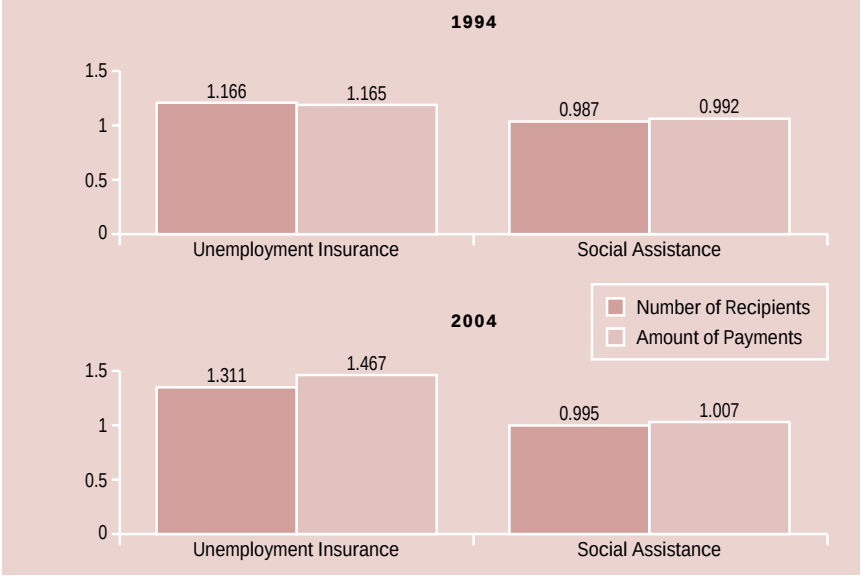


Figure 2
Ratio of Shock to Base Unemployment Insurance and Social Assistance
Base: 1994 System Shock: Weeks to Qualify Increased by Five



Changes in receipt of UI by the unemployed can have important implications for the number of Social Assistance claims filed as well as for the total value of Social Assistance paid out. Table 5 illustrates that relative to the 1994 system, adding 5 weeks to current conditions for eligibility reduces the number of UI claimants by about 6 percent, with a 16 percent decline in dollars paid out. In consequence, both Social Assistance claims and total dollars spent on Social Assistance increase by about 10 percent.

Table 4
Percentage of Unemployed Who Receive Unemployment Insurance Benefits

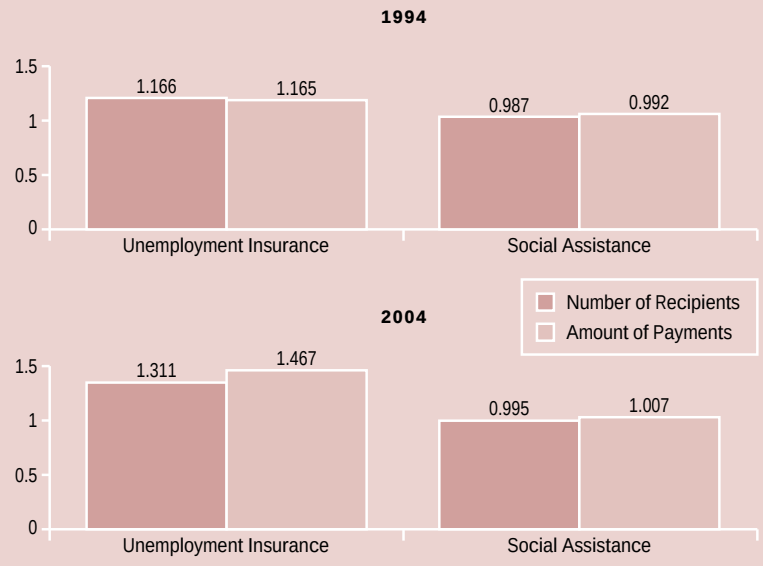
Year	Percentage of Unemployed Without Unemployment Insurance			Ratio of the Poverty Rate For the Unemployed Who Receive No UI to the Overall Poverty Rate		
	Base	Weeks to Qualify +5	Include Non-Standard	Base	Weeks to Qualify +5	Include Non-Standard
1994	34.6	37.8	24.2	1.48	1.37	1.54
1995	41.6	48.0	30.0	1.49	1.39	1.50
1996	45.3	50.1	33.0	1.47	1.41	1.57
1997	48.7	53.0	37.5	1.45	1.39	1.53
1998	48.9	54.4	36.6	1.42	1.41	1.63
1999	57.4	63.1	42.1	1.42	1.38	1.54
2000	58.8	66.1	43.2	1.43	1.42	1.63
2001	61.3	68.9	46.9	1.49	1.40	1.63
2002	60.5	67.4	48.1	1.68	1.45	1.62
2003	60.4	66.3	47.4	1.46	1.39	1.54
2004	60.4	67.1	45.9	1.39	1.43	1.80

In the first year of the simulation, extending UI coverage to self-employment and weeks with short hours increases the number of UI claimants and total UI expenditures by about 16.5 percent, relative to the existing (1994) system. About 83 percent of the increase in expenditures is due to the new coverage of self-employed workers; only 2.3 percent is due to coverage of workers with low hours and 1.2 percent to coverage of workers with low wages. The remainder of the increase in expenditures is due to other changes in behaviour resulting from

Table 5
Ratios of Unemployment Insurance Recipient/Payments and Social Assistance Recipients Payments

	Base: 1994 System Shock: Weeks to Qualify Increased by 5				Base: 1994 System Shock: Include Non-Standard Employment in Coverage			
Year	Ratio of UI Recipients in Shock to Base	Ratio of UI Payments in Shock to Base	Ratio of SA Recipients in Shock to Base	Ratio of SA Payments in Shock to Base	Ratio of UI Recipients in Shock to Base	Ratio of UI Payments in Shock to Base	Ratio of SA Recipients in Shock to Base	Ratio of SA Payments in Shock to Base
1994	0.938	0.841	1.104	1.093	1.166	1.165	0.987	0.992
1995	0.953	0.816	1.129	1.123	1.122	1.215	0.990	0.994
1996	0.943	0.888	1.112	1.107	1.114	1.249	0.993	1.000
1997	1.050	0.831	1.162	1.122	1.159	1.228	1.006	1.004
1998	1.023	0.816	1.141	1.104	1.150	1.265	0.992	1.000
1999	0.979	0.879	1.139	1.102	1.281	1.448	0.996	1.001
2000	0.885	0.876	1.142	1.118	1.320	1.577	0.991	0.997
2001	0.868	0.832	1.133	1.097	1.297	1.480	0.995	0.996
2002	0.879	0.778	1.100	1.082	1.280	1.325	0.995	0.997
2003	0.924	0.776	1.143	1.098	1.262	1.367	1.001	1.010
2004	0.902	0.849	1.135	1.104	1.311	1.467	0.995	1.007

Figure 3
Ratio of Shock to Base Unemployment Insurance and Social Assistance
Base: 1994 System Shock: Include Non-Standard Employment in Coverage



this policy change. This distribution is due mainly to the fact that the newly-covered self-employed dominate in terms of numbers, but also to the fact that workers with low hours and/or low wages will only be eligible for rather small UI payments.

Since we simulate a strong trend increase in self-employment, extending coverage to non-standard employment becomes increasingly expensive relative to the base case. The projected growth in self-employment is very likely exaggerated since we simply extrapolate the trend to self-employment which has been observed over the past few years in Canada. Nonetheless, these results are qualitatively important. If current changes in the labour market continue, then extending UI coverage to 'non-standard' employment increases the amount of UI which would be paid out relative to a scenario in which we continue to exclude non-standard employment from coverage. Put another way, if 'non-standard' employment continues to grow and we do not extend coverage to these workers, a larger and larger proportion of the labour force (and of the unemployed) will not be eligible for UI.

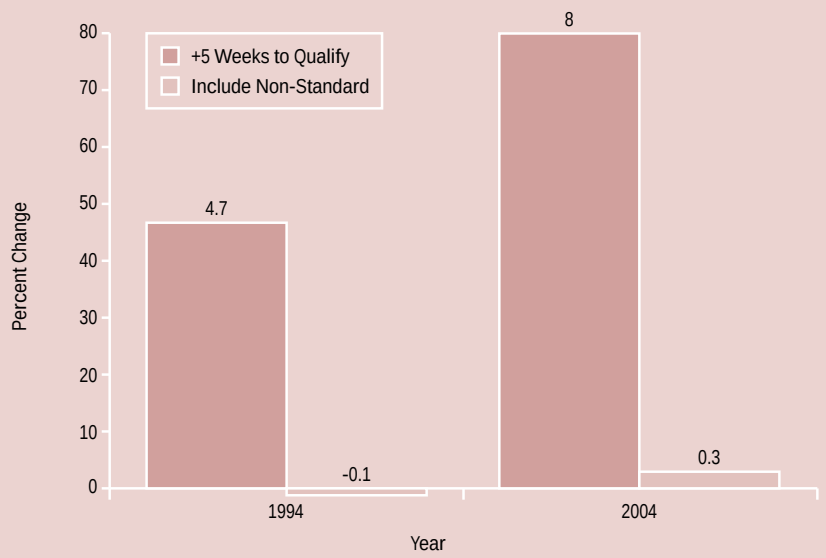
It is interesting that while UI expenditures increase by 16.5 percent in the first year of the simulated extension of UI benefits to non-standard employment, Social Assistance expenditures are basically unchanged. Why? The overwhelming majority of the newly covered unemployed workers (83 percent) are self-employed. Of these, 83 percent had annual incomes high enough to disqualify them from Social Assistance (i.e., above $10,000 for the purposes of simulation). Finally, of the low-income self-employed with some unemployment, 51 percent collected pensions and were hence ineligible for Social Assistance. Thus, the vast majority of those individuals who benefit by this policy change were not Social Assistance recipients to begin with, so the availability of UI does not take them off Social Assistance.

Relative to the self-employed, the number of individuals with short hours or low wages newly covered by UI is rather small. Thus, what happens to this group will not have much impact on aggregate statistics. But, since the characteristics of the newly covered workers with short hours and low wages look rather different from those of the self-employed, it is important to examine these cases. First, workers with low hours/wages are predominately female, many are students and many are not the head or spouse of the household in which they live (see Table 7). Thus, while most of these workers have incomes low enough to make them eligible for Social Assistance, the majority live in households with incomes above the $10,000 cutoff. Again, though for different reasons, we do not observe major consequences for the Social Assistance caseload as a result of extending UI benefits to workers with short hours or low wages.

It is important to keep in mind that the micro-simulation model is unable to deal with issues of intra-household distribution. It may or may not be true that these individuals have equal access to the resources of the larger households in which they live. Further, it is possible that poor labour-market outcomes have led to the formation of larger households than would otherwise have occurred — e.g., young adults returning to live with their parents because they can't find jobs paying enough to live alone.

Table 6 shows the poverty implications of increasing eligibility conditions and of extending UI benefits to non-standard employment.[18] Tightening eligibility conditions for UI by 5 weeks increases the overall incidence of poverty by about 5 percent in 1994 but there is little change in the average depth of poverty. By contrast, although extending UI benefits to non-standard employment would benefit some poor individuals (some workers with low hours and/or wages), since the number of such people is very small relative to the total population, this policy change has little effect on the aggregate level of poverty, for the same reasons that it has little impact on the Social Assistance caseload.

Figure 4
Percent Change in the Incidence of Poverty - From Base to Shock



In conclusion, these results suggest increasing the weeks required to establish eligibility for UI would increase the incidence of poverty in Canada and would simply shift income maintenance expenditures from UI to the Social Assistance systems. On the other hand, extending UI benefits to workers with low hours and low wages appears to be a relatively low-cost policy option which would provide benefits to a small number of poor individuals but would not introduce significant enforcement burden. However, given the high cost and the greater difficulties of administration associated with extending UI benefits to the self-employed, this option appears more problematic and would not particularly benefit the poor.

18 We measure poverty using standard Statistics Canada Low-Income Cut-offs (LICOs), for the second largest city size. Since LMAS does not reveal this information, we could not vary the LICO's by level of urbanization and assume the LICO for a city of size 100,000 to 499,999. Since we do not have complete income information but are working only with earnings plus UI plus Social Assistance, where relevant, our estimates of poverty are too high. However, this is equally true for the base case and the two policy simulations. Thus, we focus our discussion on *changes* in the incidence and depth of poverty.

Table 6
Change in Poverty Rate and Poverty Gap

Year	% Change in Poverty From Base to Shock Base: 1994 System Shock: Weeks to Qualify for UI Increased by 5 Weeks		% Change in Poverty From Base to Shock Base: 1994 System Shock: Include Non-Standard Employment in UI Coverage	
	Poverty Rate	Poverty Gap	Poverty Rate	Poverty Gap
1994	4.7	-0.1	-0.1	-0.1
1995	5.8	0.4	-0.3	0.4
1996	7.7	-0.1	-0.1	-0.1
1997	8.6	0.1	0.1	0.1
1998	7.5	0.3	-0.3	0.3
1999	7.6	0.3	0.0	0.3
2000	8.1	0.3	-0.1	0.3
2001	7.7	0.6	-0.2	0.6
2002	8.2	0.6	-0.3	0.6
2003	8.4	-0.1	0.5	-0.1
2004	8.0	0.1	0.3	0.1

Table 7
Descriptives on Those Who Have Increased UI in the Shock (Newly Covered) Where Non-Standard Employment is Included - 1994 (Percentage)

	Self-Employed	Short Hours	Low Wage (<145)	Everyone With Increased UI	Everyone in Year 1
Male	89.0	39.2	0.0	77.7	49.4
Female	11.0	60.8	100.0	22.3	50.6
Own income < $10,000	25.7	69.9	100.0	30.4	44.2
Own + other income < $10,000	16.9	13.6	27.8	14.9	20.8
Full-time student	2.3	44.8	41.2	10.5	11.8
Collects a pension	26.1	1.5	1.6	18.4	7.4
Not the head or the spouse of the house	5.7	62.4	47.2	17.7	20.7
Education					
Elementary	0.0	0.0	0.0	13.6	11.1
Some high school	37.6	23.4	25.5	22.1	23.2
High school	23.4	37.6	46.3	27.3	19.0
Some post secondary	21.4	21.4	20.1	13.5	13.0
Trade	0.0	0.0	4.6	6.4	4.8
Certificate/diploma	13.3	13.3	3.5	10.3	15.2
University	4.4	4.4	0.0	6.8	13.7

3. International Comparisons

One way to understand the role played by Canadian Unemployment Insurance is to imagine the consequences of adopting a different system. The most obvious candidate for such a thought experiment is the American system of UI, which differs by state and is thus many different systems.

The first important point to notice when comparing the Canadian and American UI systems is their different relative sizes. During 1993, out of a total Canadian labour force of 13.9 million, UI beneficiaries averaged 1.3 million (9.2 percent). In total, 3.4 million Canadians received benefits at some time during 1993. UI benefits totalled $18.3 billion[21] – about 2.6 percent of GDP.

By contrast, Unemployment Insurance in the United States is a much smaller program, paying $34.7 billion to 8.1 million claimants in 1993, (0.5 percent of GDP to 6.3 percent of the labour force). In part, this difference in the size of the two countries' UI programs was driven by the difference in unemployment rates in 1993 (11.2 percent in Canada, 6.8 percent in the United States). However, although UI in Canada is a federal program while the various state programs in the United States differ somewhat in coverage, replacement rate and duration of benefits, it is clear that Canadian Unemployment Insurance is considerably more generous than the most generous state program in the United States.

In the Canadian debate on UI, there have been many assertions in the business press that excessive UI generosity is to blame for the ills of the Canadian economy, and that it would be desirable to move to an American model of UI.

In the Canadian debate on UI, there have been many assertions in the business press that excessive UI generosity is to blame for the ills of the Canadian economy, and that it would be desirable to move to an American model of UI. Conversely, many Canadian labour and community leaders have expressed the fear that free trade (first the FTA and now NAFTA) will force continental harmonization of social programs, at the lowest common denominator. There is therefore some point in asking what the impacts on Canada would be, if Canada were to adopt an American style UI program.

We argue that dynamic micro-simulation is an appropriate tool for the evaluation of distributional implications of moving to an American style UI system in Canada. Canada has a very heterogenous population and Canadian regional labour markets have a diversity of characteristics, which vary over time. Unemployment Insurance in Canada has become a very large system with a complex set of rules and procedures. Adopting the American model of UI would imply changes in the benefit/wage replacement rate, weeks of work required for benefit eligibility, the waiting period for benefits, maximum benefit duration, the formula for benefit week entitlement and coverage of employment. Because people can be expected to change their labour market behaviours in reaction to the incentives embodied in each of these changes to Unemployment Insurance, an evaluation of Unemployment Insurance reforms must consider more than just the initial direct impact of proposed reforms.

21 See *Perspectives on Labour and Income*, Statistics Canada, Autumn 1994, p. 48, 52 and *Social Security in Canada*, HRDC, 1994, p. 26. During 1994 the number of UI recipients has declined due to exhaustion of benefits and a slight improvement in employment levels.

However, the heterogeneity of individuals, diversity of circumstances and complexity of interacting rules imply that simplistic models of behavioural responses, considered one at a time, can be seriously misleading. Behavioural micro-simulation modelling offers a methodology for incorporating the estimated behavioural responses of a diverse population of individuals in a way that ensures consistency and takes into account the feedback effects of individual behaviours over time.

This section of the report asks what would happen to the level and distribution of income in Canada if Canada moved to adopt an American style Unemployment Insurance system and examines, in particular, one of the less generous of American states (Texas) and one of the more generous (New York). Appendix B provides a detailed comparison of the 1994 Canadian UI system with those of New York and Texas. However, it is worth noting that both states offer replacement rates which are lower, entrance requirements which are stiffer and a maximum duration of benefits which is much shorter than is true of Canadian UI.

Since Unemployment Insurance is a program intended to cope with the impacts of cyclical fluctuations in employment and because an annual accounting period may not accurately capture the impact of Unemployment Insurance on the income distribution, we look at the distribution of the total value of income, over a complete business cycle (e.g. 1981 to 1989). We therefore use the "1980's version" of our model. We estimate, for a representative sample of Canadians, the fluctuations in labour earnings and Unemployment Insurance receipts associated with alternative Unemployment Insurance regimes (those in place in Canada in 1994 compared to the possible adoption of an American model - New York and Texas) as they would have affected individuals, over the business cycle of the 1980's, including behavioural responses to changes in Unemployment Insurance incentives.

In a series of papers and reports (e.g., Erksoy, Osberg and Phipps 1994a, 1994b, 1994c), we have outlined the methodology of the 1980's version of our micro-simulation model, presented explicitly the estimated behavioural equations which drive the model and demonstrated its sensitivity to alternative assumptions (e.g., the importance of past labour market outcomes). We do not repeat a full presentation of the details of this model here, but simply present in Appendix B a verbal description of the structure of the micro-simulation model and refer interested readers to our other work (e.g., Erksoy, Osberg and Phipps 1994a) for specific details.

For present purposes, the key thing about the 1980's version of the micro-simulation model is that it generates, for each of the 19,488 respondents to Statistics Canada's 1984 Survey of Assets and Debts, a predicted vector of labour earnings, Unemployment Insurance receipts, weeks unemployed, weeks employed and weeks not in the labour force for each year of the business cycle in Canada. We model individual outcomes under the Unemployment Insurance regime corresponding to 1994 Canadian legislation and those outcomes corre-

sponding to the 1992 UI legislation of Texas and New York,[22] incorporating the direct incidence of Unemployment Insurance on individual transfer income, the behavioural responses of individuals to the incentives implicit in Unemployment Insurance legislation and the impact of changes to UI on aggregate unemployment levels.[23]

Table 8 presents the average annual expected value of income, for men under the New York and Canadian Unemployment Insurance regimes, as evaluated over a business cycle such as that from 1981 to 1989. Table 9 presents equivalent results for Texas — but since the impacts of switching to a New York system are qualitatively the same as switching to a Texas system (only more pronounced) the discussion will focus primarily on the New York results. It is clear that although all parts of the income distribution are affected by this revision to UI, this income loss is a much larger fraction of the annual income of poorer deciles than of richer. For males, changing Unemployment Insurance in Canada to a New York style system would clearly increase the inequality of the distribution of income.

Table 8
Impact of Changing The 1994 Canadian UI System to the Current New York State UI System on Average Annual "Income" by Quintile
Males Aged 16 to 65

	Expected Income Value		
Quintile	Y_C	Y_N	ΔY %
1	1,291.53	1,137.00	11.96
2	8,299.02	7,989.63	3.73
3	15,376.06	14,974.47	2.61
4	22,642.47	22,183.59	2.03
5	37,732.94	37,334.07	1.06
Top 10%	45,304.73	44,878.44	0.94
Average	17,068.40	16,723.75	2.02
Gini	0.432	0.438	-1.39
C.V.	0.813	0.824	-1.35

Notes:
"Income" = Labour Earnings + Net UI transfers
Y_C = Expected Value of Income in Canada
Y_N = Expected Value of Income in New York
ΔY % = Canada - New York
C.V. = Coefficient of Variation

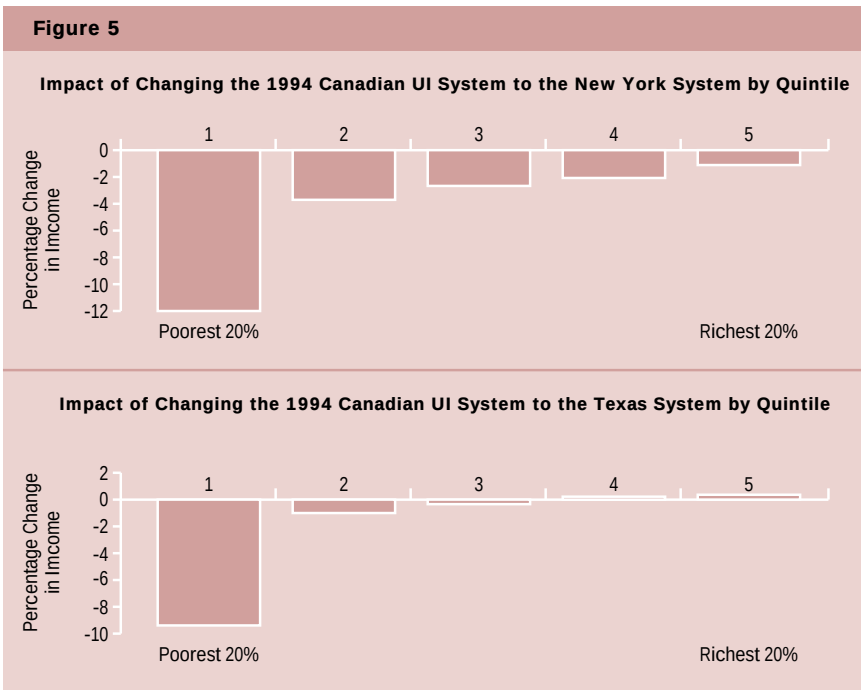
It will be noted that in Table 8, the expected value of annual income under a New York style UI system is lower, despite our assumption that switching to a New York style system would decrease the unemployment rate. This arises because UI has impacts on both the labour force participation rate and the unemployment rate. It has long been recognized that Canadian style UI offers substantial incen-

22 In Osberg, Erksoy and Phipps (1994a, 1994b) we present comparable estimates of the impact of the 1971 to 1994 revisions to Canadian UI on the level and distribution of economic well-being.

23 Extrapolating from the results of Grubel, Maki and Sax (1975), we presume that shifting to a less generous UI system, such as New York's, would decrease aggregate the unemployment rate in each year by 0.318 percent, while switching to a Texas model would decrease the unemployment rate by 0.45 percent — see Appendix B for details.

tives for marginal labour force participants to enter the labour force and qualify for UI benefits. Reducing those incentives can be expected to reduce labour force participation, as our model predicts. The fall in labour force participation is, in fact, sufficiently large that the lower unemployment rate of a New York style system also corresponds to a lower employment/population ratio.

Figure 5



One can place the change in aggregate inequality implied by adopting an American style UI system in some sort of context by comparing the change in the Gini coefficient (an increase of 0.03) to the difference in inequality between countries. Fritzell (1992) reported that the difference between Canada and Germany in the Gini index of adjusted disposable income was, in both 1981 and 1987, about 0.04. In 1981, the difference between Canada and Sweden in Gini index was 0.1, while 1987 data showed a difference of 0.08. In international comparative data from the Luxembourg Income Study, the difference in Gini index between the country with highest inequality (United States) and that with least inequality (Sweden) was 0.12 in 1979/81 and 0.13 in 1986/87.

Several caveats are, however, in order. Firstly, since the income concept used in this paper is that of annual labour earnings plus annual receipts of Unemployment Insurance payments, capital income and (more importantly) pension income and Social Assistance receipts are excluded. The relatively low annual earnings and Unemployment Insurance receipts of poorer deciles reflects in part a tendency of those with long duration unemployment spells to withdraw entirely from labour force participation – a tendency which is particularly important for older cohorts. Since our objective is to model the distributional impacts of a particular social insurance program (Unemployment Insurance),

Table 9
Impact of Changing The 1994 Canadian UI System to the Current Texas State UI System on Average Annual "Income" by Quintile
Males Aged 16 to 65

	Average Expected Income Value		
Quintile	Y_{CDN}	Y_{TEX}	ΔY %
1	1,279.98	1,158.37	9.50
2	8,266.75	8,185.22	0.99
3	15,346.29	15,299.61	0.30
4	22,608.38	22,618.98	-0.05
5	37,693.15	37,775.49	-0.22
Top 10%	45,265.31	45,317.62	-0.12
Average	17,038.91	17,007.53	0.18
Gini	0.433	0.436	-0.69
C.V.	0.814	0.818	-0.49

Notes:
"Income" = Labour earnings+net UI transfers
Y_{CDN} = Expected Value of Income in Canada
Y_{TEX} = Expected Value of Income in Texas
ΔY % = Canada - Texas
C.V. = Coefficient of Variation

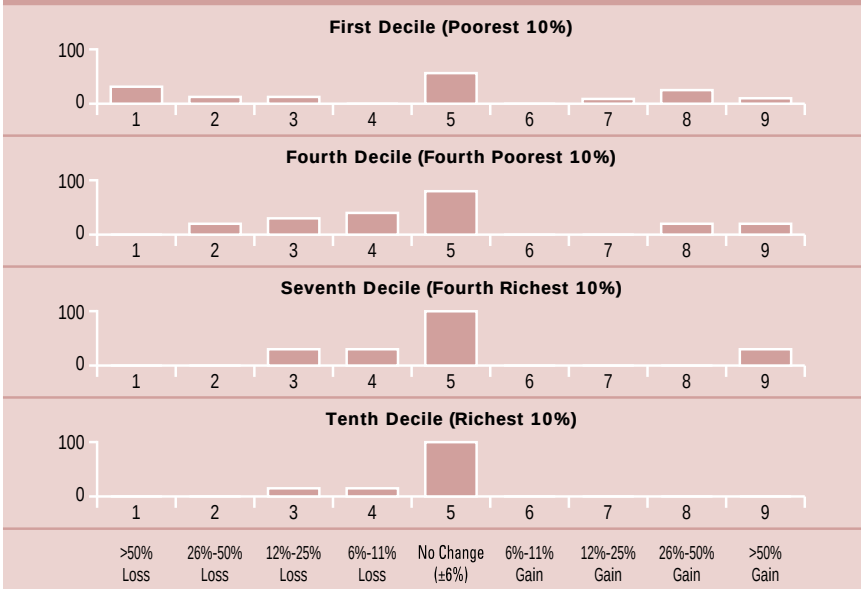
we do not build in any assumptions of automatic receipt of Social Assistance by individuals with low annual income or automatic receipt of pension income by retirees. Clearly, however, Unemployment Insurance is part of the larger welfare state of public and private social transfers, and the extent to which other transfers will kick in to offset cutbacks in Unemployment Insurance is a crucially important issue.

Furthermore, one must emphasize that Tables 8 and 9 refer to the population of individuals who participated in the labour market in 1981, some of whom may have withdrawn from the labour force from 1982-89. Tables 8 and 9 contain no consideration of household income or household size. Finally, one should emphasize that revisions to a large and complex program such as Unemployment Insurance have highly uneven impacts within income deciles. Our simulation model considers the impact on individual labour market behaviour of a number of Unemployment Insurance parameters — the benefit/wage replacement ratio, the entrance requirement for Unemployment Insurance, the formula for determination of benefit entitlement weeks and the maximum duration of Unemployment Insurance benefits. In Canadian Unemployment Insurance, entrance requirements and benefit duration vary over time and across economic regions in response to variations in local unemployment rates. Changing to an American style system would affect all these dimensions of Unemployment Insurance, with highly uneven impacts on individuals. In our micro-simulation model, some individuals may benefit financially from a revision to Unemployment Insurance which creates substantial financial losses for other individuals with a similar annual income because their particular combination of personal characteristics and the changes in Unemployment Insurance parameters relevant to them increase their relative

probability of finding employment. Unemployment Insurance revisions therefore imply substantial re-ranking of individuals within the income distribution.

Tables 8 and 9 are based on quintiles of incomes, as ordered by income under those policy regimes. Since UI revisions imply that some individuals experience gains, while others experience losses, the individuals in each quintile of income are not all the same. To illustrate the dispersion in impacts within income deciles, Table 10 reports the distribution of the percentage change in expected income arising from a switch to the New York UI system; by decile of original income under the Canadian UI regime. The percentage of individuals who are essentially unaffected by revisions to Unemployment Insurance rises with income — over 90% of the top income decile are essentially unaffected by Unemployment Insurance revisions, while only 20% of the males in the bottom income decile are similarly unaffected. Within the lower deciles of the income distribution, there is a very significant minority who experience very large percentage losses in annual income, and a much smaller proportion who experience gains.

Figure 6
Shifting from the 1994 Canadian UI System to the 1994 New York UI System
Winner and Losers by Decile of Original Income



Although economists usually argue that evaluations of the change in aggregate social welfare stemming from policy revisions should be "anonymous" — i.e. inequality and not on the identities of the rich and the poor — it is unlikely that the political system actually works this way. In addition to the impact of UI changes on aggregate inequality, people are likely to care about whether their relative position in the income distribution has changed.

Table 10
Canadian 1994 UI System Relative to the 1992 New York UI System - Winners and Losers by Decile Share
Males Aged 16 to 64

	Loss				Nil	Gain			
Present Value of Income Decile	(a) More Than 50% Loss	(b) 26% to 50% Loss	(c) 12% to 25% Loss	(d) 6% to 11% Loss	(e) No Change ±6%	(f) 6% to 11% Gain	(g) 12% to 25% Gain	(h) 26% to 50% Gain	(i) More Than 50% Gain
1	28.90	7.50	4.31	0.20	52.21	0.14	1.43	22.72	3.14
2	14.98	20.84	9.99	4.42	37.80	1.24	3.17	2.43	5.13
3	7.20	12.59	16.50	10.76	43.27	1.08	2.32	1.62	4.68
4	1.09	6.35	10.16	11.49	64.03	1.16	0.90	1.33	3.48
5	1.03	2.86	9.74	6.93	73.19	0.48	0.60	0.89	4.26
6	0.00	1.62	9.39	4.83	79.43	0.74	1.13	0.42	2.44
7	0.05	1.09	4.62	5.74	86.15	0.12	0.17	0.25	1.80
8	0.08	0.62	4.42	5.04	88.42	0.18	0.13	0.13	0.98
9	0.00	0.07	2.31	3.18	93.52	0.10	0.11	0.22	0.48
10	0.00	0.31	1.18	2.21	95.80	0.00	0.00	0.07	0.44

Notes:
% change = [(Present Value of Income with New York UI) - (Present Value Income with Canadian UI)]/ (Present Value Income with Canadian UI).
"Income" = earning + UI ; Present Value over 1981 to 1989 discounted to 1981 at 5.5%.

Table 11
Canadian 1994 UI System Relative to the 1992 Texas UI System - Winners and Losers by Decile Share
Males Aged 16 to 64

	Loss				Nil	Gain			
Present Value of Income Decile	(a) More Than 50% Loss	(b) 26% to 50% Loss	(c) 12% to 25% Loss	(d) 6% to 11% Loss	(e) No Change ±6%	(f) 6% to 11% Gain	(g) 12% to 25% Gain	(h) 26% to 50% Gain	(i) More Than 50% Gain
1	29.45	7.78	4.38	1.16	49.65	0.14	1.30	1.97	4.17
2	13.78	19.10	11.56	4.58	38.50	1.35	3.12	2.66	5.34
3	6.64	9.92	14.42	7.39	49.90	2.11	2.17	1.98	5.48
4	0.71	5.19	7.73	7.85	70.76	1.21	1.49	1.28	3.77
5	1.04	2.52	6.73	5.73	76.97	0.64	0.69	1.83	3.85
6	0.05	1.44	6.76	5.79	81.09	0.69	1.10	0.50	2.58
7	0.00	0.86	3.82	3.93	88.77	0.17	0.14	0.25	2.07
8	0.00	0.81	3.15	4.14	90.81	0.00	0.39	0.13	0.58
9	0.00	0.15	1.65	2.44	94.94	0.12	0.00	0.22	0.48
10	0.00	0.31	0.73	2.17	96.19	0.09	0.00	0.00	0.50

Notes:
% change = [(Present Value of Income with New York UI) - (Present Value Income with Canadian UI)]/ (Present Value Income with Canadian UI).
"Income" = earning + UI ; Present Value over 1981 to 1989 discounted to 1981 at 5.5%.

Unemployment Insurance and the Alleviation of Poverty

This section of the report uses microdata from the Luxembourg Income Study (LIS) to compare/contrast the role played by UI in alleviating poverty in Canada with the role of UI in poverty alleviation in five other affluent industrialized countries — Australia, Finland, Germany, Sweden and the United States. The Luxembourg Income Study is a set of internationally comparable microdata sets housed in Luxembourg but accessible to remote users via the internet. For each country included in this study, the most recent LIS data available are employed. Surveys thus date from the late 1980's or early 1990's.

We have chosen to analyze two countries regarded as having similar programs to our own and three which are viewed as having programs which are very different. Australia and the United States are generally categorized as having social programs which are similar to those of Canada (Esping-Andersen, 1990), though there are important differences across these countries in their Unemployment Insurance systems. Germany, Finland and Sweden are categorized as having very different programs from our own.

Program Surveys

How do UI programs differ across the countries studied? Key characteristics of any Unemployment Insurance program are: eligibility conditions, maximum durations, whether benefits are flat rate or are linked to previous earnings, and whether there is income testing. In Australia, men (16-65) and women (16-59) currently without employment who are willing and able to work are eligible for an income-tested benefit for as long as they remain unemployed. There is no requirement of previous work history. Benefit levels vary according to income, age, marital status and number of children and are available for as long as qualification conditions are met. The entire program is financed from general revenue.

In the United States, UI is paid through state programs, so there is some variation in eligibility requirements and benefit levels. In general, the maximum duration of benefits is 26 weeks, except in higher-unemployment regions where claimants may be eligible for up to 13 additional weeks of federally-funded 'extended benefits.' Previous wages are replaced at between 50 and 70 percent of average weekly pre-tax wages up to a state-determined maximum. The program is financed through a payroll tax on employers and benefits are taxable.

In Canada, eligibility for UI depends on past work history and on the local unemployment rate — fewer weeks of employment are required to be eligible for benefits in higher-unemployment areas. Similarly, the maximum duration of benefits depends both on previous work history and upon the local unemployment rate — duration increases as previous weeks of work increase or as the local unemployment rate goes up. However, the maximum duration of benefits is 50 weeks. In the LIS data, benefits were paid at 60 percent of previous pre-tax earnings, to a ceiling.[24] The program is primarily financed through premiums paid by employers and covered employees. Benefits are taxable.

24 Although replacement rates now vary between 55 and 60 percent, depending on income level and dependents, the 60 percent replacement rate was in effect in 1991, the year in which the Canadian LIS data (the Survey of Consumer Finances) were collected.

In Germany, the contributory UI program pays benefits at 68 percent of previous after-tax earnings for those with dependants (63 percent for those without). Benefits are not taxable. Eligibility depends upon work history and age. For example, workers aged less than 42 years must have contributed to UI for 24 months prior to their spell of unemployment. This entitles them to 12 months of benefit. Workers aged 55-65, on the other hand, are entitled to 32 months of benefits if they have contributed for 65 months before becoming unemployed. Thus, the German regular UI program grants long-time workers a very long duration of benefits. When benefits are exhausted, workers will be eligible for means-tested Unemployment Assistance for as long as they remain unemployed.

Means-tested unemployment assistance is available for individuals who are either ineligible for regular Unemployment Insurance benefits or who have exhausted their regular benefits. To qualify, individuals must have had at least one day of regular UI in the last year or have had 150 days of paid work. Benefits are paid at a rate of 58 percent of previous after-tax earnings for individuals with dependants (56 percent for those without) for an unlimited period of time. Unemployment Assistance benefits are not taxable, though there is a 100 percent taxback on any earnings.

Finland also provides both Unemployment Insurance and Unemployment Assistance. A basic, means-tested Unemployment Assistance benefit is available to anyone between the ages of 17 and 64 who is unemployed and actively seeking employment, though first-time employees or job-seekers must have been employed or actively seeking employment for at least 3 months. This benefit increases with additional children. It is available for an unlimited period of time.

Unemployment Insurance benefits, which are earnings related, are available to unemployed workers with at least 26 weeks of employment during the 24 months prior to loss of job. Replacement rates are a maximum of 90 percent of previous wage. Lower-wage workers receive a higher replacement of earnings than do higher-wage workers. Earnings-related benefits are payable for up to 500 days in 4 consecutive years (United States Department of Health and Human Services, 1992).

Finally, in Sweden, Unemployment Insurance is the responsibility of the trade unions and is administered through ‘Unemployment Insurance funds,’ though national legislation establishes rules which apply to all funds. To be eligible for UI, an individual must be unemployed and willing to accept suitable employment, have been a member of the appropriate Unemployment Insurance fund for at least twelve months, and must have worked 75 days in the past year. Benefits are then available for 300 days (or 450 days for those aged 55 and above) at a rate of 90 percent of previous earnings, to a ceiling.[25] UI is financed through employee and employer contributions to the UI funds. Individuals who are not members of a fund or who do not qualify for regular UI are entitled to a flat rate daily cash labour market assistance equal to about one-third of the maximum regular benefit (Ryden, 1993).

25 Since 1993, the replacement rate is 80 percent. However, the 90 percent replacement rate was in effect at the time the LIS data were collected and thus would be the relevant figure for assessing outcomes.

In summarizing important differences in UI programs across the various countries studied, a first point to make is that Finland, Sweden and Germany offer both Unemployment Insurance and Unemployment Assistance benefits. The Unemployment Assistance benefits are means-tested and available for an unlimited period of time. (Recall that the second-tier German benefits are still relatively generous.) Australia only provides an Unemployment Assistance style benefit which is means-tested but available for an unlimited duration. (All four countries also offer Social Assistance which does not have a job-search test.)

Canada and the United States only offer earnings-related Unemployment Insurance benefits. The United States has the shortest maximum duration for its earning-related benefits — 39 weeks of benefit in high-unemployment areas. Sweden and Canada offer UI benefits of roughly one-year, at maximum; Finland offers a maximum duration of about 2 years. The maximum duration of earnings-related UI benefits varies with age in Germany, from 1 year for younger workers to 32 months for older workers.

Replacement rates also vary across the countries. Replacement rates are 50 to 70 percent of previous earnings in the United States, 60 percent in Canada, 68 or 63 percent (for individuals with and without dependants) in Germany and 90 percent in Sweden.[26] However, there are ceilings on benefits paid in the United States, Canada and Sweden, so that higher-income individuals effectively receive lower replacement rates. There is no ceiling on benefits in Finland, though replacement rates are lower for higher-income individuals. There is no ceiling of any kind in Germany.

It is in terms of entrance requirements that the Canadian and United States Unemployment Insurance programs are relatively most generous. It is easier to qualify for Canadian or American earnings-related benefits than it is in any of the European countries. It is also easier to qualify for Canadian or American earnings-related benefits than it is to qualify for German Unemployment Assistance benefits (though the German Unemployment Assistance benefits are more generous than the Canadian or American Unemployment Insurance benefits). However, since no previous work history is required to obtain Unemployment Assistance in Australia, Finland or Sweden, this is a less stringent condition than is applied for Canadian or American benefits.

Statistical Results

Given some fairly significant differences across the countries in the structure of Unemployment Insurance programs, it is interesting to compare the role played by alternative UI systems in alleviating poverty among the unemployed. In keeping with the rest of this report, we focus our analysis on households in which the reference individual is less than 65 years and hence potentially a labour-force participant. Table 12 presents a baseline incidence of poverty for all households with a head less than 65 years, regardless of unemployment status. Poverty experience for this group is highest in the United States (20 percent) and lowest in Finland (9 percent).

26 Comparisons are difficult here since the United States and Canada pay benefits as a fraction of pre-tax earnings, then tax UI benefits. Germany pays benefits as a fraction of post-tax earnings, but does not tax UI. Recall, again, that both Canada and Sweden have lowered replacement rates since LIS data were collected.

Table 12
Unemployment and Poverty: Percentage of All Households with Heads Age Less Than 65

	Australia (1989)	Canada (1991)	Finland (1991)	Germany (1984)	Sweden (1987)	United States (1991)
Incidence of poverty among households in selected sample group	16	16	9	9	11	20
Fraction of households in which unemployment was reported by head or spouse	11	27	20	11	—	17
Incidence of poverty in households reporting unemployment	24	21	11	26	—	31
Fraction of households reporting unemployment who received UI benefits	46	73	59	61	—	43
Incidence of poverty among households receiving UI benefits	29	14	3	18	7	17
Incidence of poverty among households receiving UI, but with UI deducted from gross income	41	29	14	31	21	26
Incidence of poverty among households with unemployment but no UI benefits	20	43	23	37	—	41
Average UI benefit received, as a fraction of gross income	23	22	16	20	21	12
Ratio of all other transfers to UI benefit, for households receiving UI	1.99	0.79	3.59	0.89	8.22	1.69

Source: Luxembourg Income Study
Notes: A household is poor if gross equivalent family income is less than 50 percent median gross equivalent country income.

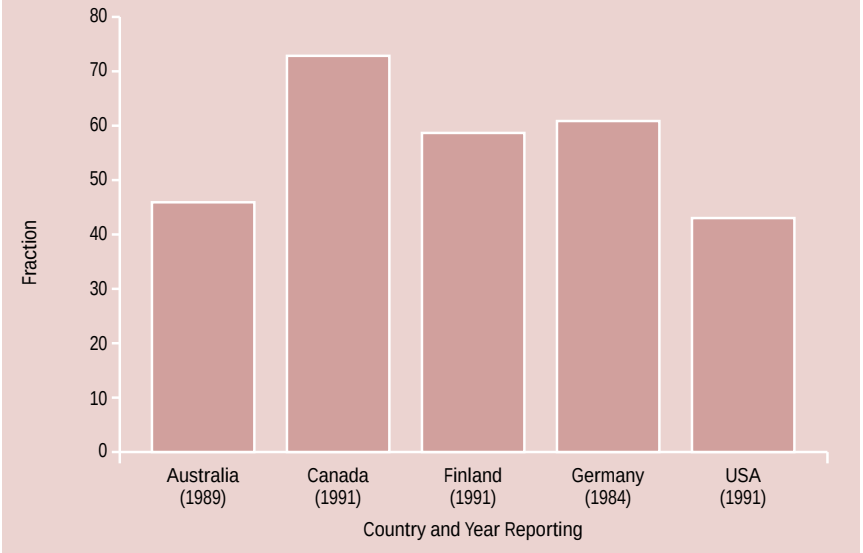
Next, notice that the unemployment problem is more pronounced in Canada than in the other countries studied — 27 percent of Canadian households had a head or spouse with at least one week of unemployment. Only 17 percent of United States households, 11 percent of Australian households and 11 percent of German households experienced any unemployment.[27]

To what extent does the experience of unemployment bring with it the experience of poverty? While we look worse in terms of the number of households with unemployment, unemployment does not as surely bring poverty with it in Canada as in some of the other countries. Only about 20 percent of Canadian households with unemployment were poor while about 30 percent of American households with unemployment were poor; about 25 percent of Australian and German households with unemployment were poor. On the other only about 10 percent of Finnish households with unemployment were poor.

27 The Swedish data provide very limited information on labour-force behaviour, so not all variables could be calculated.

Canada does better than any other country in providing Unemployment Insurance benefits to households with unemployment. While nearly three quarters of Canadian households with unemployment reported the receipt of some UI benefits, only 60 percent of Finnish and German households and less than half of Australian and American households reported the receipt of benefits.

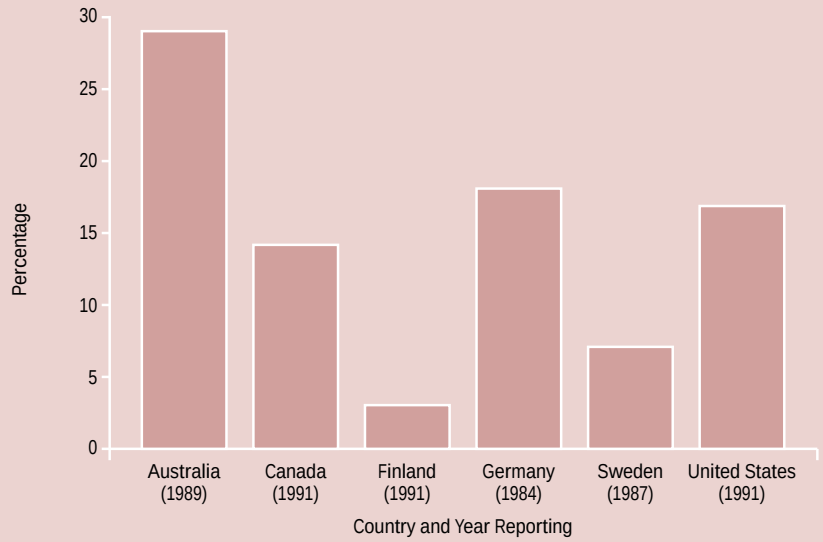
Figure 7
Fraction of Households Reporting Unemployment Who Recieved UI Benefits



Except in Australia, households with unemployment who receive UI benefits are much less likely to experience poverty than are households without UI. In Canada, Germany and the United States, about 40 percent of households with unemployment but without benefits are poor while only about 15 percent of unemployed households with benefits were poor. In part, households without benefits are more likely to be poor because programs in these countries are structured to pay UI to those with better past labour-market experiences. In Australia, on the other hand, UI is structured so that poorer people receive benefits while richer ones do not. Thus, households with unemployment but without UI are less likely to be poor than are households with UI.

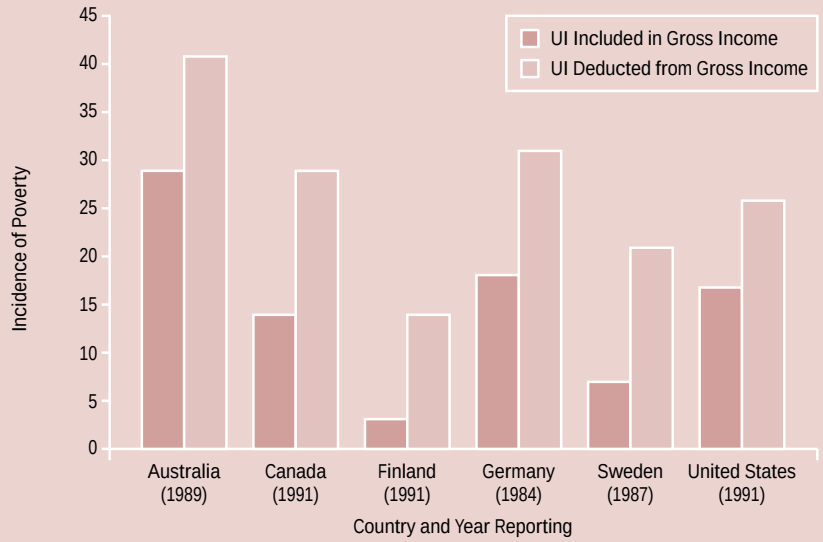
But, while it is true in most countries that UI is available for those individuals with more successful past labour-market records, it is certainly still the case that when unemployment strikes, UI helps to alleviate poverty which would otherwise be experienced. In all countries, the receipt of UI helps reduce economic hardship for many families who experience unemployment. In Canada, the incidence of poverty among the unemployed who receive benefits would double if we took away their benefits (an increase of 15 percentage points). In terms of the total percentage points reduction in poverty which would otherwise have occurred, the Canadian program has one of the best records. However, since the amount of poverty which would have occurred without UI is higher in Canada than in some of the other countries, we end up with a higher incidence of poverty among the

Figure 8
Incidence of Poverty Among Households Recieving UI



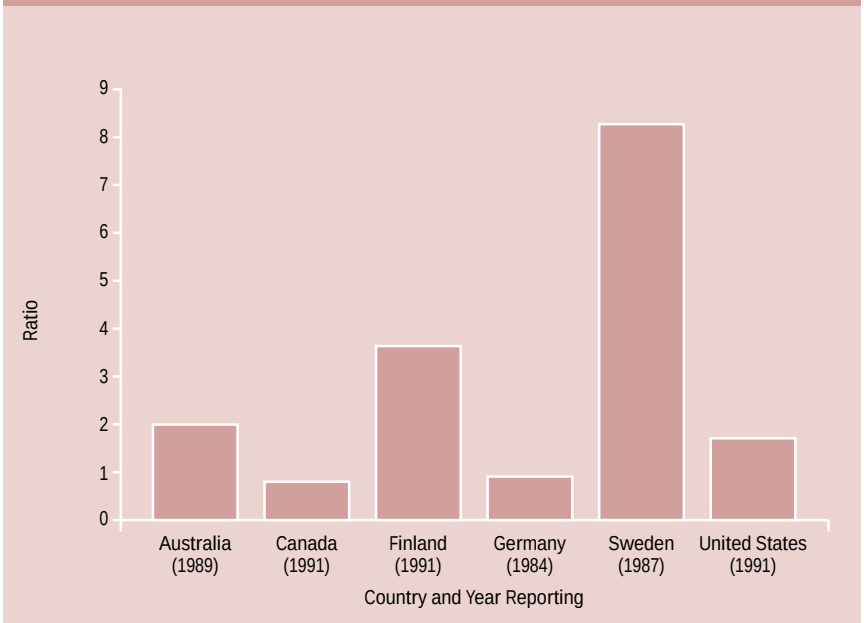
unemployed who receive UI (14 percent of such households are poor) than, for example, in Finland (3 percent are poor) or Sweden (7 percent are poor). Australia, which has only a means-tested UI system, leaves by far the largest number of households with unemployment in poverty (29 percent).

Figure 9
Incidence of Poverty Among Households Recieving UI - Including and Excluding UI from Gross Income



One final important point to take from Table 12 is that relative to other transfers available in Canada, UI is extremely important — much more so than in the other countries studied. If we calculate the ratio of all other transfers received to the amount of UI received by households receiving UI, this ratio is only less than one in Canada (0.8) and in Germany (0.9). In all other countries, households who are receiving UI are receiving *more* in the form of other transfers than they are receiving as UI.

Figure 10
Ratio of All Other Transfers to UI Benefits for Households Receiving UI



Tables 13 through 16 repeat the basic analysis of Table 12 for different demographic groups. Tables 13 and 14 contrast the experiences of younger and older households. Tables 15 and 16 contrast the experiences of households with and without children.

Consider, then, the relative experiences of younger and older households across the countries. In all cases, the younger households are much more likely to experience unemployment and are much more likely to be poor when unemployed than are the older households.[28] There are, however, interesting differences across the countries in whether the younger unemployed are more or less likely to receive UI benefits. In Canada, the United States and Finland, older unemployed workers are more likely to receive benefits. For example, in Canada, 75 percent of older unemployed households receive benefits; 62 percent of younger unemployed households receive benefits. In Australia and in Germany, older and younger households are about equally likely to receive UI if unemployed.

28 Some caution must be used in interpreting the figures for younger households in Finland and Sweden where the LIS data are derived from administrative tax data. In these data, young adults who are actually still living with their parents are treated as independent households, thus over-stating the number of young households who are poor.

Tables 15 and 16 compare focus on households with and without children. We choose this break-down to highlight differences across countries in the relative importance of UI in the over-all social security framework. In the Scandinavian countries, benefits for children are much more extensive than they are, say in Canada or in the United States. Thus, we would expect UI to be relatively much less important for families with children in the Scandinavian countries. And, the final row of Table 15 shows this to be the case. For households with children that receive Unemployment Insurance, other transfers received are 4 times as important in Finland and fifteen times as important in Sweden. In Canada, on the other hand, families with children who receive UI receive only about the same amount of other transfers.

…while poverty alleviation may not be the principal goal of UI in Canada, UI nonetheless plays an extremely important role in reducing poverty associated with unemployment.

Evidence presented in this section of the report clearly indicates that while poverty alleviation may not be the principal goal of UI in Canada, UI nonetheless plays an extremely important role in reducing poverty associated with unemployment. UI benefits are received by a larger fraction of the unemployed than in any of the other countries studied, which is very important for reducing poverty since households with unemployment who do not receive UI experience extremely high rates of poverty (43 percent in Canada).[29] Further, if UI benefits were taken away from households receiving them now, the incidence of poverty among the unemployed would double.

While it is thus clear that our UI system is helping reduce the economic hardship associated with unemployment, it is worth noting that we still leave 14 percent of unemployed households in poverty while Sweden and Finland leave only 7 and 3 percent of unemployed households poor. However, this difference is perhaps not so much due to differences in Unemployment Insurance systems as to differences in the over-all social security framework. The Scandinavian countries offer other transfer programs which are much more generous than our own (especially those for families with children).

Perhaps the most important point to take from this survey is that UI as a poverty-alleviation tool appears to be relatively much more important in Canada than in the other countries studied. In Canada, for families receiving UI, it is the most important transfer they receive. This is not true for any other country, except Germany. Elsewhere, families receiving UI receive more in the form of other transfers. If UI were to be cut in the other countries, families would have more in the way of back-up income support than would be true in Canada. Thus, Canadians have to be very careful in making changes to UI, given its very central role in the income security framework.

29 However, remember that Canadian data are for 1991. Entry requirements for Canadian UI have since been made more difficult to satisfy.

Table 13
Unemployment and Poverty: Percentage of Households with Heads Age less than 25

	Australia (1989)	Canada (1991)	Finland (1991)	Germany (1984)	Sweden (1987)	United States (1991)
Incidence of poverty among households in selected sample group	27	37	32	28	32	42
Fraction of households in which unemployment was reported by head or spouse	24	37	26	21	—	25
Incidence of poverty in households reporting unemployment	33	43	28	44	—	47
Fraction of households reporting unemployment who received UI benefits	44	62	34	63	—	21
Incidence of poverty among households receiving UI benefits	30	30	5	39	13	14
Incidence of poverty among households receiving UI, but with UI deducted from gross income	41	41	23	39	32	33
Incidence of poverty among households with unemployment but no UI benefits	38	66	40	55	—	55
Average UI benefit received, as a fraction of gross income	22	26	14	28	23	12
Ratio of all other transfers to UI benefit, for households receiving UI	1.01	1.15	2.36	0.76	7.20	0.31

Source: Luxembourg Income Study
Notes: A household is poor if gross equivalent family income is less than 50 percent median gross equivalent country income.

Table 14
Unemployment and Poverty: Percentage of Households with Heads Age 25-65

	Australia (1989)	Canada (1991)	Finland (1991)	Germany (1984)	Sweden (1987)	United States (1991)
Incidence of poverty among households in selected sample group	14	14	6	8	5	18
Fraction of households in which unemployment was reported by head or spouse	9	26	19	11	—	16
Incidence of poverty in households reporting unemployment	20	19	9	24	—	29
Fraction of households reporting unemployment who received UI benefits	42	75	63	61	—	46
Incidence of poverty among households receiving UI benefits	28	12	3	16	4	18
Incidence of poverty among households receiving UI, but with UI deducted from gross income	41	27	14	30	17	25
Incidence of poverty among households with unemployment but no UI benefits	14	38	19	35	—	38
Average UI benefit received, as a fraction of gross income	23	22	16	20	20	12
Ratio of all other transfers to UI benefit, for households receiving UI	2.47	0.75	3.68	0.90	8.65	1.77

Source: Luxembourg Income Study
Notes: A household is poor if gross equivalent family income is less than 50 percent median gross equivalent country income.

Table 15
Unemployment and Poverty: Percentage of Households with Children, and Heads Age less than 65

	Australia (1989)	Canada (1991)	Finland (1991)	Germany (1984)	Sweden (1987)	United States (1991)
Incidence of poverty among households in selected sample group	19	18	5	9	5	27
Fraction of households in which unemployment was reported by head or spouse	10	29	20	12	—	19
Incidence of poverty in households reporting unemployment	29	24	8	31	—	41
Fraction of households reporting unemployment who received UI benefits	58	75	64	69	—	43
Incidence of poverty among households receiving UI benefits	41	18	4	24	3	26
Incidence of poverty among households receiving UI, but with UI deducted from gross income	53	30	16	40	14	33
Incidence of poverty among households with unemployment but no UI benefits	19	42	17	47	—	53
Average UI benefit received, as a fraction of gross income	24	19	13	19	14	10
Ratio of all other transfers to UI benefit, for households receiving UI	1.92	1.20	3.78	1.13	14.60	1.94

Source: Luxembourg Income Study
Notes: A household is poor if gross equivalent family income is less than 50 percent median gross equivalent country income.

Table 16
Unemployment and Poverty: Percentage of Households without Children, and Heads Age less than 65

	Australia (1989)	Canada (1991)	Finland (1991)	Germany (1984)	Sweden (1987)	United States (1991)
Incidence of poverty among households in selected sample group	13	15	10	9	14	15
Fraction of households in which unemployment was reported by head or spouse	11	26	19	11	—	15
Incidence of poverty in households reporting unemployment	20	20	13	22	—	21
Fraction of households reporting unemployment who received UI benefits	48	73	56	56	—	43
Incidence of poverty among households receiving UI benefits	21	25	3	13	24	9
Incidence of poverty among households receiving UI, but with UI deducted from gross income	34	27	13	23	24	19
Incidence of poverty among households with unemployment but no UI benefits	20	43	26	32	—	29
Average UI benefit received, as a fraction of gross income	22	25	19	22	24	14
Ratio of all other transfers to UI benefit, for households receiving UI	2.03	0.58	3.41	0.67	5.28	1.44

Source: Luxembourg Income Study
Notes: A household is poor if gross equivalent family income is less than 50 percent median gross equivalent country income.

4. Assets and Unemployment

Individuals with unemployment who do not receive Unemployment Insurance face a very high risk of being poor.

This section of the report illustrates that individuals with unemployment who do not receive Unemployment Insurance face a very high risk of being poor. The second part of this section indicates that poverty rates among the unemployed who do receive UI would double if they lost their UI entitlements (given no other changes in behaviour or transfers). Thus, while relief of poverty is not the main goal, UI in Canada does seem to serve an important anti-poverty function. However, if it were true that people have sufficient assets to meet their needs at or above a poverty level standard of living through a spell of unemployment, then the purely income-based assessments of Sections 1, 2 and 3 would exaggerate the importance of UI in alleviating hardship.

Evidence from the United States (Ruggles and Williams, 1989) suggests that people in the United States do not have the assets to see them through even fairly short spells of low income. What is the evidence for Canada?

We use microdata from the 1983/84 Statistics Canada Survey of Assets and Debts to answer the following question:

> *"Suppose you lost your job tomorrow. Would you have enough liquid assets to cover consumption needs at a poverty level standard of living for a single adult, for 21.6 weeks (the average interrupted duration of a spell of unemployment in 1984)?"*

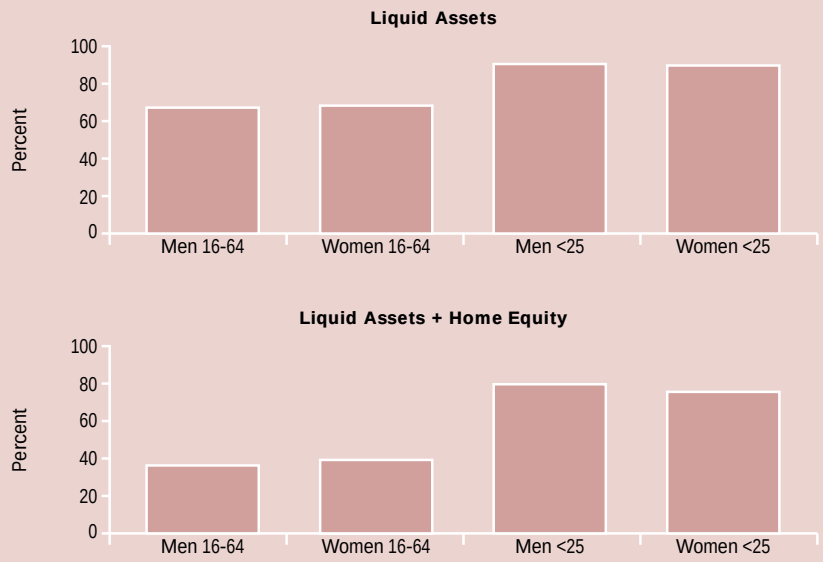
Table 17
Income Deciles and Net Liquid Assets
Percentage of Males and Females Aged 16 to 64 in Households with Assets > $3,020 1983/84

	Males		Females	
Deciles	(a) Net Liquid Assets	(a) + Available Home Equity	(b) Net Liquid Assets	(b) + Available Home Equity
Poorest 10%	50.39	80.98	33.94	66.34
11-20	33.15	63.16	30.15	56.92
21-30	20.52	45.46	28.06	56.74
31-40	19.41	44.85	30.51	61.82
41-50	25.49	54.68	33.12	63.95
51-60	25.19	59.45	30.89	61.30
61-70	29.43	63.95	29.67	55.50
71-80	34.99	69.11	29.93	60.69
81-90	36.88	75.37	31.95	60.90
Top 10%	46.53	81.76	39.16	67.15
Average	32.20	63.88	31.7	61.13

Notes:
$3020 = 1981 single person poverty line for 21.6 weeks (the average interrupted duration of a spell of unemployment in 1984)
A survey of local banks provided the following rule-of-thumb formula for second mortgage credit limits: credit limit = 75% of market value of house less balance outstanding on first mortgage.

Table 17 indicates that relatively few men (aged 16 to 64) live in households with sufficient assets — only 32 percent over all. Of course, available assets vary by income group, with higher-income groups in general having more assets. Still, less than half of men in the highest income decile would have the resources available to carry them through an unemployment spell of average duration, even at fairly low levels of consumption. (The exception is the bottom income decile, with relatively high access to savings — we suspect that early retirees may be inflating the average asset holdings of this decile.)

Figure 11
Individuals Without Enough Financial Assets to Pay for an Average Duration of Unemployment at a Poverty Line Standard of Living



If we add available home equity to net liquid assets (i.e., if we assume that people take out the maximum second mortgage on their home which they are likely to be able to get), over half (64 percent) of all men would be able to survive a spell of unemployment without other income support.

Over-all results for women are comparable — about 32 percent of women live in households with sufficient liquid assets to see them through a spell of unemployment of average length; about 61 percent could survive if they borrowed against home equity. One difference from the male results, however, is that women at the bottom and top of the income distribution are not as likely to have enough assets than are other women in other income groups.

Of course, some groups in society are more likely to have assets than are others. Young people (less than 25 years), for example, are very unlikely to have significant liquid assets or significant home equity against which they can borrow. Only about 10 percent of young men and about 13 percent of young women would have the savings needed to survive a spell of unemployment of average duration. Adding borrowing against home equity helps, but not by as much as it does for older individuals — about 20 percent of young men and about 25 percent of

young women would then have basic resources through a spell of unemployment without any additional assistance.

Thus far we have been asking whether the average individual has sufficient assets to survive a spell of unemployment, should it occur. We now ask whether individuals who actually experienced unemployment had sufficient assets to survive an unemployment spell of average duration. In Table 20, it is apparent that vulnerability is even greater when we focus on the group of people who actually experienced unemployment. Only 19 percent of men and 23 percent of women had sufficient liquid assets to get through an average spell of unemployment at poverty consumption standards. Just over half of both men and women could manage at this level if they borrowed as much as possible against their home equity.

Notice, as well, that the evidence discussed above refers to providing for a single person at a poverty-level standard of living. Consumption needs would increase if the individual experiencing unemployment has dependent children, for example.

This evidence suggests that Canadians are extremely vulnerable. A long spell of unemployment could cause serious deprivation in the absence of any financial assistance through Unemployment Insurance.

Table 18
Income Deciles and Net Liquid Assets
Percentage with > $3,020 1983/84
Under 25 Years

	Males		Females	
Deciles	(a) Net Liquid Assets	(a) + Available Home Equity	(b) Net Liquid Assets	(b) + Available Home Equity
Poorest 10%	1.52	9.09	8.11	25.23
11-20	3.51	14.04	14.55	30.91
21-30	10.61	12.12	19.39	31.63
31-40	12.31	20.00	5.61	16.82
41-50	10.26	19.23	7.00	18.00
51-60	6.25	17.19	7.00	14.00
61-70	13.43	23.88	13.89	24.07
71-80	11.11	28.57	17.00	28.00
81-90	16.39	36.07	15.31	30.61
Top 10%	14.06	25.00	19.27	29.36
Average	9.95	20.5	12.71	24.86

Notes:
$3020 = 1981 single person poverty line for 21.6 weeks (the average interrupted duration of a spell of unemployment in 1984)

Table 19
Income Deciles and Net Liquid Assets
Percentage with > $3,020 1983/84
25-64 Years

	Males		Females	
Deciles	(a) Net Liquid Assets	(a) + Available Home Equity	(b) Net Liquid Assets	(b) + Available Home Equity
Poorest 10%	22.01	54.43	25.09	63.55
11-20	17.76	45.56	29.16	63.45
21-30	20.97	52.64	30.24	65.23
31-40	24.68	58.70	33.18	65.46
41-50	27.45	61.80	33.19	66.81
51-60	29.48	64.98	34.07	67.25
61-70	31.73	69.20	31.26	64.24
71-80	37.15	74.30	33.48	66.74
81-90	42.08	80.20	35.40	65.04
Top 10%	47.59	81.80	40.97	70.93
Average	30.09	64.36	32.60	65.87

Notes:
$3020 = 1981 single person poverty line for 21.6 weeks (the average interrupted duration of a spell of unemployment in 1984)

Table 20
Income Deciles and Net Liquid Assets
Percentage of Males and Females Aged 16 to 64 with Unemployment Who Have Household Assets > $3,020 1983/84

	Males		Females	
Deciles	(a) Net Liquid Assets	(a) + Available Home Equity	(b) Net Liquid Assets	(b) + Available Home Equity
Poorest 10%	21.01	55.80	15.29	54.12
11-20	15.00	53.33	23.81	55.95
21-30	19.12	59.56	27.03	59.46
31-40	15.91	46.21	20.45	56.82
41-50	18.64	58.47	23.17	52.44
51-60	10.57	45.53	27.40	46.58
61-70	13.82	47.15	26.09	47.83
71-80	22.95	57.38	26.39	54.17
81-90	24.03	59.69	20.27	52.70
Top 10%	29.91	62.39	18.57	45.71
Average	19.10	54.55	22.85	52.58

Notes:
$3020 = 1981 single person poverty line for 21.6 weeks (the average interrupted duration of a spell of unemployment in 1984)
A survey of local banks provided the following rule-of-thumb formula for second mortgage credit limits: credit limit = 75% of market value of house less balance outstanding on first mortgage.

5. Conclusion

Throughout the 1980s and 1990s, Canadians have had very high rates of unemployment and UI reaches a significant proportion of households with unemployment — more than in most other countries.

Perhaps the major conclusion we draw from this research is the centrality of UI to the economic security of Canadians. Throughout the 1980s and 1990s, Canadians have had very high rates of unemployment and UI reaches a significant proportion of households with unemployment — more than in most other countries. In Canada, unlike any other country except Germany, UI is the most important form of transfer for these households. Thus, given that we rely to a larger degree than most on our UI system, we must be particularly careful about which changes we make.

A second important lesson to be learned from this research is that while poverty alleviation is not usually regarded as the most important goal of UI, UI is nonetheless an important anti-poverty tool. Poverty rates for those currently in receipt of UI would double in Canada if benefits were taken away.

The unemployed who do not receive any UI are very likely to be poor. In Canada, it is people with the worst labour market outcomes who are least likely to have UI. And, given current trends toward increased non-standard employment, we need to think carefully about whether we continue to exclude non-standard employment from UI coverage. As the percentage of the labour force in self-employment increases, this will mean that an increasing percentage of the labour force is not covered by UI (and Social Assistance expenditures will climb). On the other hand, of course, extending coverage would increase UI expenditures and pose new problems of administration for a system which has been, up to now, based on the standard employment relationship.

Finally, the evidence is fairly clear that the liquid asset holdings of Canadian households - particularly of those households that experience unemployment - is rarely sufficient to finance an average duration unemployment spell, at a poverty line level of living. Although it could be the case that, in the absence of UI, precautionary saving would increase in the long run, savings will never be able to fill the consumption gap for young workers (who have not had the time to accumulate wealth) or the workers who have multiple unemployment spells (and have deleted their savings in their initial unemployment spell). Currently, the level and distribution of household assets certainly means that Canadian households would face a significant problem of adjustment if UI were no longer available, or only available in significantly diminished amount, to finance consumption during periods of unemployment.

This study has used a micro-simulation methodology because the impacts of UI on the labour market are many, and they interact in complex ways. It has used comparative international data in order to access the relative significance of UI compared to the experience of other nations. Since the reason for the existence of UI is to increase the economic security of Canadian workers, it has looked at the asset holdings of Canadians who depend on UI. We hope that proposed future amendments to UI will also examine these issues.

Appendix A: Logical structure of the Micro-Simulation Model

Figure A.1 Logical Structure of the Micro-Simulation Model

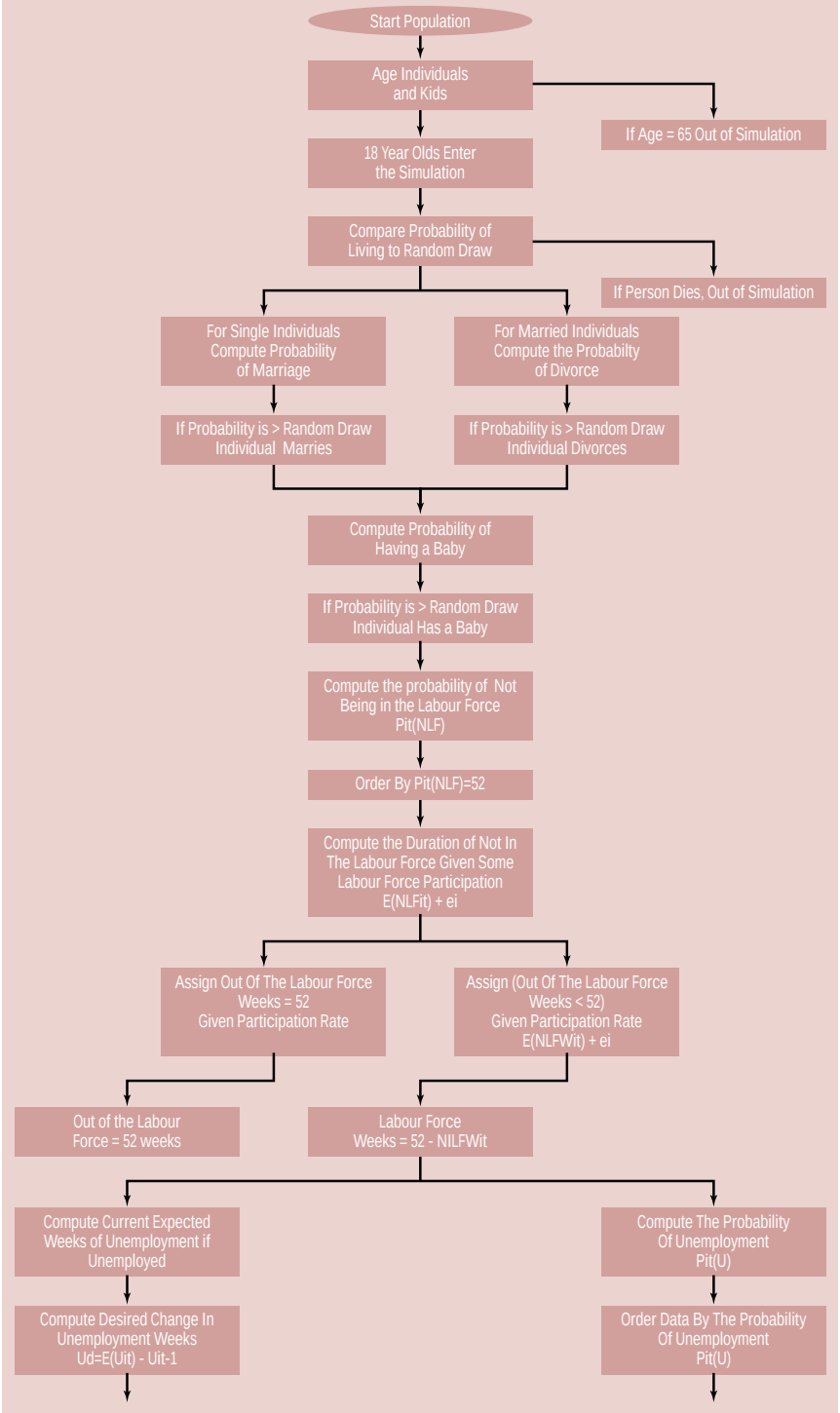
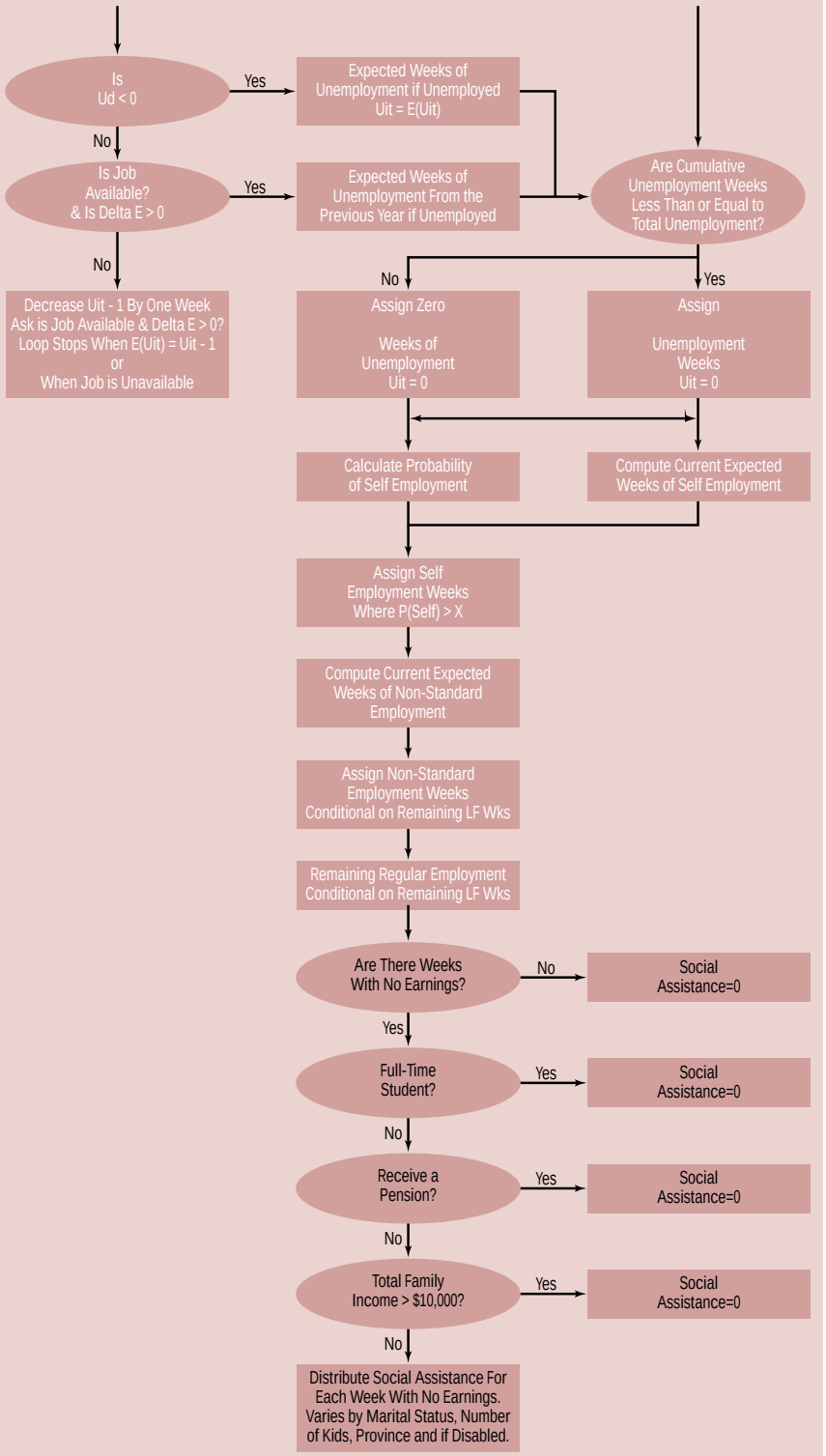


Figure A.1 (continued)



Structure of the Model

In micro-simulation, it is important to model accurately the correlation over time in the behaviour of individuals — in the present context, the likelihood that unemployment or labour force withdrawal will increase the future probability or duration of unemployment, or the probability of future labour force withdrawal. Since Canada does not have a representative longitudinal panel of microdata which could be used to estimate the correlation of labour market behaviour for every year 1981-1989, this study uses the Labour Market Activity Survey of 1986/87 to estimate the structural determinants of labour force participation, unemployment incidence, unemployment duration and constrained behavioural response. Previous year's labour market experience is included as a determinant of current year's labour market outcomes.

Since the interest in this paper is in the distributional implications of social transfers, we want to retain information on the net assets of individuals, hence the Assets and Debts Survey (1984) of Statistics Canada is used for the purposes of simulation. Since both the Labour Market Activity Survey and the Asset and Debts Survey were drawn as supplementary surveys from the same sampling frame (that used for the Labour Force Survey) and since many variables are identically specified in both surveys, the behavioural relationships estimated using the LMAS can be used to simulate the behaviour of the Asset and Debts Survey sample over time.

However, since the public use sample of the 1986/87 LMAS which Statistics Canada makes available does not link the behaviour of individuals within households, it is not possible to model accurately the inter-dependence of labour market behaviour within families.[30] Since the Asset and Debts Survey was administered in 1983, it is necessary to back-cast the data to a 1981 base (the starting year for the cycle we will study), adjusting employment earnings and asset values for inflation and observed unemployment durations to accord with observed 1981 data.

We want to ensure that our results are not overly influenced by the idiosyncrasies of a few outlying cases, hence we exclude individuals earning less than $50 per week or more than $3,000 weekly. Subject to this exclusion, we take observed weekly wages in 1983 as a measure of potential earnings. We impute an expected wage to all individuals without observed wages, (correcting appropriately for sample selection bias). All nominal dollar amounts are deflated to 1981 constant using the consumer price index. Real weekly earnings of each individual are adjusted each year by the average change in real weekly earnings actually observed during the 1981 to 1989 period.

In the simulation model, as in real life, there is a positive probability that an individual will not participate in the labour force in any given year and a positive probability that an individual will not find any work, even if they are labour force participants for some or all of the year. Hence, the model generates, each year, a fraction of the population with zero earnings. To reproduce 1981 aggregates, the model is "run" for two years previous (at an assumed constant unemployment of

30 Future research will use the 1988-90 LMAS in order to take into account household influences on individual behavioural response.

7.0 percent) in order to generate 1981 estimates. Individuals may move into or out of the labour force, and earnings may be zero in one year (perhaps with receipt of Unemployment Insurance from a previous year's entitlement) but positive in subsequent years. The simulation model works by first asking whether an individual is entirely outside the labour force and then assigning each labour force participant a particular number of weeks outside the labour force, based on demographic characteristics, labour market history, the regional unemployment rate and the weeks required to qualify for Unemployment Insurance in that local area. Notice that weeks outside the labour force are effectively aggregated into a single 'spell'. A logit model predicts the probability of being outside the labour-force for 52 weeks (estimated using the full sample) and a tobit model estimates weeks of labour force participation (estimated using the sample of individuals with some labour-force attachment during the year).[31] Individuals are assigned a probability of not being in the labour force at all during the year and non-participation is assigned to those individuals with highest probability of non-participation, up to the frequency actually observed in the data.

We always estimate behavioural models separately for men and for women because of the differential importance of labour force entry and retirement. We estimate these models of labour-force participation for three age groups (16-24, 25-54, 55-64) and use them to predict expected weeks of labour force withdrawal for each individual. Random error terms drawn from a distribution with variance consistent with the observed unexplained variance are added to the conditional expectation of participation and of weeks of withdrawal, in order to preserve the underlying stochastic element in labour force participation. Those who remain in the labour force are assigned out of labour force weeks up to a maximum of 51 weeks.

We assume that in the real world the underlying stochastic element consists of permanent and temporary features. The former can be regarded as the persistent part of the total unobserved characteristics of an individual. In the model this is assumed to be 40 percent of the individual random error term generated for each behavioural equation. This component is therefore generated once and kept constant in each simulation year. The temporary component, however, corresponds to the remaining 60 percent of the error term and is generated separately in each year. The sum total of the permanent and temporary components therefore gives the total value of the stochastic element. Further note that random error terms are initially generated for each individual in all behavioural equations and in all simulation years. These random error terms are then retained and used in alternative policy simulations. Using the same individual random error terms in all simulations therefore allows us to compare alternative policy scenarios directly since the same distribution of "luck" (both permanent and temporary) is present in all simulations.

Given participation in the paid labour force, a logit model is used to predict the probability that an individual will experience unemployment in a given year. For

31 That is, within a year, no-one can be outside the labour market for more than fifty-two or less than zero weeks. We use the SAS LIFEREG procedure.

those individuals who experience unemployment, an accelerated failure time model of annual unemployment experience is estimated,[32] correcting for the bias which would otherwise arise as a result of the fact that we do not observe the completed duration of unemployment spells in progress at the end of the year. Adding a stochastic term which consists of temporary and permanent components gives a predicted annual experience of unemployment, conditional on experiencing unemployment, for each individual in the sample. Weeks of employment are obtained as a residual.

Up to this point in the simulation model, we estimate the determinants of weeks of non-participation in the labour market, unemployment and employment conditional on a particular specification of Unemployment Insurance legislation. However, since we emphasized the issue of behavioural response to changes in the incentives implicit in Unemployment Insurance legislation, we predict that many individuals will want to change their behaviour response to any changes in Unemployment Insurance — but will they be able to?

Even if, for example, a cut in the benefit/wage replacement ratio means that an individual wants to spend less time unemployed (i.e., more time employed), will they be able to get additional weeks of work? After all, search theory would predict that although a decrease in Unemployment Insurance generosity may imply a decrease in an individual's reservation wage and an increase in the probability of acceptance of employment, the arrival of job offers continues to be a stochastic event. Some people will remain unemployed, despite their lower reservation wage.

In our model, we presume that additional weeks of unemployment are easy to get (individuals can simply quit their jobs), but workers may be constrained in getting additional weeks of employment. We calculate for each individual this year's expected weeks of unemployment conditional on this year's incentives, personal characteristics, work history, labour market environment, and chance. If expected weeks of unemployment this year exceed weeks of unemployment from last year, we assign the individual his/her expected weeks of unemployment. However, if expected weeks of unemployment this year are less than last year's weeks of unemployment, the individual wants to increase his/her supply of labour, but he/she may not be able to obtain the additional weeks of employment.

In the LMAS, respondents are asked whether or not they were satisfied with their weeks of employment and if they were not satisfied, whether they wanted additional weeks of work.[33] We take this as evidence of the presence of a constraint on available additional weeks of work and we estimate the probability that an individual with given personal and labour market characteristics, and a given number of weeks of work, will be constrained in obtaining an additional week of work. Those who want to increase their labour supply may be able to get one more week of work, and given that they have been successful in obtaining one additional week of employment, they face a certain probability of being able to

32 Again, all weeks of unemployment are aggregated into a single 'spell' which we call 'annual unemployment experience'.

33 In practice, the LMAS coding is more complex than this, since search behaviour after the termination of employment in any given year is taken as a behaviourial indicator of desire for additional employment.

get a second additional week of employment, etc. We compute, for all individuals with an expected decrease in unemployment, the probability that they will encounter constraints in getting one more week of work. Those who are not constrained from getting an additional week of work, are assigned a one week reduction in unemployment and we then ask, is this individual constrained in getting a second week of additional work? We proceed in this way until the individual has either reached his/her expected additional employment or encountered a constraint on obtaining an additional week of work.

The micro-simulation model is embedded within a changing macroeconomic environment by allowing the macroeconomic unemployment rate to change over time and calculating the associated aggregate weeks of unemployment. Individuals are ordered in descending order of the probability of experiencing unemployment in a given year and the cumulative sum of unemployment weeks is calculated across individuals. Unemployment is assigned to those with the highest probability of experiencing unemployment, up to the point where the total number of unemployment weeks experienced equals the aggregate unemployment experience for the year. The maintenance of a stochastic element with permanent and temporary components in each equation serves to ensure that the simulation model retains some of the dynamic change of real world labour markets, while the deterministic component of the structural equations and the inclusion of lagged labour market experience as a determinant of current labour market outcomes serves to introduce the period to period correlation of outcomes which is also characteristic of the real world.

Finally, the changes in the aggregate unemployment rates under alternative UI systems are also accounted for. The impact of Unemployment Insurance on aggregate unemployment is a hotly contested empirical issue in Canada. Myatt (1993) presents a summary of 14 published studies on the impact of the liberalization of Unemployment Insurance in 1971. As he notes,"Of these studies, seven found a significant positive effect [of Unemployment Insurance on aggregate unemployment], five found no significant effect and two found no significant effect in seven out of ten provinces (it is worth noting that these latter studies disagree on which three provinces have the significant positive effect…). A more evenly divided result could not be imagined.' (1993:12)

A 'queuing model' of unemployment is consistent with those macroeconomic studies which find no statistically significant impact of Unemployment Insurance variables on aggregate unemployment — its interest lies in its indication that changes in the relative incidence of unemployment *do* have distributional implications, even though the aggregate rate of unemployment is constrained to be unaffected by changes in micro-behaviour.

In this paper, we assume that reductions in the generosity of Unemployment Insurance *do* coincide with reductions in the unemployment rate. Our benchmark is the presumption that there was a 0.6% increase in the unemployment rate due to the introduction of more generous UI regulations by the Unemployment Insurance Act in 1971 (as estimated by Grubel Maki, and Sax, 1975).

In order to be able to extrapolate the effects of changes in the UI system on aggregate unemployment rates we look at the behaviour of an hypothetical

claimant who follows a repeated cycle of working the minimum required weeks in order to collect the maximum benefits under alternative UI systems. In the pre-1970 system such an individual could work for 15 weeks, followed by unemployment for 16 weeks, of which 15 would be on UI claim. Pro-rating the waiting period of 1 week over the entire unemployment spell, each week of work generates (15/16) weeks of claim, at a 50% benefit/wage ratio — i.e. $ 0.468 per insurable dollar earned.

The 1971 revisions cut the weeks of work required to 8, raised the replacement rate to 66 percent, increased the waiting period to 2 weeks and paid benefits for up to 26 weeks (if unemployment exceeded 5 percent) — a maximal claimant could work 8 weeks and be unemployed for 28 and make [(26/28) * (26/8) * (0.66)] = $1.99 per insurable dollar earned in 1972. Therefore, the change in the UI generosity in the post-1971 period compared to the pre-1971 period is about 323% [$\frac{1.99 - 0.47}{0.47}$]. Assuming that this increase in UI benefits lead to a 0.6 percent increase in the unemployment rate due to the response of our hypothetical individual (see Grubel, Maki and Sax, 1975), one can calculate the effect of UI policy changes on the unemployment rate (U) as follows:

Percentage change in U = (a/b) x 0.6 percent,

where *a* = dollar change in UI benefits for a given change in the regulations, and *b* = dollar increase in the UI benefits in the 1971/1972 period, which is $1.42.

In New York State, in 1992, the entrance qualification of 40 weeks work in the last 2 years, 1 week waiting period and maximum 26 weeks of benefits at 50% replacement implies that each dollar of insurable earnings could generate (for the maximal client):

*[(26/20) * (26/27) * (0.5)] = $0.625 in UI benefits.*

In the 1994 Canadian system, the minimum entrance requirement of 12 weeks, 2 week waiting period, maximum benefit period of 32 weeks [for a 12 week employment spell, in a high unemployment region] and 55 percent replacement rate imply that the maximal client gets $1.38 per dollar of insurable earnings, i.e. [(32/34) * (32/12) * (0.55)].

It has to be emphasized that measuring the generosity of the system by its impact on the maximal client is likely to overstate the impact of changing from the 1994 system to the New York regime. Only a small fraction of Canadians live in the regions where the minimum entrance qualification and maximum regional benefits apply, and most claimants do not exhaust their claim. However, to err on the side of overstating the benefits of cutting UI, we use this methodology to pro-rate the change in the aggregate unemployment rate.

On this basis, shifting to a New York system from the 1994 Canadian system would represent a cut in benefits which is

$$\left[\frac{1.38-0.625}{1.42}\right] = 53\%$$

of the size of the 1971 UI revisions. If the 1971 revisions caused a 0.6 percent increase in the unemployment rate, switching to a New York State system might cause *[(0.6) * (0.53)] = 0.318* percent drop in unemployment. On this basis, we

simulate the earnings and UI benefits of individuals under the 1994 Canadian system at the historic unemployment rates of 1981 to 1989 and subtract 0.318 percentage points for the simulations of the New York system.

Although the Texas system of Unemployment Insurance is highly complex, comparative simulation is made easier by our assumption of constant weekly wages which simplifies calculation of "weekly benefit amount" from the quarter of highest earnings. We summarize the Texas system as having an entrance requirement of 20 weeks, waiting period of 1 week, and a maximum benefits period of 26 weeks at 52 percent of insurable earnings. Maximum insurable earnings are lower at $444 (U.S.) in Texas compared to $600 (U.S.) in New York. If we calculate that a dollar of earnings for a maximal client generates *[26/20 * 26/27 * (0.52)] = $0.651* in UI benefits we get the answer that the Texas system is approximately the same as New York, for someone earning less than maximum insurable earnings. However, to allow for the lower ceiling on coverage in Texas, we inflate the impact of the New York system by the ratio of maximum insurable earnings (600/444). Hence, switching to a Texas system would imply a drop in the unemployment rate of about 0.45 percent.

The original Grubel, Maki and Sax (1975) article estimated a simultaneous model in which UI affected unemployment partly through labour force participation effects. Card and Riddel (1993) are among those who have also stressed the importance of increasing labour force participation rates in Canadian unemployment and the potential role of UI generosity in increasing such participation decisions. Since UI parameters influence the probability of labour force participation in our model, it is quite possible for aggregate employment to fall, even as the unemployment rate decreases, if the labour force participation rate decreases - and in fact this happens. It is this decrease in total employment which drives the decrease in expected value of total income, comparing the New York or Texas systems to the Canadian UI system.

Unemployment Insurance System	1983 Mean Not In The Labour Force Weeks	1983 Mean Employment Weeks	1983 Mean Unemployment Weeks	1983 Unemployment Rate
Canada - 1994 System	10.948	36.130	4.922	12.00
New York - Current System	12.582	34.818	4.600	11.68
Texas - Current System	12.543	34.886	4.571	11.59

Appendix B: Comparison of Canadian and American Unemployment Insurance Systems

	1994 Canadian UI System	1992 New York UI System	1992 Texas UI System
Benefit Wage Ratio	a) 60% of insured earnings for claimants with less than or equal to 1/2 of maximum insurable earnings and with dependents b) 55% for all other claimants	50% of insured earnings for all claimants	52% of insured earnings for all claimants
Maximum Insurable Earnings	$745.00/week	$674/week	$535/week
Minimum Insurable Earnings	20% of Maximum Insurable Earnings	$90/week	$88/week
Waiting Period	2 Weeks	1 Week	1 Week
Minimum Employment Weeks to Qualify	From 12 weeks to 20 weeks depending on regional unemployment rates	20 Weeks	20 Weeks
Maximum Annual Benefit Period	50 weeks	26 Weeks	26 Weeks
Benefit Period Determination	1) Up to 20 weeks of benefits, based on one week of benefits for every two weeks of work for the first 40 insured weeks of work. 2) Up to 12 weeks of benefits, based on one week of benefits for each week of work beyond the first 40 weeks. 3) Up to 26 weeks, based on two weeks of benefits for every percentage point by which the regional unemployment rate is above 4%.	Any individual who qualifies for UI can receive up to 26 weeks of benefits under the New York State's UI Scheme	Any individual who qualifies for UI can receive up to 26 weeks of benefits under the Texas State's UI Scheme

Notes:
Dollar Values for Canadian 1994 UI System are in 1993 Canadian Dollars.
Dollar Values for New York/Texas UI Systems are in 1993 Canadian Equivalent Dollars. e.g.
Canadian Equivalent Maximum Insurable Earnings for New York/Texas Style UI System = $(\bar{Y}_C \backslash \bar{Y}_{NY/Tex})\, Y_{MAXNY/Tex}$
& Equivalent Minimum Insurable Earnings for New York Style UI System = $(\bar{Y}_C \backslash \bar{Y}_{NY/Tex})\, Y_{MINNY/Tex}$
where:
$\bar{Y}_C$= Mean 1993 Canadian Weekly Wage [$559.24 - Canadian Funds].
$\bar{Y}_{NY}$ = The Mean 1992 New York Weekly Wage [$498 -U.S. Funds].
$\bar{Y}_{Tex}$= The Mean 1992 Texas Weekly Wage [$464.10 -U.S. Funds].
Y_{MAXNY}= The 1992 Maximum Insurable Earnings Limit For New York [$600 - U.S. Funds].
Y_{MINNY}= The 1992 Maximum Insurable Earnings Limit For New York [$80 - U.S. Funds].
Y_{MAXTex}= The 1992 Maximum Insurable Earnings Limit For Texas [$444 - U.S. Funds].
Y_{MINTex}= The 1992 Maximum Insurable Earnings Limit For Texas [$73 - U.S. Funds]

Appendix C: Regression Results

Table C.1
Logit Model of the Probability of Not Being in the Labour Force For 52 Weeks
Dependent Variable =1 if not in the Labour Force for the Entire Year, 1989
Single Males
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-3.372	1.360	0.0131
Dummy=1 if no education or elementary	1.089	0.319	0.0006
Dummy=1 if some high school	0.222	0.216	0.3029
Dummy=1 if some post secondary education	-0.022	0.231	0.9258
Dummy=1 if certificate or diploma	0.246	0.331	0.4573
Dummy=1 if university	0.406	0.397	0.3065
Dummy=1 if trade	-1.299	0.935	0.1646
Weeks unemployed in 1988	0.051	0.009	0.0001
Weeks not in the labour force 1988	0.059	0.006	0.0001
Dummy = 1 if Weeks not in the labour force>0 1988	0.761	0.201	0.0002
Weeks needed to qualify for unemployment 1988	-0.163	0.081	0.0449
Provincial Unemployment Rate 1988	-0.026	0.056	0.6103
Total number of kids	0.089	0.094	0.3422
Dummy=1 if kids 0 - 2	1.277	0.479	0.0076
Dummy=1 if kids 3 - 5	0.226	0.434	0.6014
Dummy=1 if Aged 16	0.827	0.247	0.0008
Dummy=1 if Aged 17 to 19	0.546	0.201	0.0066
Dummy=1 if limited by a disability	1.565	0.274	0.0001
Dummy=1 if disability but not known if limited	0.496	1.037	0.6323
Dummy=1 if disability but not limited	-0.925	0.706	0.1902
Dummy=1 if minority	0.417	0.320	0.1924
Dummy=1 if foreign	0.173	0.294	0.5570
Dummy=1 if Non-English	-0.137	0.166	0.4095
Number of Observations		-2 Log L	2,127.108
Dependent >0:	305	Dependent = 0:	3,912

Table C.2
Logit Model of the Probability of Not Being in the Labour Force for 52 Weeks
Dependent Variable =1 if not in the Labour Force for the Entire Year, 1989
Single Males
Aged 25 to 54 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-6.441	2.373	0.0066
Dummy=1 if no education or elementary	0.564	0.354	0.1112
Dummy=1 if some high school	0.495	0.348	0.1552
Dummy=1 if some post secondary education	0.534	0.393	0.1742
Dummy=1 if certificate or diploma	0.230	0.456	0.6132
Dummy=1 if university	0.391	0.384	0.3092
Dummy=1 if trade	-0.827	0.718	0.2494
Weeks unemployed in 1988	0.090	0.008	0.0001
Weeks not in the labour force 1988	0.091	0.010	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	1.934	0.395	0.0001
Weeks needed to qualify for unemployment 1988	0.056	0.138	0.6860
Provincial Unemployment Rate 1988	-0.063	0.096	0.5162
Total number of kids	0.879	0.317	0.0056
Dummy=1 if kids 0 - 2	-2.153	1.266	0.0889
Dummy=1 if kids 3 - 5	-0.306	0.745	0.6818
Dummy=1 if kids 6 - 15	-1.167	0.693	0.0923
Dummy=1 if Aged 25 to 34	-0.395	0.250	0.1138
Dummy=1 if Aged 45 to 54	0.049	0.304	0.8712
Dummy=1 if limited by a disability	1.650	0.248	0.0001
Dummy=1 if disability but not known if limited	0.862	0.687	0.2092
Dummy=1 if disability but not limited	-0.941	0.605	0.1202
Dummy=1 if minority	-1.416	0.488	0.0037
Dummy=1 if foreign	0.622	0.343	0.0698
Dummy=1 if Non-English	-0.438	0.251	0.0813
Number of Observations		-2 Log L	1,816.231
Dependent >0:	253	Dependent = 0:	2,976

Table C.3
Logit Model of the Probability of Not Being in the Labour Force for 52 Weeks
Dependent Variable =1 if not in the Labour Force for the Entire Year, 1989
Single Males
Aged 55 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-6.108	4.142	0.1403
Dummy=1 if no education or elementary	-0.167	0.816	0.8376
Dummy=1 if some high school	-0.281	0.906	0.7566
Dummy=1 if some post secondary education	0.641	1.379	0.6420
Dummy=1 if certificate or diploma	1.714	1.055	0.1041
Dummy=1 if university	-0.412	1.043	0.6927
Dummy=1 if trade	-1.399	1.050	0.1828
Weeks unemployed in 1988	0.028	0.168	0.0973
Weeks not in the labour force 1988	0.104	0.019	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	1.187	0.815	0.1453
Weeks needed to qualify for unemployment 1988	0.093	0.239	0.6969
Provincial Unemployment Rate 1988	0.109	0.173	0.5264
Total number of kids	0.458	0.448	0.3067
Dummy=1 if limited by a disability	0.759	0.511	0.1372
Dummy=1 if disability but not known if limited	0.717	1.086	0.5088
Dummy=1 if disability but not limited	1.703	0.643	0.0081
Dummy=1 if minority	-1.344	1.193	0.2600
Dummy=1 if foreign	0.010	0.588	0.9864
Dummy=1 if Non-English	0.317	0.444	0.4756
Number of Observations		-2 Log L	692.499
Dependent >0:	225	Dependent = 0:	290

Table C.4
Logit Model of the Probability of Not Being in the Labour Force for 52 Weeks
Dependent Variable =1 if not in the Labour Force for the Entire Year, 1989
Married Males
Aged 16 to 54 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-3.555	1.577	0.0241
Dummy=1 if no education or elementary	0.029	0.247	0.9051
Dummy=1 if some high school	-0.307	0.243	0.2066
Dummy=1 if some post secondary education	0.023	0.283	0.9364
Dummy=1 if certificate or diploma	-0.235	0.273	0.3894
Dummy=1 if university	-1.895	0.373	0.0001
Dummy=1 if trade	-0.513	0.352	0.1447
Weeks unemployed in 1988	0.072	0.006	0.0001
Weeks not in the labour force 1988	0.088	0.007	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	1.201	0.314	0.0001
Weeks needed to qualify for unemployment 1988	-0.136	0.094	0.1502
Provincial Unemployment Rate 1988	-0.055	0.061	0.3735
Total number of kids	-0.041	0.146	0.7813
Dummy=1 if kids 0 - 2	0.166	0.282	0.5548
Dummy=1 if kids 3 - 5	0.220	0.259	0.3960
Dummy=1 if kids 6 - 15	-0.313	0.284	0.2698
Dummy=1 if Aged 16 to 19	-0.126	0.733	0.8634
Dummy=1 if Aged 20 to 24	0.594	0.303	0.0502
Dummy=1 if Aged 25 to 34	-0.715	0.235	0.0023
Dummy=1 if Aged 45 to 54	0.255	0.211	0.2271
Dummy=1 if limited by a disability	1.641	0.179	0.0001
Dummy=1 if disability but not known if limited	1.622	0.565	0.0041
Dummy=1 if disability but not limited	-0.096	0.433	0.8248
Dummy=1 if minority	0.319	0.322	0.3224
Dummy=1 if foreign	0.570	0.239	0.0170
Dummy=1 if Non-English	-0.083	0.186	0.6537
Number of Observations		-2 Log L	3,394.056
Dependent >0:	387	Dependent = 0:	14,355

Table C.5
Logit Model of the Probability of Not Being in the Labour Force for 52 Weeks
Dependent Variable =1 if not in the Labour Force for the Entire Year, 1989
Married Males
Aged 55 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-3.330	1.790	0.0628
Dummy=1 if no education or elementary	-0.492	0.265	0.0640
Dummy=1 if some high school	-0.011	0.287	0.9684
Dummy=1 if some post secondary education	-0.436	0.421	0.3003
Dummy=1 if certificate or diploma	-0.335	0.391	0.3920
Dummy=1 if university	-0.499	0.340	0.1421
Dummy=1 if trade	-0.596	0.452	0.1875
Weeks unemployed in 1988	0.075	0.007	0.0001
Weeks not in the labour force 1988	0.115	0.007	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	0.497	0.345	0.1494
Weeks needed to qualify for unemployment 1988	-0.005	0.105	0.9638
Provincial Unemployment Rate 1988	-0.052	0.073	0.4776
Total number of kids	-0.031	0.237	0.8947
Dummy=1 if limited by a disability	1.170	0.220	0.0001
Dummy=1 if disability but not known if limited	1.273	0.575	0.0267
Dummy=1 if disability but not limited	-0.384	0.296	0.1955
Dummy=1 if minority	-0.119	0.452	0.7923
Dummy=1 if foreign	0.385	0.228	0.0920
Dummy=1 if Non-English	-0.177	0.204	0.3864
Number of Observations		-2 Log L	3,572.825
Dependent >0:	896	Dependent = 0:	2,095

Table C.6
Logit Model of the Probability of Not Being in the Labour Force for 52 Weeks
Dependent Variable =1 if not in the Labour Force for the Entire Year, 1989
Single Females
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-3.949	1.246	0.0015
Dummy=1 if no education or elementary	0.585	0.416	0.1594
Dummy=1 if some high school	-0.031	0.190	0.8711
Dummy=1 if some post secondary education	-0.421	0.187	0.0241
Dummy=1 if certificate or diploma	-0.602	0.261	0.0213
Dummy=1 if university	-1.451	0.517	0.0050
Dummy=1 if trade	-3.680	1.314	0.0051
Weeks unemployed in 1988	0.051	0.009	0.0001
Weeks not in the labour force 1988	0.076	0.007	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	0.786	0.191	0.0001
Weeks needed to qualify for unemployment 1988	-0.031	0.073	0.6752
Provincial Unemployment Rate 1988	-0.026	0.042	0.5424
Total number of kids	-0.131	0.099	0.1855
Dummy=1 if kids 0 - 2	0.998	0.268	0.0002
Dummy=1 if kids 3 - 5	0.741	0.330	0.0245
Dummy=1 if Aged 16	-0.418	0.211	0.0475
Dummy=1 if Aged 17 to 19	-0.568	0.169	0.0008
Dummy=1 if limited by a disability	0.110	0.277	0.6906
Dummy=1 if disability but not known if limited	-1.209	1.217	0.3205
Dummy=1 if disability but not limited	-0.057	0.469	0.9027
Dummy=1 if minority	-0.440	0.292	0.1323
Dummy=1 if foreign	0.281	0.245	0.2518
Dummy=1 if Non-English	0.302	0.155	0.0515
Number of Observations		-2 Log L	2,496.843
Dependent >0:	385	Dependent = 0:	3,106

Table C.7
Logit Model of the Probability of Not Being in the Labour Force for 52 Weeks
Dependent Variable =1 if not in the Labour Force for the Entire Year, 1989
Single Females
Aged 25 to 54 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-6.462	1.728	0.0002
Dummy=1 if no education or elementary	0.980	0.262	0.0002
Dummy=1 if some high school	0.554	0.252	0.0276
Dummy=1 if some post secondary education	0.342	0.276	0.2148
Dummy=1 if certificate or diploma	-0.088	0.281	0.7553
Dummy=1 if university	-0.920	0.409	0.0245
Dummy=1 if trade	-0.439	0.433	0.3105
Weeks unemployed in 1988	0.065	0.006	0.0001
Weeks not in the labour force 1988	0.079	0.006	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	1.645	0.262	0.0001
Weeks needed to qualify for unemployment 1988	0.069	0.099	0.4876
Provincial Unemployment Rate 1988	0.022	0.066	0.7417
Total number of kids	-0.557	0.169	0.0010
Dummy=1 if kids 0 - 2	1.515	0.333	0.0001
Dummy=1 if kids 3 - 5	0.392	0.302	0.1938
Dummy=1 if kids 6 - 15	1.062	0.291	0.0003
Dummy=1 if Aged 25 to 34	0.119	0.200	0.5540
Dummy=1 if Aged 45 to 54	0.224	0.228	0.3248
Dummy=1 if limited by a disability	0.922	0.202	0.0001
Dummy=1 if disability but not known if limited	0.894	0.840	0.2869
Dummy=1 if disability but not limited	-0.196	0.361	0.5887
Dummy=1 if minority	-0.161	0.355	0.6514
Dummy=1 if foreign	0.104	0.253	0.6804
Dummy=1 if Non-English	0.524	0.189	0.0055
Number of Observations		-2 Log L	3,093.599
Dependent >0:	496	Dependent = 0:	2,852

Table C.8
Logit Model of the Probability of Not Being in the Labour Force for 52 Weeks
Dependent Variable =1 if not in the Labour Force for the Entire Year, 1989
Single Females
Aged 55 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-5.302	3.696	0.1514
Dummy=1 if no education or elementary	0.286	0.543	0.5981
Dummy=1 if some high school	-0.651	0.528	0.2177
Dummy=1 if some post secondary education	-0.948	0.716	0.1856
Dummy=1 if certificate or diploma	-1.105	0.618	0.0738
Dummy=1 if university	-0.074	0.637	0.9080
Dummy=1 if trade	-3.351	0.892	0.0002
Weeks unemployed in 1988	0.096	0.012	0.0001
Weeks not in the labour force 1988	0.109	0.013	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	2.619	0.594	0.0001
Weeks needed to qualify for unemployment 1988	0.164	0.214	0.4434
Provincial Unemployment Rate 1988	-0.033	0.141	0.8173
Total number of kids	-1.169	0.336	0.0005
Dummy=1 if limited by a disability	2.094	0.455	0.0001
Dummy=1 if disability but not known if limited	-0.283	1.032	0.7841
Dummy=1 if disability but not limited	0.036	0.593	0.9519
Dummy=1 if minority	0.497	0.943	0.5979
Dummy=1 if foreign	-1.300	0.483	0.0071
Dummy=1 if Non-English	0.165	0.390	0.1780
Number of Observations		-2 Log L	1,495.335
Dependent >0:	618	Dependent = 0:	391

Table C.9
Logit Model of the Probability of Not Being in the Labour Force for 52 Weeks
Dependent Variable =1 if not in the Labour Force for the Entire Year, 1989
Married Females
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-2.319	0.198	0.2413
Dummy=1 if no education or elementary	0.419	0.410	0.3069
Dummy=1 if some high school	0.472	0.265	0.0746
Dummy=1 if some post secondary education	0.241	0.331	0.4661
Dummy=1 if certificate or diploma	-0.552	0.405	0.1733
Dummy=1 if university	-3.611	2.044	0.0773
Dummy=1 if trade	-0.842	0.794	0.2886
Weeks unemployed in 1988	0.071	0.010	0.0001
Weeks not in the labour force 1988	0.074	0.009	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	1.227	0.322	0.0001
Weeks needed to qualify for unemployment 1988	-0.181	0.119	0.1303
Provincial Unemployment Rate 1988	-0.070	0.069	0.3049
Total number of kids	-0.032	0.188	0.8636
Dummy=1 if kids 0 - 2	0.655	0.286	0.0218
Dummy=1 if kids 3 - 5	0.760	0.336	0.0238
Dummy=1 if Aged 16	-1.385	1.166	0.2349
Dummy=1 if Aged 17 to 19	0.302	0.317	0.3409
Dummy=1 if limited by a disability	0.515	0.651	0.4289
Dummy=1 if disability but not known if limited	1.561	1.543	0.3077
Dummy=1 if disability but not limited	0.128	0.627	0.8382
Dummy=1 if minority	-0.971	0.626	0.1207
Dummy=1 if foreign	-0.691	0.408	0.0899
Dummy=1 if Non-English	0.204	0.245	0.4046

Number of Observations		-2 Log L	1,240.18
Dependent >0:	244	Dependent = 0:	1,379

Table C.10
Logit Model of the Probability of Not Being in the Labour Force for 52 Weeks
Dependent Variable =1 if not in the Labour Force for the Entire Year, 1989
Married Females
Aged 25 to 54 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-3.094	0.738	0.0001
Dummy=1 if no education or elementary	-0.032	0.127	0.7999
Dummy=1 if some high school	0.216	0.108	0.0447
Dummy=1 if some post secondary education	-0.363	0.135	0.0073
Dummy=1 if certificate or diploma	-0.221	0.116	0.0558
Dummy=1 if university	-0.533	0.137	0.0001
Dummy=1 if trade	-0.314	0.189	0.0971
Weeks unemployed in 1988	0.068	0.004	0.0001
Weeks not in the labour force 1988	0.088	0.003	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	1.482	0.117	0.0001
Weeks needed to qualify for unemployment 1988	-0.112	0.043	0.0093
Provincial Unemployment Rate 1988	-0.055	0.027	0.0391
Total number of kids	0.095	0.065	0.1432
Dummy=1 if kids 0 - 2	0.383	0.121	0.0015
Dummy=1 if kids 3 - 5	0.044	0.109	0.6900
Dummy=1 if kids 6 - 15	-0.262	0.126	0.0380
Dummy=1 if Aged 25 to 34	-0.053	0.098	0.5899
Dummy=1 if Aged 35 to 44	0.486	0.109	0.0001
Dummy=1 if limited by a disability	0.863	0.142	0.0001
Dummy=1 if disability but not known if limited	0.734	0.512	0.1519
Dummy=1 if disability but not limited	-0.063	0.199	0.7508
Dummy=1 if minority	-0.007	0.189	0.9724
Dummy=1 if foreign	-0.149	0.108	0.1648
Dummy=1 if Non-English	0.287	0.087	0.0010

Number of Observations		-2 Log L	13,999.538
Dependent >0:	3,075	Dependent = 0:	11,383

Table C.11
Logit Model of the Probability of Not Being in the Labour Force for 52 Weeks
Dependent Variable =1 if not in the Labour Force for the Entire Year, 1989
Married Females
Aged 55 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-4.425	2.087	0.0340
Dummy=1 if no education or elementary	0.011	0.290	0.9693
Dummy=1 if some high school	-0.306	0.286	0.2852
Dummy=1 if some post secondary education	-0.550	0.461	0.2334
Dummy=1 if certificate or diploma	-0.121	0.337	0.7192
Dummy=1 if university	-1.075	0.394	0.0063
Dummy=1 if trade	0.428	0.484	0.3763
Weeks unemployed in 1988	0.079	0.008	0.0001
Weeks not in the labour force 1988	0.094	0.007	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	2.006	0.303	0.0001
Weeks needed to qualify for unemployment 1988	0.083	0.120	0.4924
Provincial Unemployment Rate 1988	0.012	0.079	0.8825
Total number of kids	-0.568	0.282	0.0441
Dummy=1 if limited by a disability	0.158	0.295	0.5913
Dummy=1 if disability but not known if limited	0.489	0.899	0.5868
Dummy=1 if disability but not limited	0.099	0.357	0.7824
Dummy=1 if minority	-0.702	0.474	0.1386
Dummy=1 if foreign	0.270	0.247	0.2743
Dummy=1 if Non-English	0.188	0.228	0.4092
Number of Observations		-2 Log L	3,341.099
Dependent >0:	1,793	Dependent = 0:	924

Table C.12
Tobit Model of Out of the Labour Force Weeks
Dependent Variable = not in the Labour Force Weeks in 1989
Single Males
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-64.554	8.420	0.0001
Dummy=1 if managerial or administrative	-8.558	2.365	0.0003
Dummy=1 if professional	4.303	1.374	0.0017
Dummy=1 if clerical	-2.971	1.479	0.0446
Dummy=1 if sales & services	-2.644	1.003	0.0084
Dummy=1 if farm	5.013	1.690	0.0030
Dummy=1 if no education or elementary	2.456	2.869	0.3921
Dummy=1 if Aged 16	13.312	1.553	0.0001
Dummy=1 if Aged 17 to 19	7.535	0.959	0.0001
Dummy=1 if some high school	2.571	1.224	0.0357
Dummy=1 if some post secondary education	9.564	1.103	0.0001
Dummy=1 if certificate or diploma	3.396	1.539	0.0273
Dummy=1 if university	0.989	2.085	0.6352
Dummy=1 if trade	2.924	2.347	0.2130
Weeks unemployed in 1988	0.023	0.050	0.6394
Dummy = 1 if Weeks not in the labour force >0 1988	18.448	0.878	0.0001
Provincial Unemployment Rate 1988	1.590	0.324	0.0001
Weeks needed to qualify for unemployment 1988	2.843	0.494	0.0001
Total Number of kids in 1988	0.494	1.187	0.6773
Dummy=1 if kids Aged 0 - 2	-1.367	3.909	0.7265
Dummy=1 if kids Aged 3 - 6	-7.572	3.983	0.0573
Dummy=1 if kids Aged 6 - 15	-0.637	1.763	0.7178
Dummy=1 if limited by a disability	7.405	2.682	0.0058
Dummy=1 if disability but not known if limited	-4.066	12.858	0.7518
Dummy=1 if disability but not limited	-3.898	2.746	0.1558
Dummy=1 if foreign	2.670	1.453	0.0662
Dummy=1 if Non-English	1.546	0.964	0.1089
Scale	22.764	0.388	
		Log Like:	-10,913.9913
Non-censored	2,110	Left Censored:	1,811

Table C.13
Tobit Model of Out of the Labour Force Weeks
Dependent Variable = not in the Labour Force Weeks in 1989
Single Males
Aged 25 to 54 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-52.869	14.853	0.0004
Dummy=1 if managerial or administrative	-7.977	2.424	0.0010
Dummy=1 if professional	-10.352	2.345	0.0001
Dummy=1 if clerical	0.236	2.483	0.9243
Dummy=1 if sales & services	0.311	1.859	0.8669
Dummy=1 if farm	-8.513	3.644	0.0195
Dummy=1 if no education or elementary	9.513	2.468	0.0001
Dummy=1 if Aged 25 to 34	7.083	1.658	0.0001
Dummy=1 if Aged 45 to 54	4.105	2.279	0.0001
Dummy=1 if some high school	4.423	2.199	0.0443
Dummy=1 if some post secondary education	6.211	2.338	0.0079
Dummy=1 if certificate or diploma	-0.182	2.217	0.9344
Dummy=1 if university	3.534	2.272	0.1198
Dummy=1 if trade	1.178	3.141	0.7077
Weeks unemployed in 1988	0.280	0.055	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	19.547	1.495	0.0001
Provincial Unemployment Rate 1988	0.211	0.615	0.7315
Weeks needed to qualify for unemployment 1988	1.289	0.860	0.1341
Total Number of kids in 1988	-5.691	3.221	0.0772
Dummy=1 if kids Aged 0 - 2	20.235	5.699	0.0004
Dummy=1 if kids Aged 3 - 6	-2.567	5.724	0.6537
Dummy=1 if kids Aged 6 - 15	5.851	5.258	0.2658
Dummy=1 if limited by a disability	14.284	2.320	0.0001
Dummy=1 if disability but not known if limited	16.457	10.839	0.1289
Dummy=1 if disability but not limited	6.180	2.880	0.0319
Dummy=1 if foreign	0.378	1.879	0.8406
Dummy=1 if Non-English	2.563	1.494	0.0862
Scale	26.916	0.819	
		Log Like:	-4,414.4954
Non-censored	690	Left Censored:	2,286

Table C.14
Tobit Model of Out of the Labour Force Weeks
Dependent Variable = not in the Labour Force Weeks in 1989
Single Males
Aged 55 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-8.958	47.320	0.8499
Dummy=1 if managerial or administrative	-10.998	10.772	0.3072
Dummy=1 if professional	-44.146	15.103	0.0035
Dummy=1 if clerical	-7.166	15.056	0.6341
Dummy=1 if sales & services	3.228	5.880	0.5830
Dummy=1 if farm	3.535	7.372	0.6316
Dummy=1 if no education or elementary	3.162	10.176	0.7560
Dummy=1 if some high school	16.116	10.382	0.1206
Dummy=1 if some post secondary education	31.358	14.805	0.0342
Dummy=1 if certificate or diploma	25.127	12.962	0.0526
Dummy=1 if university	23.459	13.961	0.0929
Dummy=1 if trade	30.665	12.020	0.0107
Weeks unemployed in 1988	-0.161	0.173	0.3514
Dummy = 1 if Weeks not in the labour force >0 1988	-2.641	5.580	0.6360
Provincial Unemployment Rate 1988	-0.096	2.068	0.9630
Weeks needed to qualify for unemployment 1988	-1.989	2.782	0.4746
Total Number of kids in 1988	-2.956	5.621	0.5990
Dummy=1 if limited by a disability	10.500	6.469	0.1046
Dummy=1 if disability but not known if limited	10.682	14.467	0.4603
Dummy=1 if disability but not limited	26.949	7.162	0.0002
Dummy=1 if foreign	-13.785	6.782	0.0421
Dummy=1 if Non-English	8.449	4.989	0.0904
Scale	26.494	2.603	
		Log Like:	-405.0594
Non-censored	69	Left Censored:	221

Table C.15
Tobit Model of Out of the Labour Force Weeks
Dependent Variable = not in the Labour Force Weeks in 1989
Married Males
Aged 16 to 54 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-63.389	6.792	0.0001
Dummy=1 if managerial or administrative	-4.804	1.158	0.0001
Dummy=1 if professional	-4.112	1.237	0.0009
Dummy=1 if clerical	-2.351	1.640	0.1517
Dummy=1 if sales & services	-0.090	0.979	0.9266
Dummy=1 if farm	-7.349	1.772	0.0001
Dummy=1 if no education or elementary	3.164	1.299	0.0149
Dummy=1 if Aged 16	-0.089	17.839	0.9960
Dummy=1 if Aged 17 to 19	10.876	4.497	0.0156
Dummy=1 if Aged 25 to 34	4.360	0.893	0.0001
Dummy=1 if Aged 45 to 54	0.896	0.981	0.3614
Dummy=1 if Aged 20 to 24	7.574	1.432	0.0001
Dummy=1 if some high school	0.248	1.064	0.8153
Dummy=1 if some post secondary education	1.303	1.227	0.2881
Dummy=1 if certificate or diploma	-3.089	1.159	0.0077
Dummy=1 if university	1.278	1.210	0.2908
Dummy=1 if trade	-0.230	1.424	0.8720
Weeks unemployed in 1988	0.355	0.040	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	16.310	0.872	0.0001
Provincial Unemployment Rate 1988	1.382	0.268	0.0001
Weeks needed to qualify for unemployment 1988	1.817	0.399	0.0001
Total Number of kids in 1988	-0.995	0.674	0.1397
Dummy=1 if kids Aged 0 - 2	1.606	1.149	0.1622
Dummy=1 if kids Aged 3 - 6	-2.253	1.132	0.0466
Dummy=1 if kids Aged 6 - 15	0.589	1.266	0.6418
Dummy=1 if limited by a disability	15.087	1.355	0.0001
Dummy=1 if disability but not known if limited	-27.565	14.567	0.0584
Dummy=1 if disability but not limited	0.788	1.536	0.6078
Dummy=1 if foreign	2.751	0.967	0.0044
Dummy=1 if Non-English	0.745	0.793	0.3472
Scale	25.933	0.458	
		Log Like:	-13,804.7101
Non-censored 2,538		Left Censored:	11,817

Table C.16
Tobit Model of Out of the Labour Force Weeks
Dependent Variable = not in the Labour Force Weeks in 1989
Married Males
Aged 55 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-87.444	22.116	0.0001
Dummy=1 if managerial or administrative	3.901	3.333	0.2419
Dummy=1 if professional	-10.184	4.600	0.0268
Dummy=1 if clerical	10.875	4.377	0.0130
Dummy=1 if sales & services	-1.254	2.936	0.6694
Dummy=1 if farm	-10.323	4.312	0.0167
Dummy=1 if no education or elementary	6.270	3.509	0.0740
Dummy=1 if some high school	9.170	3.675	0.0126
Dummy=1 if some post secondary education	3.470	5.006	0.4882
Dummy=1 if certificate or diploma	9.224	4.529	0.0417
Dummy=1 if university	4.490	4.351	0.3020
Dummy=1 if trade	5.151	5.033	0.3061
Weeks unemployed in 1988	0.535	0.115	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	16.744	2.822	0.0001
Provincial Unemployment Rate 1988	1.690	0.901	0.0607
Weeks needed to qualify for unemployment 1988	2.886	1.275	0.0236
Total Number of kids in 1988	-3.921	2.642	0.1377
Dummy=1 if limited by a disability	18.434	3.330	0.0001
Dummy=1 if disability but not known if limited	8.620	9.110	0.3441
Dummy=1 if disability but not limited	5.639	3.188	0.0770
Dummy=1 if foreign	-0.633	2.477	0.7983
Dummy=1 if Non-English	4.802	2.356	0.0416
Scale	33.779	1.343	
		Log Like:	-2,811.1839
Non-censored	474	Left Censored:	1,621

Table C.17
Tobit Model of Out of the Labour Force Weeks
Dependent Variable = not in the Labour Force Weeks in 1989
Single Females
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-25.943	9.323	0.0054
Dummy=1 if managerial or administrative	-9.911	3.015	0.0010
Dummy=1 if professional	-8.079	1.911	0.0001
Dummy=1 if clerical	-11.841	1.655	0.0001
Dummy=1 if sales & services	-9.927	1.565	0.0001
Dummy=1 if farm	-1.616	3.577	0.6514
Dummy=1 if no education or elementary	-1.648	4.745	0.7284
Dummy=1 if Aged 16	9.818	1.674	0.0001
Dummy=1 if Aged 17 to 19	4.710	1.065	0.0001
Dummy=1 if some high school	-4.448	1.483	0.0027
Dummy=1 if some post secondary education	4.681	1.196	0.0001
Dummy=1 if certificate or diploma	-0.551	1.586	0.7281
Dummy=1 if university	-3.799	2.140	0.0759
Dummy=1 if trade	4.321	2.873	0.1326
Weeks unemployed in 1988	0.166	0.054	0.0023
Dummy = 1 if Weeks not in the labour force >0 1988	21.882	0.980	0.0001
Provincial Unemployment Rate 1988	0.824	0.326	0.0114
Weeks needed to qualify for unemployment 1988	1.187	0.534	0.0263
Total Number of kids in 1988	1.113	0.666	0.0945
Dummy=1 if kids Aged 0 - 2	2.429	2.992	0.4169
Dummy=1 if kids Aged 3 - 6	-0.634	2.950	0.8299
Dummy=1 if limited by a disability	-0.336	2.382	0.8877
Dummy=1 if disability but not known if limited	17.752	7.882	0.0243
Dummy=1 if disability but not limited	-8.705	3.082	0.0047
Dummy=1 if foreign	-1.208	1.733	0.4859
Dummy=1 if minority	-2.014	2.088	0.3348
Dummy=1 if Non-English	-2.525	1.056	0.0168
Scale	22.355	0.417	
		Log Like:	-8,917.2799
Non-censored	1,740	Left Censored:	1,366

Table C.18
Tobit Model of Out of the Labour Force Weeks
Dependent Variable = not in the Labour Force Weeks in 1989
Single Females
Aged 25 to 54 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-82.812	16.370	0.0001
Dummy=1 if managerial or administrative	-14.964	3.167	0.0001
Dummy=1 if professional	-5.224	2.621	0.0463
Dummy=1 if clerical	-0.366	2.376	0.8776
Dummy=1 if sales & services	0.060	2.297	0.9793
Dummy=1 if farm	1.416	9.654	0.8834
Dummy=1 if no education or elementary	8.060	3.342	0.0159
Dummy=1 if Aged 25 to 34	1.867	1.589	0.2400
Dummy=1 if Aged 45 to 54	2.441	2.078	0.2402
Dummy=1 if some high school	1.826	2.371	0.4413
Dummy=1 if some post secondary education	0.287	2.441	0.9063
Dummy=1 if certificate or diploma	5.600	2.092	0.0074
Dummy=1 if university	4.476	2.321	0.0538
Dummy=1 if trade	1.304	3.492	0.7089
Weeks unemployed in 1988	0.456	0.063	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	24.216	1.548	0.0001
Provincial Unemployment Rate 1988	1.325	0.621	0.0330
Weeks needed to qualify for unemployment 1988	3.195	0.919	0.0005
Total Number of kids in 1988	3.905	0.921	0.0001
Dummy=1 if kids Aged 0 - 2	-1.140	3.716	0.7590
Dummy=1 if kids Aged 3 - 6	-1.262	2.840	0.6568
Dummy=1 if limited by a disability	11.100	2.366	0.0001
Dummy=1 if disability but not known if limited	21.641	14.148	0.1261
Dummy=1 if disability but not limited	1.720	2.997	0.5661
Dummy=1 if foreign	2.434	2.120	0.2509
Dummy=1 if minority	-4.153	2.986	0.1642
Dummy=1 if Non-English	-2.575	1.599	0.1073
Scale	27.147	0.821	
		Log Like:	-4,316.3809
Non-censored	699	Left Censored:	2,153

Table C.19
Tobit Model of Out of the Labour Force Weeks
Dependent Variable = not in the Labour Force Weeks in 1989
Single Females
Aged 55 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-64.323	45.342	0.1560
Dummy=1 if managerial or administrative	-3.881	8.013	0.6281
Dummy=1 if professional	-14.090	7.363	0.0557
Dummy=1 if clerical	-14.366	6.763	0.0337
Dummy=1 if sales & services	2.062	6.234	0.7409
Dummy=1 if farm	-23.589	19.173	0.2186
Dummy=1 if no education or elementary	16.648	6.994	0.0173
Dummy=1 if some high school	6.948	6.266	0.2675
Dummy=1 if some post secondary education	8.690	8.550	0.3095
Dummy=1 if certificate or diploma	20.516	6.897	0.0029
Dummy=1 if university	6.807	7.258	0.3483
Dummy=1 if trade	5.150	10.333	0.6182
Weeks unemployed in 1988	-0.078	0.245	0.7496
Dummy = 1 if Weeks not in the labour force >0 1988	27.344	4.446	0.0001
Provincial Unemployment Rate 1988	1.354	1.772	0.4448
Weeks needed to qualify for unemployment 1988	2.202	2.486	0.3758
Total Number of kids in 1988	5.860	4.672	0.2098
Dummy=1 if limited by a disability	14.011	5.658	0.0133
Dummy=1 if disability but not known if limited	24.741	13.145	0.0598
Dummy=1 if disability but not limited	-5.088	6.072	0.4020
Dummy=1 if foreign	-0.824	5.009	0.8694
Dummy=1 if minority	-5.817	8.802	0.5087
Dummy=1 if Non-English	-1.066	4.141	0.7968
Scale	27.460	1.981	
		Log Like:	-732.891
Non-censored	110	Left Censored:	281

Table C.20
Tobit Model of Out of the Labour Force Weeks
Dependent Variable = not in the Labour Force Weeks in 1989
Married Females
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-19.982	15.927	0.2096
Dummy=1 if managerial or administrative	-4.118	4.223	0.3295
Dummy=1 if professional	-2.668	3.052	0.3820
Dummy=1 if clerical	-1.203	2.481	0.6277
Dummy=1 if sales & services	2.552	2.381	0.2838
Dummy=1 if farm	-3.479	7.731	0.6527
Dummy=1 if no education or elementary	-0.150	5.848	0.9795
Dummy=1 if Aged 16	8.785	9.388	0.3494
Dummy=1 if Aged 17 to 19	5.446	2.523	0.0309
Dummy=1 if some high school	4.686	2.381	0.0491
Dummy=1 if some post secondary education	1.926	2.409	0.4241
Dummy=1 if certificate or diploma	-0.746	2.255	0.7409
Dummy=1 if university	2.148	3.206	0.5029
Dummy=1 if trade	1.649	3.502	0.6376
Weeks unemployed in 1988	0.029	0.084	0.7286
Dummy = 1 if Weeks not in the labour force >0 1988	14.147	1.685	0.0001
Provincial Unemployment Rate 1988	0.845	0.585	0.1482
Weeks needed to qualify for unemployment 1988	0.218	0.924	0.8137
Total Number of kids in 1988	-4.005	1.820	0.0278
Dummy=1 if kids Aged 0 - 2	6.366	2.698	0.0183
Dummy=1 if kids Aged 3 - 6	6.384	3.606	0.0766
Dummy=1 if limited by a disability	0.802	5.182	0.8769
Dummy=1 if disability but not known if limited	-11.516	20.980	0.5831
Dummy=1 if disability but not limited	-2.623	5.183	0.6128
Dummy=1 if foreign	-2.345	2.822	0.4060
Dummy=1 if minority	1.355	5.523	0.8061
Dummy=1 if Non-English	-4.133	1.770	0.0176
Scale	24.107	0.788	
		Log Like:	-732.891
Non-censored	630	Left Censored:	749

Table C.21
Tobit Model of Out of the Labour Force Weeks
Dependent Variable = not in the Labour Force Weeks in 1989
Married Females
Aged 25 to 54 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-33.255	7.482	0.0001
Dummy=1 if managerial or administrative	-12.251	1.535	0.0001
Dummy=1 if professional	-7.438	1.348	0.0001
Dummy=1 if clerical	-9.559	1.198	0.0001
Dummy=1 if sales & services	-6.917	1.161	0.0001
Dummy=1 if farm	-10.943	2.361	0.0001
Dummy=1 if Aged 25 to 34	2.947	0.861	0.0006
Dummy=1 if Aged 45 to 54	-1.736	1.048	0.0978
Dummy=1 if no education or elementary	5.000	1.495	0.0008
Dummy=1 if some high school	1.587	1.131	0.1606
Dummy=1 if some post secondary education	-3.078	1.131	0.0200
Dummy=1 if certificate or diploma	-1.075	1.062	0.3112
Dummy=1 if university	-1.351	1.218	0.2672
Dummy=1 if trade	-6.220	1.937	0.0013
Weeks unemployed in 1988	0.326	0.039	0.0001
Dummy = 1 if Weeks not in the labour force >0 1988	20.243	0.766	0.0001
Provincial Unemployment Rate 1988	0.737	0.274	0.0071
Weeks needed to qualify for unemployment 1988	0.879	0.430	0.0410
Total Number of kids in 1988	-0.870	0.416	0.0363
Dummy=1 if kids Aged 0 - 2	4.060	1.040	0.0001
Dummy=1 if kids Aged 3 - 6	1.851	1.062	0.0814
Dummy=1 if limited by a disability	9.408	1.633	0.0001
Dummy=1 if disability but not known if limited	17.411	7.923	0.0280
Dummy=1 if disability but not limited	-0.454	1.882	0.8094
Dummy=1 if foreign	0.613	1.050	0.5595
Dummy=1 if minority	-1.400	1.769	0.4287
Dummy=1 if Non-English	-0.506	0.834	0.5544
Scale	27.886	0.415	
		Log Like:	-17,583.465
Non-censored	3,364	Left Censored:	8,019

Table C.22
Tobit Model of Out of the Labour Force Weeks
Dependent Variable = not in the Labour Force Weeks in 1989
Married Females
Aged 55 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-10.452	29.108	0.7195
Dummy=1 if managerial or administrative	-12.658	5.087	0.0128
Dummy=1 if professional	-13.929	5.133	0.0067
Dummy=1 if clerical	-16.826	4.279	0.0001
Dummy=1 if sales & services	-11.469	3.959	0.0038
Dummy=1 if farm	-17.397	5.937	0.0034
Dummy=1 if no education or elementary	1.123	3.801	0.7677
Dummy=1 if some high school	3.456	3.545	0.3295
Dummy=1 if some post secondary education	2.126	5.371	0.6922
Dummy=1 if certificate or diploma	0.913	4.236	0.8294
Dummy=1 if university	4.946	4.792	0.3020
Dummy=1 if trade	0.542	5.670	0.9239
Weeks unemployed in 1988	0.022	0.175	0.8980
Dummy = 1 if Weeks not in the labour force >0 1988	22.925	2.828	0.0001
Provincial Unemployment Rate 1988	-0.130	1.128	0.9080
Weeks needed to qualify for unemployment 1988	0.171	1.630	0.9165
Total Number of kids in 1988	-1.948	4.391	0.6573
Dummy=1 if limited by a disability	15.344	3.705	0.0001
Dummy=1 if disability but not known if limited	-14.850	19.144	0.4379
Dummy=1 if disability but not limited	4.636	4.256	0.2760
Dummy=1 if foreign	-3.724	3.147	0.2367
Dummy=1 if minority	-3.435	6.623	0.6041
Dummy=1 if Non-English	4.227	2.814	0.1331
Scale	27.793	1.322	
		Log Like:	-1,670.061
Non-censored	273	Left Censored:	651

Table C.23
Logit Model of the Probability of Having at Least One Week of Unemployment
Dependent Variable =1 if at Least One Week of Unemployment in 1989
Single Males
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-1.881	0.160	0.0001
Dummy=1 if managerial or administrative	-1.708	0.313	0.0001
Dummy=1 if professional	-0.570	0.133	0.0001
Dummy=1 if clerical	-0.314	0.134	0.0191
Dummy=1 if sales & services	-0.372	0.095	0.0001
Dummy=1 if farm	-0.476	0.174	0.0061
Dummy=1 if Aged 16	0.023	0.145	0.8758
Dummy=1 if Aged 17 to 19	-0.051	0.086	0.5530
Provincial Unemployment Rate 1988	0.120	0.016	0.0001
Weeks unemployed in 1988	0.951	0.078	0.0001
Maximum duration of benefits	-0.015	0.005	0.0041
Benefit replacement ratio1	1.006	0.364	0.0058
Total number of kids	-0.080	0.058	0.1703
Dummy=1 if kids 0 - 2	-0.173	0.352	0.6235
Dummy=1 if minority	-0.434	0.190	0.0223

Number of Observations		-2 Log L	4,241.197
Dependent >0:	1,090	Dependent = 0:	2,370

Table C.24
Logit Model of the Probability of Having at Least One Week of Unemployment
Dependent Variable =1 if at Least One Week of Unemployment in 1989
Single Males
Aged 25 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-2.257	0.282	0.0001
Dummy=1 if managerial or administrative	-0.725	0.209	0.0005
Dummy=1 if professional	-0.897	0.206	0.0001
Dummy=1 if clerical	-0.672	0.224	0.0027
Dummy=1 if sales & services	-0.168	0.144	0.2436
Dummy=1 if farm	-0.086	0.315	0.7852
Dummy=1 if Aged 25 to 34	0.376	0.139	0.0069
Dummy=1 if Aged 45 to 54	-0.320	0.226	0.1570
Dummy=1 if Aged 55 to 64	0.248	0.245	0.3123
Dummy=1 if no education or elementary	0.090	0.202	0.6566
Dummy=1 if some high school	0.152	0.172	0.3758
Dummy=1 if some post secondary education	0.227	0.190	0.2329
Dummy=1 if certificate or diploma	-0.166	0.177	0.3471
Dummy=1 if university	-0.100	0.198	0.6136
Dummy=1 if trade	-0.091	0.238	0.7006
Provincial Unemployment Rate 1988	0.158	0.024	0.0001
Weeks unemployed in 1988	1.822	0.116	0.0001
Maximum duration of benefits	-0.046	0.007	0.0001
Benefit replacement ratio1	1.688	0.545	0.0019
Total number of kids	0.184	0.090	0.0400
Dummy=1 if kids 0 - 2	0.781	0.326	0.0165
Dummy=1 if minority	-0.137	0.217	0.5266

Number of Observations		-2 Log L	2,375.836
Dependent >0:	618	Dependent = 0:	2,048

Table C.25
Logit Model of the Probability of Having at Least One Week of Unemployment
Dependent Variable =1 if at Least One Week of Unemployment in 1989
Married Males
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-0.879	0.591	0.1370
Dummy=1 if managerial or administrative	-1.666	0.902	0.0646
Dummy=1 if professional	-0.372	0.328	0.2560
Dummy=1 if clerical	-0.346	0.397	0.3829
Dummy=1 if sales & services	-0.206	0.272	0.4482
Dummy=1 if farm	0.715	0.399	0.0728
Dummy=1 if Aged 16	0.189	1.170	0.8720
Dummy=1 if Aged 17 to 19	0.600	0.352	0.0883
Provincial Unemployment Rate 1988	0.105	0.041	0.0111
Weeks unemployed in 1988	1.185	0.192	0.0001
Maximum duration of benefits	-0.068	0.015	0.0001
Benefit replacement ratio1	2.572	1.252	0.0399
Total number of kids	0.134	0.139	0.3358
Dummy=1 if kids 0 - 2	-0.169	0.265	0.5230
Dummy=1 if minority	1.633	0.488	0.0008

Number of Observations		-2 Log L	789.277
Dependent >0:	217	Dependent = 0:	560

Table C.26
Logit Model of the Probability of Having at Least One Week of Unemployment
Dependent Variable =1 if at Least One Week of Unemployment in 1989
Married Males
Aged 25 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-2.197	0.191	0.0001
Dummy=1 if managerial or administrative	-0.406	0.111	0.0002
Dummy=1 if professional	-0.546	0.128	0.0001
Dummy=1 if clerical	-0.294	0.145	0.0427
Dummy=1 if sales & services	-0.556	0.100	0.0001
Dummy=1 if farm	-0.607	0.199	0.0023
Dummy=1 if Aged 25 to 34	0.260	0.081	0.0014
Dummy=1 if Aged 45 to 54	-0.189	0.100	0.0591
Dummy=1 if Aged 55 to 64	-0.061	0.117	0.6048
Dummy=1 if no education or elementary	0.524	0.114	0.0001
Dummy=1 if some high school	0.500	0.098	0.0001
Dummy=1 if some post secondary education	0.187	0.123	0.1278
Dummy=1 if certificate or diploma	0.112	0.112	0.3202
Dummy=1 if university	0.067	0.128	0.5991
Dummy=1 if trade	0.649	0.124	0.0001
Provincial Unemployment Rate 1988	0.092	0.013	0.0001
Weeks unemployed in 1988	2.150	0.071	0.0001
Maximum duration of benefits	-0.037	0.004	0.0001
Benefit replacement ratio1	1.199	0.302	0.0001
Total number of kids	-0.079	0.035	0.0226
Dummy=1 if kids 0 - 2	0.099	0.093	0.2932
Dummy=1 if minority	-0.411	0.177	0.0202

Number of Observations		-2 Log L	7,330.257
Dependent >0:	1,860	Dependent = 0:	10,530

Table C.27
Logit Model of the Probability of Having at Least One Week of Unemployment
Dependent Variable =1 if at Least One Week of Unemployment in 1989
Single Females
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-1.471	0.238	0.0001
Dummy=1 if managerial or administrative	-1.324	0.334	0.0001
Dummy=1 if professional	-1.213	0.209	0.0001
Dummy=1 if clerical	-1.370	0.179	0.0001
Dummy=1 if sales & services	-0.661	0.166	0.0001
Dummy=1 if farm	-1.407	0.422	0.0009
Dummy=1 if Aged 16	0.073	0.180	0.6858
Dummy=1 if Aged 17 to 19	0.203	0.112	0.0686
Provincial Unemployment Rate 1988	0.093	0.020	0.0001
Weeks unemployed in 1988	0.750	0.106	0.0001
Maximum duration of benefits	-0.0002	0.007	0.9794
Benefit replacement ratio1	-0.125	0.459	0.7844
Total number of kids	0.049	0.071	0.4905
Dummy=1 if kids 0 - 2	0.143	0.321	0.6566
Dummy=1 if minority	-0.311	0.226	0.1685

Number of Observations		-2 Log L	2,715.929
Dependent >0:	609	Dependent = 0:	1,987

Table C.28
Logit Model of the Probability of Having at Least One Week of Unemployment
Dependent Variable =1 if at Least One Week of Unemployment in 1989
Single Females
Aged 25 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-1.229	0.313	0.0001
Dummy=1 if managerial or administrative	-0.908	0.219	0.0001
Dummy=1 if professional	-1.463	0.212	0.0001
Dummy=1 if clerical	-1.223	0.183	0.0001
Dummy=1 if sales & services	-1.023	0.183	0.0001
Dummy=1 if farm	-0.402	0.848	0.6357
Dummy=1 if Aged 25 to 34	0.045	0.136	0.7425
Dummy=1 if Aged 45 to 54	0.155	0.184	0.3995
Dummy=1 if Aged 55 to 64	0.285	0.206	0.1677
Dummy=1 if no education or elementary	-0.240	0.250	0.3368
Dummy=1 if some high school	-0.262	0.188	0.1648
Dummy=1 if some post secondary education	-0.219	0.201	0.2756
Dummy=1 if certificate or diploma	0.159	0.167	0.3430
Dummy=1 if university	0.058	0.185	0.7521
Dummy=1 if trade	-0.353	0.308	0.2519
Provincial Unemployment Rate 1988	0.147	0.026	0.0001
Weeks unemployed in 1988	1.659	0.126	0.0001
Maximum duration of benefits	-0.050	0.009	0.0001
Benefit replacement ratio1	1.724	0.643	0.0073
Total number of kids	0.235	0.074	0.0016
Dummy=1 if kids 0 - 2	-0.573	0.369	0.1203
Dummy=1 if minority	-0.139	0.235	0.5530

Number of Observations		-2 Log L	2,298.828
Dependent >0:	455	Dependent = 0:	2,368

Table C.29
Logit Model of the Probability of Having at Least One Week of Unemployment
Dependent Variable =1 if at Least One Week of Unemployment in 1989
Married Females
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-0.406	0.351	0.2470
Dummy=1 if managerial or administrative	-0.735	0.373	0.0488
Dummy=1 if professional	-1.106	0.261	0.0001
Dummy=1 if clerical	-0.748	0.211	0.0004
Dummy=1 if sales & services	-0.806	0.217	0.0002
Dummy=1 if farm	0.577	0.802	0.4716
Dummy=1 if Aged 16	-0.261	1.124	0.8167
Dummy=1 if Aged 17 to 19	0.305	0.227	0.1797
Provincial Unemployment Rate 1988	0.038	0.035	0.2733
Weeks unemployed in 1988	1.669	0.161	0.0001
Maximum duration of benefits	0.005	0.012	0.6903
Benefit replacement ratio1	-2.085	0.891	0.0193
Total number of kids	-0.248	0.146	0.0888
Dummy=1 if kids 0 - 2	0.466	0.239	0.0509
Dummy=1 if minority	0.034	0.504	0.9464
Number of Observations		-2 Log L	1,240.73
Dependent >0:	349	Dependent = 0:	885

Table C.30
Logit Model of the Probability of Having at Least One Week of Unemployment
Dependent Variable =1 if at Least One Week of Unemployment in 1989
Married Females
Aged 25 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-2.301	0.181	0.0001
Dummy=1 if managerial or administrative	-0.536	0.133	0.0001
Dummy=1 if professional	-0.867	0.125	0.0001
Dummy=1 if clerical	-0.752	0.103	0.0001
Dummy=1 if sales & services	-0.683	0.104	0.0001
Dummy=1 if farm	-0.518	0.244	0.0341
Dummy=1 if Aged 25 to 34	0.132	0.081	0.1007
Dummy=1 if Aged 45 to 54	-0.258	0.105	0.0139
Dummy=1 if Aged 55 to 64	0.030	0.145	0.8392
Dummy=1 if no education or elementary	-0.029	0.138	0.8357
Dummy=1 if some high school	0.267	0.100	0.0076
Dummy=1 if some post secondary education	-0.025	0.123	0.8427
Dummy=1 if certificate or diploma	0.120	0.098	0.2308
Dummy=1 if university	-0.171	0.122	0.1624
Dummy=1 if trade	-0.098	0.172	0.5665
Provincial Unemployment Rate 1988	0.119	0.014	0.0001
Weeks unemployed in 1988	1.894	0.075	0.0001
Maximum duration of benefits	-0.029	0.005	0.0001
Benefit replacement ratio1	1.538	0.390	0.0001
Total number of kids	-0.032	0.037	0.3881
Dummy=1 if kids 0 - 2	0.060	0.100	0.5485
Dummy=1 if minority	-0.222	0.163	0.1724

Number of Observations		-2 Log L	6,470.468
Dependent >0:	1,672	Dependent = 0:	8,398

Table C.31
Tobit Model of the Duration of Unemployment
Dependent Variable = Unemployment Weeks in 1989 Where Weekly Wage in 1988 > 0
Single Males
16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	3.636	0.175	0.0001
Dummy=1 if managerial or administrative	-0.976	0.531	0.0662
Dummy=1 if professional	-1.022	0.189	0.0001
Dummy=1 if clerical	-0.660	0.189	0.0005
Dummy=1 if sales & services	-0.709	0.141	0.0001
Dummy=1 if farm	0.063	0.288	0.8269
Dummy=1 if Aged 16	0.129	0.228	0.5716
Dummy=1 if Aged 17 to 19	0.016	0.129	0.9041
Dummy=1 if no education or elementary	-0.008	0.333	0.9804
Dummy=1 if some high school	-0.029	0.157	0.8547
Dummy=1 if some post secondary education	0.166	0.154	0.2811
Dummy=1 if certificate or diploma	0.342	0.218	0.1165
Dummy=1 if university	0.149	0.267	0.5771
Dummy=1 if trade	-0.883	0.223	0.0001
Weeks unemployed in 1988	0.017	0.006	0.0031
Maximum duration of benefits	0.015	0.007	0.0260
Benefit replacement ratio1	-0.773	0.504	0.1250
Total number of kids	0.152	0.085	0.0719
Dummy=1 if kids 0 - 2	-1.221	0.472	0.0096
Dummy=1 if minority	-0.403	0.298	0.1757
Scale	1.095	0.043	
		Log Like:	-1,162.5797
Non-censored	396	Left Censored:	694

Table C.32
Tobit Model of the Duration of Unemployment
Dependent Variable = Unemployment Weeks in 1989 Where Weekly Wage in 1988 > 0
Single Males
25 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	4.490	0.390	0.0001
Dummy=1 if managerial or administrative	-0.444	0.320	0.1655
Dummy=1 if professional	-0.261	0.315	0.4071
Dummy=1 if clerical	-0.402	0.309	0.1925
Dummy=1 if sales & services	-0.232	0.200	0.2443
Dummy=1 if farm	0.102	0.464	0.8251
Dummy=1 if Aged 25 to 34	-0.822	0.231	0.0004
Dummy=1 if Aged 45 to 54	-0.473	0.384	0.2178
Dummy=1 if Aged 55 to 64	-0.107	0.375	0.7759
Dummy=1 if no education or elementary	-0.335	0.286	0.2412
Dummy=1 if some high school	0.291	0.260	0.2640
Dummy=1 if some post secondary education	0.112	0.286	0.6959
Dummy=1 if certificate or diploma	-0.209	0.270	0.4384
Dummy=1 if university	-0.650	0.281	0.0206
Dummy=1 if trade	-0.215	0.318	0.4989
Weeks unemployed in 1988	0.030	0.007	0.0001
Maximum duration of benefits	0.025	0.009	0.0041
Benefit replacement ratio1	-1.704	0.673	0.0114
Total number of kids	-0.201	0.111	0.0691
Dummy=1 if kids 0 - 2	-0.807	0.380	0.0339
Dummy=1 if minority	0.441	0.338	0.1927
Scale	1.127	0.064	
		Log Like:	-628.6082
Non-censored 202		Left Censored:	416

Table C.33
Tobit Model of the Duration of Unemployment
Dependent Variable = Unemployment Weeks in 1989 Where Weekly Wage in 1988 > 0
Married Males
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	3.804	0.882	0.0001
Dummy=1 if managerial or administrative	-0.089	1.081	0.9342
Dummy=1 if professional	0.122	0.710	0.8640
Dummy=1 if clerical	0.167	0.609	0.7842
Dummy=1 if sales & services	-0.163	0.374	0.6631
Dummy=1 if farm	1.157	0.567	0.0412
Dummy=1 if Aged 16	-1.969	1.401	0.1598
Dummy=1 if Aged 17 to 19	-0.134	0.441	0.7607
Dummy=1 if no education or elementary	23.415	75,880.420	0.9998
Dummy=1 if some high school	0.668	0.352	0.0573
Dummy=1 if some post secondary education	1.278	0.534	0.0167
Dummy=1 if certificate or diploma	-0.552	0.400	0.1675
Dummy=1 if university	0.423	0.625	0.4989
Dummy=1 if trade	0.295	0.465	0.5257
Weeks unemployed in 1988	0.024	0.015	0.1055
Maximum duration of benefits	0.014	0.015	0.0331
Benefit replacement ratio1	-2.857	1.629	0.0795
Total number of kids	0.697	0.283	0.0137
Dummy=1 if kids 0 - 2	-0.898	0.363	0.0134
Dummy=1 if minority	1.168	0.550	0.0337
Scale	1.022	0.092	
		Log Like:	-203.2075
Non-censored	90	Left Censored:	127

Table C.34
Tobit Model of the Duration of Unemployment
Dependent Variable = Unemployment Weeks in 1989 Where Weekly Wage in 1988 > 0
Married Males
Aged 25 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	4.684	0.274	0.0001
Dummy=1 if managerial or administrative	-0.040	0.187	0.8317
Dummy=1 if professional	-0.183	0.201	0.3632
Dummy=1 if clerical	-0.818	0.205	0.0001
Dummy=1 if sales & services	-0.449	0.137	0.0010
Dummy=1 if farm	0.491	0.392	0.2099
Dummy=1 if Aged 25 to 34	-0.442	0.122	0.0003
Dummy=1 if Aged 45 to 54	-0.114	0.165	0.4883
Dummy=1 if Aged 55 to 64	0.066	0.201	0.7410
Dummy=1 if no education or elementary	0.419	0.183	0.0222
Dummy=1 if some high school	0.035	0.144	0.8086
Dummy=1 if some post secondary education	-0.266	0.166	0.1096
Dummy=1 if certificate or diploma	0.096	0.177	0.5889
Dummy=1 if university	0.052	0.194	0.7900
Dummy=1 if trade	-0.375	0.168	0.0261
Weeks unemployed in 1988	0.005	0.004	0.2028
Maximum duration of benefits	0.008	0.006	0.1758
Benefit replacement ratio1	-1.499	0.450	0.0009
Total number of kids	-0.094	0.049	0.0533
Dummy=1 if kids 0 - 2	0.145	0.131	0.2691
Dummy=1 if minority	0.448	0.313	0.1527
Scale	1.049	0.038	
		Log Like:	-1,421.0912
Non-censored 597		Left Censored:	1,263

Table C.35
Tobit Model of the Duration of Unemployment
Dependent Variable = Unemployment Weeks in 1989 Where Weekly Wage in 1988 > 0
Single Females
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	4.352	0.352	0.0001
Dummy=1 if managerial or administrative	-1.118	0.462	0.0156
Dummy=1 if professional	-1.591	0.307	0.0001
Dummy=1 if clerical	-0.773	0.288	0.0072
Dummy=1 if sales & services	-1.011	0.259	0.0001
Dummy=1 if farm	0.308	0.998	0.7559
Dummy=1 if Aged 16	-1.039	0.265	0.0001
Dummy=1 if Aged 17 to 19	0.011	0.183	0.9512
Dummy=1 if no education or elementary	1.206	0.806	0.1346
Dummy=1 if some high school	0.225	0.231	0.3303
Dummy=1 if some post secondary education	-0.419	0.193	0.0302
Dummy=1 if certificate or diploma	-0.728	0.254	0.0041
Dummy=1 if university	0.443	0.347	0.2022
Dummy=1 if trade	-0.559	0.314	0.0747
Weeks unemployed in 1988	0.019	0.008	0.0180
Maximum duration of benefits	0.003	0.009	0.7664
Benefit replacement ratio1	-0.072	0.630	0.9087
Total number of kids	-0.122	0.101	0.2276
Dummy=1 if kids 0 - 2	0.408	0.429	0.3416
Scale	1.035	0.053	
	Log Like:	-610.1009	
Non-censored 251	Left Censored:	358	

Table C.36
Tobit Model of the Duration of Unemployment
Dependent Variable = Unemployment Weeks in 1989 Where Weekly Wage in 1988 > 0
Single Females
Aged 25 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	5.655	0.398	0.0001
Dummy=1 if managerial or administrative	-1.682	0.352	0.0001
Dummy=1 if professional	-1.026	0.343	0.0028
Dummy=1 if clerical	-1.672	0.304	0.0001
Dummy=1 if sales & services	-2.264	0.302	0.0001
Dummy=1 if farm	-2.042	0.698	0.0035
Dummy=1 if Aged 25 to 34	-0.085	0.172	0.6201
Dummy=1 if Aged 45 to 54	-0.101	0.220	0.6467
Dummy=1 if Aged 55 to 64	0.047	0.279	0.8667
Dummy=1 if no education or elementary	-0.029	0.298	0.9220
Dummy=1 if some high school	-0.266	0.224	0.2344
Dummy=1 if some post secondary education	-0.469	0.246	0.0564
Dummy=1 if certificate or diploma	-0.176	0.215	0.4125
Dummy=1 if university	-0.686	0.229	0.0027
Dummy=1 if trade	-0.097	0.329	0.7681
Weeks unemployed in 1988	0.008	0.006	0.1594
Benefit replacement ratio1	-0.486	0.311	0.1183
Total number of kids	-0.063	0.085	0.4576
Dummy=1 if kids 0 - 2	0.481	0.502	0.3380
Scale	0.871	0.052	
	Log Like:	-440.9353	
Non-censored 178	Left Censored:	277	

Table C.37
Tobit Model of the Duration of Unemployment
Dependent Variable = Unemployment Weeks in 1989 Where Weekly Wage in 1988 > 0
Married Females
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	3.575	0.301	0.0001
Dummy=1 if managerial or administrative	0.148	0.669	0.8250
Dummy=1 if professional	-1.818	0.325	0.0001
Dummy=1 if clerical	-1.062	0.248	0.0001
Dummy=1 if sales & services	-1.043	0.236	0.0001
Dummy=1 if farm	1.508	0.168	0.3683
Dummy=1 if Aged 16	-0.337	0.918	0.0713
Dummy=1 if Aged 17 to 19	-0.128	0.205	0.5315
Dummy=1 if no education or elementary	0.120	0.427	0.7784
Dummy=1 if some high school	0.292	0.219	0.1836
Dummy=1 if some post secondary education	0.469	0.261	0.0724
Dummy=1 if certificate or diploma	0.203	0.226	0.3698
Dummy=1 if university	0.814	0.344	0.0180
Dummy=1 if trade	0.543	0.503	0.2806
Weeks unemployed in 1988	0.018	0.008	0.0195
Maximum duration of benefits	0.041	0.011	0.0001
Benefit replacement ratio1	-2.436	0.781	0.0018
Total number of kids	0.339	0.158	0.0323
Dummy=1 if kids 0 - 2	-0.437	0.245	0.0747
Scale	0.863	0.057	
		Log Like:	-340.2597
Non-censored	149	Left Censored:	200

Table C.38
Tobit Model of the Duration of Unemployment
Dependent Variable = Unemployment Weeks in 1989 Where Weekly Wage in 1988 > 0
Married Females
Aged 25 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	4.080	0.242	0.0001
Dummy=1 if managerial or administrative	-1.193	0.211	0.0001
Dummy=1 if professional	-1.120	0.199	0.0001
Dummy=1 if clerical	-1.037	0.170	0.0001
Dummy=1 if sales & services	-0.948	0.169	0.0001
Dummy=1 if farm	0.527	0.530	0.3197
Dummy=1 if Aged 25 to 34	0.274	0.120	0.0229
Dummy=1 if Aged 45 to 54	0.288	0.154	0.0610
Dummy=1 if Aged 55 to 64	1.082	0.292	0.0002
Dummy=1 if no education or elementary	0.287	0.230	0.2114
Dummy=1 if some high school	0.161	0.147	0.2750
Dummy=1 if some post secondary education	0.190	0.177	0.2828
Dummy=1 if certificate or diploma	0.135	0.141	0.3387
Dummy=1 if university	0.339	0.196	0.0836
Dummy=1 if trade	0.406	0.270	0.1328
Weeks unemployed in 1988	0.013	0.004	0.0034
Maximum duration of benefits	0.036	0.006	0.0001
Benefit replacement ratio1	-2.473	0.479	0.0001
Total number of kids	0.109	0.056	0.0533
Dummy=1 if kids 0 - 2	-0.039	0.155	0.8005
Scale	1.054	0.041	
		Log Like:	-1,305.4707
Non-censored	564	Left Censored:	1,108

Table C.39
Logit Model of the Probability of Being Constrained
Dependent Variable = 1 if Underemployed in 1989
Single Males
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	0.325	0.361	0.3687
Dummy=1 if managerial or administrative	-0.589	0.436	0.1765
Dummy=1 if professional	-0.337	0.280	0.2289
Dummy=1 if sales & services	-0.496	0.164	0.0025
Dummy=1 if clerical	0.101	0.229	0.6595
Dummy=1 if farm	-0.330	0.298	0.2690
Dummy=1 if Aged 16	-1.115	0.340	0.0010
Dummy=1 if Aged 17 to 19	-1.552	0.274	0.0001
Dummy=1 if Aged 20 to 24	-0.930	0.245	0.0001
Dummy=1 if Aged 25 to 34	-0.695	0.245	0.0045
Dummy=1 if Aged 45 to 54	-0.475	0.369	0.1978
Dummy=1 if Aged 55 to 64	-0.738	0.377	0.0500
Dummy=1 if no education or elementary	0.084	0.246	0.7326
Dummy=1 if some high school	0.197	0.176	0.2640
Dummy=1 if some post secondary education	-0.084	0.190	0.6574
Dummy=1 if certificate or diploma	0.053	0.234	0.8212
Dummy=1 if university	-0.120	0.293	0.6820
Dummy=1 if trade	-0.480	0.324	0.1391
Weeks unemployed in 1988	-0.010	0.005	0.0340
Weeks unemployed in 1989	0.045	0.004	0.0001
Benefit replacement ratio1	-2.206	0.253	0.0001
Dummy=1 if received U.S.	0.913	0.149	0.0001
Wage	-0.003	0.000	0.0001
Provincial Unemployment Rate 1988	0.018	0.024	0.4628
Total number of kids	0.029	0.100	0.7728
Total number of kids1	-2.123	0.905	0.0190
Total number of kids2	0.690	0.435	0.1129
Dummy=1 if limited by a disability	-0.093	0.250	0.7100
Dummy=1 if foreign	-0.366	0.243	0.1324
Dummy=1 if minority	0.489	0.291	0.0931
Dummy=1 if Non-English	0.072	0.126	0.5651
Number of Observations		-2 Log L	2,367.284
Dependent >0:	626	Dependent = 0:	1,402

Table C.40
Logit Model of the Probability of Being Constrained
Dependent Variable = 1 if Underemployed in 1989
Married Males
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-0.890	0.313	0.0045
Dummy=1 if managerial or administrative	-0.410	0.246	0.0950
Dummy=1 if professional	-0.672	0.276	0.0147
Dummy=1 if sales & services	-0.625	0.187	0.0008
Dummy=1 if clerical	-0.040	0.278	0.8846
Dummy=1 if farm	-0.244	0.285	0.3919
Dummy=1 if Aged 16 to 19	-0.620	0.687	0.3667
Dummy=1 if Aged 20 to 24	-0.035	0.235	0.8827
Dummy=1 if Aged 25 to 34	0.387	0.159	0.0149
Dummy=1 if Aged 45 to 54	0.110	0.187	0.5586
Dummy=1 if Aged 55 to 64	0.208	0.218	0.3413
Dummy=1 if no education or elementary	0.329	0.198	0.0956
Dummy=1 if some high school	0.033	0.177	0.8528
Dummy=1 if some post secondary education	0.134	0.219	0.5404
Dummy=1 if certificate or diploma	-0.117	0.219	0.5931
Dummy=1 if university	0.599	0.248	0.0156
Dummy=1 if trade	0.179	0.227	0.4312
Weeks unemployed in 1988	-0.005	0.004	0.2106
Weeks unemployed in 1989	0.040	0.004	0.0001
Benefit replacement ratio1	-1.919	0.277	0.0001
Dummy=1 if received U.S.	0.852	0.139	0.0001
Wage	-0.001	0.000	0.0001
Provincial Unemployment Rate 1988	0.003	0.022	0.8998
Total number of kids	-0.121	0.071	0.0906
Total number of kids1	-0.135	0.169	0.4268
Total number of kids2	0.081	0.178	0.6475
Dummy=1 if limited by a disability	0.366	0.222	0.0996
Dummy=1 if foreign	0.087	0.174	0.6181
Dummy=1 if minority	0.232	0.301	0.4405
Dummy=1 if Non-English	0.007	0.116	0.9498

Number of Observations		-2 Log L	2,363.315
Dependent >0:	709	Dependent = 0:	1,658

Table C.41
Logit Model of the Probability of Being Constrained
Dependent Variable = 1 if Underemployed in 1989
Single Females
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	1.799	0.427	0.0001
Dummy=1 if managerial or administrative	-0.798	0.400	0.0463
Dummy=1 if professional	-1.429	0.272	0.0001
Dummy=1 if sales & services	-2.003	0.199	0.0001
Dummy=1 if clerical	-1.816	0.230	0.0001
Dummy=1 if farm	-2.253	0.886	0.0110
Dummy=1 if Aged 16	-1.207	0.354	0.0006
Dummy=1 if Aged 17 to 19	-1.057	0.279	0.0002
Dummy=1 if Aged 20 to 24	-0.942	0.273	0.0006
Dummy=1 if Aged 25 to 34	-0.697	0.266	0.0088
Dummy=1 if Aged 45 to 54	-0.805	0.357	0.0242
Dummy=1 if Aged 55 to 64	-0.133	0.408	0.7439
Dummy=1 if no education or elementary	1.181	0.414	0.0043
Dummy=1 if some high school	0.167	0.238	0.4830
Dummy=1 if some post secondary education	0.446	0.230	0.0521
Dummy=1 if certificate or diploma	0.439	0.256	0.0867
Dummy=1 if university	0.033	0.335	0.9221
Dummy=1 if trade	0.906	0.374	0.0154
Weeks unemployed in 1988	0.003	0.006	0.5704
Weeks unemployed in 1989	0.030	0.006	0.0001
Benefit replacement ratio1	-1.530	0.312	0.0001
Dummy=1 if received U.S.	0.911	0.198	0.0001
Wage	-0.005	0.000	0.0001
Provincial Unemployment Rate 1988	-0.062	0.028	0.0273
Total number of kids	0.124	0.102	0.2241
Total number of kids1	0.515	0.385	0.1813
Total number of kids2	0.108	0.322	0.7367
Dummy=1 if limited by a disability	1.172	0.280	0.0001
Dummy=1 if foreign	-0.913	0.284	0.0013
Dummy=1 if minority	0.380	0.340	0.2637
Dummy=1 if Non-English	0.425	0.154	0.0058
Number of Observations		-2 Log L	1,824.888
Dependent >0:	503	Dependent = 0:	955

Table C.42
Logit Model of the Probability of Being Constrained
Dependent Variable = 1 if Underemployed in 1989
Married Females
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	0.765	0.299	0.0104
Dummy=1 if managerial or administrative	-2.240	0.278	0.0001
Dummy=1 if professional	-2.006	0.225	0.0001
Dummy=1 if sales & services	-2.328	0.166	0.0001
Dummy=1 if clerical	-2.029	0.173	0.0001
Dummy=1 if farm	-2.275	0.388	0.0001
Dummy=1 if Aged 16	-0.070	1.602	0.9652
Dummy=1 if Aged 17 to 19	-0.673	0.445	0.1305
Dummy=1 if Aged 20 to 24	0.062	0.210	0.7681
Dummy=1 if Aged 25 to 34	0.044	0.162	0.7855
Dummy=1 if Aged 45 to 54	0.367	0.200	0.0670
Dummy=1 if Aged 55 to 64	0.361	0.293	0.2176
Dummy=1 if no education or elementary	-0.643	0.238	0.0069
Dummy=1 if some high school	0.047	0.172	0.0784
Dummy=1 if some post secondary education	-0.026	0.220	0.9066
Dummy=1 if certificate or diploma	0.486	0.182	0.0075
Dummy=1 if university	0.367	0.238	0.1234
Dummy=1 if trade	0.679	0.303	0.2510
Weeks unemployed in 1988	-0.012	0.004	0.0075
Weeks unemployed in 1989	0.040	0.005	0.0001
Benefit replacement ratio1	-1.638	0.244	0.0001
Dummy=1 if received U.S.	1.013	0.144	0.0001
Wage	-0.003	0.000	0.0001
Provincial Unemployment Rate 1988	-0.017	0.020	0.4092
Total number of kids	-0.092	0.757	0.2237
Total number of kids1	-0.235	0.175	0.1800
Total number of kids2	0.363	0.181	0.0448
Dummy=1 if limited by a disability	-0.116	0.281	0.6808
Dummy=1 if foreign	0.486	0.174	0.0051
Dummy=1 if minority	0.673	0.292	0.0213
Dummy=1 if Non-English	0.059	0.122	0.6288
Number of Observations		-2 Log L	2,615.635
Dependent >0:	876	Dependent = 0:	1,677

Table C.43
Logit Model of the Probability of Having Self-Employment 1989
Dependent Variable = 1 if at Least One Week of Self-Employment in 1989
Single Males
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-3.414	0.320	0.0001
Dummy=1 if no education or elementary	-0.500	0.324	0.1231
Dummy=1 if some high school	-0.609	0.235	0.0094
Dummy=1 if some post secondary education	-0.216	0.217	0.3216
Dummy=1 if certificate or diploma	-0.061	0.246	0.8056
Dummy=1 if university	0.165	0.250	0.5075
Dummy=1 if trade	0.536	0.308	0.0822
Weeks unemployed in 1988	0.037	0.006	0.0001
Self-Employment in 1988	0.143	0.005	0.0001
Weeks not in the labour force 1988	0.034	0.004	0.0001
Provincial Unemployment Rate 1988	-0.038	0.027	0.1632
Dummy=1 if Aged 16	-0.510	0.344	0.1385
Dummy=1 if Aged 17 to 19	-1.104	0.282	0.0001
Dummy=1 if Aged 20 to 24	-0.764	0.246	0.0019
Dummy=1 if Aged 25 to 34	-0.142	0.226	0.5292
Dummy=1 if Aged 45 to 54	-0.031	0.327	0.9252
Dummy=1 if Aged 55 to 64	0.171	0.366	0.6400
Dummy=1 if minority	-1.121	0.408	0.0060
Dummy=1 if foreign	0.298	0.222	0.1797
Dummy=1 if Non-English	-0.767	0.158	0.0001
Dummy=1 if managerial or administrative	0.411	0.269	0.1276
Dummy=1 if professional	-0.206	0.247	0.4047
Dummy=1 if clerical	-1.260	0.438	0.0040
Dummy=1 if sales & services	0.493	0.176	0.0052
Dummy=1 if farm	1.455	0.237	0.0001

Number of Observations		-2 Log L	5,675.823
Dependent >0:	901	Dependent = 0:	6,277

Table C.44
Logit Model of the Probability of Having Self-Employment 1989
Dependent Variable = 1 if at Least One Week of Self-Employment in 1989
Married Males
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-3.883	0.205	0.0001
Dummy=1 if no education or elementary	-0.147	0.196	0.4531
Dummy=1 if some high school	0.207	0.163	0.2046
Dummy=1 if some post secondary education	0.337	0.183	0.0655
Dummy=1 if certificate or diploma	0.524	0.165	0.0014
Dummy=1 if university	0.416	0.169	0.0136
Dummy=1 if trade	0.495	0.208	0.0173
Weeks unemployed in 1988	0.044	0.004	0.0001
Self-Employment in 1988	0.149	0.003	0.0001
Weeks not in the labour force 1988	0.041	0.004	0.0001
Provincial Unemployment Rate 1988	-0.036	0.019	0.0585
Dummy=1 if Aged 16 to 19	-1.110	0.975	0.2603
Dummy=1 if Aged 20 to 24	-0.294	0.223	0.1878
Dummy=1 if Aged 25 to 34	0.099	0.118	0.3994
Dummy=1 if Aged 45 to 54	-0.209	0.141	0.1386
Dummy=1 if Aged 55 to 64	-0.304	0.169	0.0727
Dummy=1 if minority	1.133	0.188	0.0001
Dummy=1 if foreign	-0.164	0.145	0.2580
Dummy=1 if Non-English	-0.341	0.104	0.0010
Dummy=1 if managerial or administrative	0.344	0.152	0.0231
Dummy=1 if professional	0.000	0.170	0.9989
Dummy=1 if clerical	-0.684	0.330	0.0384
Dummy=1 if sales & services	0.464	0.133	0.0005
Dummy=1 if farm	1.570	0.209	0.0001

Number of Observations		-2 Log L	16,706.009
Dependent >0:	3,999	Dependent = 0:	12,451

Table C.45
Logit Model of the Probability of Having Self-Employment 1989
Dependent Variable = 1 if at Least One Week of Self-Employment in 1989
Single Females
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-4.924	0.450	0.0001
Dummy=1 if no education or elementary	0.259	0.422	0.5396
Dummy=1 if some high school	0.662	0.248	0.0076
Dummy=1 if some post secondary education	0.117	0.252	0.6428
Dummy=1 if certificate or diploma	0.519	0.274	0.0586
Dummy=1 if university	0.563	0.303	0.0634
Dummy=1 if trade	0.679	0.408	0.0961
Weeks unemployed in 1988	0.031	0.008	0.0001
Self-Employment in 1988	0.140	0.005	0.0001
Weeks not in the labour force 1988	0.049	0.004	0.0001
Provincial Unemployment Rate 1988	-0.064	0.030	0.0300
Dummy=1 if Aged 16	-1.181	0.346	0.0006
Dummy=1 if Aged 17 to 19	-0.400	0.277	0.1490
Dummy=1 if Aged 20 to 24	-0.436	0.278	0.1170
Dummy=1 if Aged 25 to 34	0.086	0.261	0.7411
Dummy=1 if Aged 45 to 54	0.204	0.330	0.5361
Dummy=1 if Aged 55 to 64	0.308	0.355	0.3850
Dummy=1 if minority	-1.358	0.456	0.0029
Dummy=1 if foreign	-0.709	0.305	0.0199
Dummy=1 if Non-English	0.160	0.159	0.3137
Dummy=1 if managerial or administrative	0.469	0.421	0.2645
Dummy=1 if professional	0.527	0.340	0.1206
Dummy=1 if clerical	0.049	0.329	0.8820
Dummy=1 if sales & services	1.046	0.285	0.0002
Dummy=1 if farm	1.931	0.531	0.0003

Number of Observations		-2 Log L	3,726.689
Dependent >0:	531	Dependent = 0:	5,818

Table C.46
Logit Model of the Probability of Having Self-Employment 1989
Dependent Variable = 1 if at Least One Week of Self-Employment in 1989
Married Females
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-4.141	0.271	0.0001
Dummy=1 if no education or elementary	0.081	0.230	0.7235
Dummy=1 if some high school	0.161	0.165	0.0329
Dummy=1 if some post secondary education	0.441	0.180	0.0142
Dummy=1 if certificate or diploma	0.199	0.165	0.2263
Dummy=1 if university	0.043	0.198	0.8269
Dummy=1 if trade	0.714	0.240	0.0030
Weeks unemployed in 1988	0.030	0.005	0.0001
Self-Employment in 1988	0.151	0.004	0.0001
Weeks not in the labour force 1988	0.037	0.003	0.0001
Provincial Unemployment Rate 1988	-0.067	0.020	0.0010
Dummy=1 if Aged 16 to 19	0.314	0.371	0.3972
Dummy=1 if Aged 20 to 24	-0.041	0.194	0.8309
Dummy=1 if Aged 25 to 34	0.249	0.132	0.0588
Dummy=1 if Aged 45 to 54	0.021	0.166	0.8984
Dummy=1 if Aged 55 to 64	-0.163	0.242	0.4990
Dummy=1 if minority	-0.412	0.301	0.1704
Dummy=1 if foreign	-0.152	0.162	0.3478
Dummy=1 if Non-English	-0.330	0.118	0.0050
Dummy=1 if managerial or administrative	0.428	0.250	0.0872
Dummy=1 if professional	0.170	0.224	0.4474
Dummy=1 if clerical	-0.003	0.204	0.9873
Dummy=1 if sales & services	0.966	0.178	0.0001
Dummy=1 if farm	1.975	0.274	0.0001
Number of Observations		-2 Log L	9,885.834
Dependent >0:	2,000	Dependent = 0:	11,686

Table C.47
OLS Model of the Duration of Self-Employment Weeks in 1989
Dependent Variable = Self-Employment Weeks in 1989
Single Males
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	38.468	2.146	0.0001
Dummy=1 if no education or elementary	-1.294	1.895	0.4947
Dummy=1 if some high school	0.299	1.389	0.8298
Dummy=1 if some post secondary education	1.742	1.490	0.2427
Dummy=1 if certificate or diploma	-1.678	1.449	0.2472
Dummy=1 if university	0.004	1.475	0.9979
Dummy=1 if trade	1.458	2.068	0.4808
Weeks unemployed in 1988	-0.065	0.070	0.3539
Dummy =1 if Weeks not in the labour force 1988	-0.225	0.051	0.0001
Dummy =1 if self Employment in 1988	0.234	0.031	0.0001
Dummy=1 if managerial or administrative	1.133	1.645	0.4912
Dummy=1 if professional	3.630	1.460	0.0131
Dummy=1 if clerical	-3.742	3.352	0.2646
Dummy=1 if farm	1.340	1.245	0.2820
Dummy=1 if sales & services	-4.237	1.161	0.0003
Dummy=1 if minority	-6.742	2.855	0.0184
Dummy=1 if Non-English	0.916	0.925	0.3223
Dummy=1 if foreign	0.959	1.271	0.4506
Dummy=1 if 16	-4.507	2.293	0.0497
Dummy=1 if 17 to 19	-8.391	1.955	0.0001
Dummy=1 if 20 to 24	-6.514	1.582	0.0001
Dummy=1 if 25 to 34	-1.918	1.232	0.1200
Dummy=1 if 45 to 54	0.325	1.574	0.8365
Dummy=1 if 55 to 64	0.101	1.786	0.9549
Number of Observations 901	R Sqd Adjst:	0.3433	

Table C.48
OLS Model of the Duration of Self-Employment Weeks in 1989
Dependent Variable = Self-Employment Weeks in 1989
Married Males
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	36.314	0.768	0.0001
Dummy=1 if no education or elementary	-0.955	0.583	0.1012
Dummy=1 if some high school	-0.278	0.525	0.5962
Dummy=1 if some post secondary education	0.001	0.629	0.9981
Dummy=1 if certificate or diploma	-3.085	0.573	0.0001
Dummy=1 if university	0.026	0.549	0.9629
Dummy=1 if trade	0.306	0.719	0.6702
Weeks unemployed in 1988	0.130	0.032	0.0001
Dummy =1 if Weeks not in the labour force 1988	0.072	0.028	0.0086
Dummy =1 if self Employment in 1988	0.273	0.012	0.0001
Dummy=1 if managerial or administrative	0.197	0.517	0.7033
Dummy=1 if professional	0.059	0.602	0.9215
Dummy=1 if clerical	2.183	1.526	0.1525
Dummy=1 if farm	1.177	0.486	0.0156
Dummy=1 if sales & services	-1.267	0.461	0.0060
Dummy=1 if minority	-0.794	0.831	0.3398
Dummy=1 if Non-English	0.001	0.348	0.9977
Dummy=1 if foreign	0.280	0.471	0.5525
Dummy=1 if 16 to 19	-3.300	5.880	0.5747
Dummy=1 if 20 to 24	0.774	1.086	0.4758
Dummy=1 if 25 to 34	0.175	0.432	0.6845
Dummy=1 if 45 to 54	0.808	0.428	0.0592
Dummy=1 if 55 to 64	-0.096	0.496	0.8471
Number of Observations 3,999	R Sqd Adjst:	0.1621	

Table C.49
OLS Model of the Duration of Self-Employment Weeks in 1989
Dependent Variable = Self-Employment Weeks in 1989
Single Females
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	20.535	4.413	0.0001
Dummy=1 if no education or elementary	8.538	3.233	0.0085
Dummy=1 if some high school	8.913	2.207	0.0001
Dummy=1 if some post secondary education	5.084	2.408	0.0353
Dummy=1 if certificate or diploma	8.314	2.516	0.0010
Dummy=1 if university	6.183	2.833	0.0295
Dummy=1 if trade	9.009	3.935	0.0225
Weeks unemployed in 1988	0.053	0.112	0.6345
Dummy =1 if Weeks not in the labour force 1988	0.005	0.061	0.9359
Dummy =1 if self Employment in 1988	0.366	0.045	0.0001
Dummy=1 if managerial or administrative	9.532	3.917	0.0153
Dummy=1 if professional	5.997	3.585	0.0950
Dummy=1 if clerical	0.234	3.654	0.9490
Dummy=1 if farm	5.924	4.353	0.1741
Dummy=1 if sales & services	3.772	3.094	0.2234
Dummy=1 if minority	2.506	3.781	0.5078
Dummy=1 if Non-English	2.685	1.439	0.0626
Dummy=1 if foreign	-3.034	2.235	0.1752
Dummy=1 if 16	-12.147	2.858	0.0001
Dummy=1 if 17 to 19	-5.441	2.567	0.0345
Dummy=1 if 20 to 24	-5.018	2.694	0.0630
Dummy=1 if 25 to 34	-3.192	2.315	0.1686
Dummy=1 if 45 to 54	-6.540	2.620	0.0129
Dummy=1 if 55 to 64	-2.923	2.726	0.2841
Number of Observations 531	R Sqd Adjst:	0.2872	

Table C.50
OLS Model of the Duration of Self-Employment Weeks in 1989
Dependent Variable = Self-Employment Weeks in 1989
Married Females
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	34.152	1.539	0.0001
Dummy=1 if no education or elementary	-3.526	1.114	0.0016
Dummy=1 if some high school	-1.083	0.904	0.2309
Dummy=1 if some post secondary education	0.206	1.000	0.8368
Dummy=1 if certificate or diploma	-1.932	0.864	0.0255
Dummy=1 if university	-0.876	1.009	0.3853
Dummy=1 if trade	-1.109	1.370	0.4179
Weeks unemployed in 1988	-0.000	0.058	0.9988
Dummy =1 if Weeks not in the labour force 1988	-0.019	0.028	0.4933
Dummy =1 if self Employment in 1988	0.287	0.020	0.0001
Dummy=1 if managerial or administrative	0.702	1.420	0.6211
Dummy=1 if professional	0.005	1.306	0.9968
Dummy=1 if clerical	2.166	1.266	0.0872
Dummy=1 if farm	3.007	1.264	0.0174
Dummy=1 if sales & services	0.476	1.096	0.6641
Dummy=1 if minority	-2.275	1.526	0.1362
Dummy=1 if Non-English	0.283	0.608	0.6411
Dummy=1 if foreign	0.440	0.796	0.5803
Dummy=1 if 16	-13.051	14.081	0.3782
Dummy=1 if 17 to 19	-1.659	3.566	0.6418
Dummy=1 if 20 to 24	-2.240	1.389	0.1070
Dummy=1 if 25 to 34	-0.470	0.722	0.5157
Dummy=1 if 45 to 54	1.300	0.761	0.0882
Dummy=1 if 55 to 64	-0.329	1.046	0.7534
Number of Observations 2,000	R Sqd Adjst:	0.2132	

Table C.51
Tobit Model of Non-Standard Employment Weeks in 1989
Dependent Variable = Employment Weeks in 1989 Where Hours Worked < 15/Week
Single Males
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-81.185	7.898	0.0001
Dummy=1 if no education or elementary	10.986	7.970	0.1681
Dummy=1 if some high school	19.449	2.886	0.0001
Dummy=1 if some post secondary education	15.688	2.885	0.0001
Dummy=1 if certificate or diploma	9.537	3.824	0.0126
Dummy=1 if university	13.844	5.216	0.0079
Dummy=1 if trade	-14.928	7.546	0.0479
Weeks unemployed in 1988	-0.707	0.155	0.0001
Dummy=1 if managerial or administrative	-9.952	6.205	0.1088
Dummy=1 if professional	15.709	3.755	0.0001
Dummy=1 if clerical	14.129	3.765	0.0002
Dummy=1 if farm	11.650	5.050	0.0211
Dummy=1 if sales & services	16.443	2.891	0.0001
Dummy=1 if foreign	9.392	3.472	0.0068
Weeks to Needed qualify	1.915	0.560	0.0006
Dummy=1 if primary	-11.175	3.999	0.0052
Dummy=1 if utility	2.235	5.345	0.6759
Dummy=1 retail trade & wholesales	13.068	3.065	0.0001
Dummy=1 finance	-14.626	5.403	0.0068
Dummy=1 other service	11.769	3.445	0.0006
Dummy=1 government	-16.602	6.727	0.0136
Number of Observations		Log Like:	-6,204.767882
Non-censored:	798	Left Censored:	3,114.000

Table C.52
Tobit Model of Non-Standard Employment Weeks in 1989
Dependent Variable = Employment Weeks in 1989 Where Hours Worked < 15/Week
Single Males
Aged 25 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-258.175	52.875	0.0001
Provincial Unemployment Rate 1988	3.731	2.180	0.0870
Dummy=1 if managerial or administrative	3.578	8.916	0.6882
Dummy=1 if professional	27.267	7.229	0.0002
Dummy=1 if clerical	37.854	9.275	0.0001
Dummy=1 if farm	17.746	11.502	0.1229
Dummy=1 if sales & services	23.549	7.244	0.0012
Dummy=1 if minority	-31.644	14.997	0.0349
Dummy=1 if foreign	-17.631	8.113	0.0298
Weeks to Needed qualify	8.046	2.982	0.0070
Dummy=1 If employed 19 or Less	25.512	6.227	0.0001
Number of Observations	Log Like:	-1,607.320558	
Non-censored: 188	Left Censored:	3,078.000	

Table C.53
Tobit Model of Non-Standard Employment Weeks in 1989
Dependent Variable = Employment Weeks in 1989 Where Hours Worked < 15/Week
Married Males
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-132.561	21.097	0.0001
Provincial Unemployment Rate 1988	5.156	1.694	0.0023
Dummy=1 if managerial or administrative	-2.310	22.613	0.9186
Dummy=1 if professional	32.180	12.009	0.0070
Dummy=1 if clerical	56.884	13.050	0.0001
Dummy=1 if farm	23.627	16.321	0.1477
Dummy=1 if sales & services	36.396	10.482	0.0005
Dummy=1 if foreign	36.030	12.886	0.0052
Total number of kids	-37.411	13.085	0.0043
Total Number of Kids Squared	14.146	4.593	0.0021
Number of Observations	Log Like:	-513.9325624	
Non-censored: 67	Left Censored:	760.000	

Table C.54
Tobit Model of Non-Standard Employment Weeks in 1989
Dependent Variable = Employment Weeks in 1989 Where Hours Worked < 15/Week
Married Males
Aged 25 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-188.562	12.778	0.0001
Dummy =1 if Weeks not in the labour force 1988	0.402	0.173	0.0200
Dummy=1 if managerial or administrative	-12.631	5.220	0.0155
Dummy=1 if professional	18.073	4.470	0.0001
Dummy=1 if clerical	7.928	7.406	0.2844
Dummy=1 if farm	5.406	7.318	0.4601
Dummy=1 if sales & services	23.063	4.284	0.0001
Dummy=1 if foreign	-11.752	4.234	0.0055
Weeks to Needed qualify	3.176	0.859	0.0002
Dummy=1 If employed 19 or Less	21.308	4.304	0.0001
Union89	-21.075	9.300	0.0234
Total number of kids	-4.732	1.481	0.0014
Number of Observations		Log Like:	-5,353.735946
Non-censored:	653	Left Censored:	14,970.000

Table C.55
Tobit Model of Non-Standard Employment Weeks in 1989
Dependent Variable = Employment Weeks in 1989 Where Hours Worked < 15/Week
Single Females
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-33.445	5.566	0.0001
Dummy=1 if no education or elementary	24.021	10.235	0.0189
Dummy=1 if some high school	14.420	2.923	0.0001
Dummy=1 if some post secondary education	14.776	2.616	0.0001
Dummy=1 if certificate or diploma	3.452	3.382	0.3074
Dummy=1 if university	4.614	4.528	0.3082
Dummy=1 if trade	1.905	6.666	0.7751
Weeks unemployed in 1988	-0.492	0.140	0.0004
Provincial Unemployment Rate 1988	-2.593	0.365	0.0001
Dummy=1 if managerial or administrative	-6.187	7.530	0.4112
Dummy=1 if professional	19.330	4.792	0.0001
Dummy=1 if clerical	19.537	4.441	0.0001
Dummy=1 if farm	-6.818	10.412	0.5126
Dummy=1 if sales & services	15.520	4.471	0.0005
Dummy=1 if minority	18.176	4.213	0.0001
Dummy=1 if foreign	-8.240	3.649	0.0240
Dummy=1 if kids 0 - 2	-31.243	8.538	0.0003
Dummy=1 if kids 3 - 5	3.380	6.548	0.6057
Dummy=1 if kids 6 - 15	8.333	2.564	0.0012
Total Number of Kids Squared	1.292	0.668	0.0533
Dummy=1 if primary	9.836	6.705	0.1424
Dummy=1 if utility	-17.187	6.489	0.0081
Dummy=1 retail trade & wholesales	13.814	3.129	0.0001
Dummy=1 finance	-12.172	4.078	0.0028
Dummy=1 other service	8.591	3.192	0.0071
Dummy=1 government	3.350	4.599	0.4664
Dummy=1 If employed 19 or Less	8.679	2.047	0.0001
Dummy=1 if Not In The Labour Force for 53 Weeks	-12.332	4.143	0.0029
Dummy=1 if 16 - 24			
Number of Observations		Log Like:	-6,136.44477
Non-censored: 876		Left Censored:	2,230.000

Table C.56
Tobit Model of Non-Standard Employment Weeks in 1989
Dependent Variable = Employment Weeks in 1989 Where Hours Worked < 15/Week
Single Females
Aged 25 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-100.033	10.671	0.0001
Weeks not in the labour force 1988	0.584	0.136	0.0001
Provincial Unemployment Rate 1988	-2.119	0.758	0.0052
Dummy=1 if managerial or administrative	2.912	9.797	0.7663
Dummy=1 if professional	36.286	8.306	0.0001
Dummy=1 if clerical	20.838	8.249	0.0115
Dummy=1 if farm	22.305	26.701	0.4035
Dummy=1 if sales & services	45.310	8.213	0.0001
Dummy=1 if limited by a disability	13.867	6.621	0.0362
Dummy=1 if minority	-18.469	8.800	0.0358
Dummy=1 if Non-English	-10.164	3.976	0.1060
Dummy=1 If employed 19 or Less	21.114	4.392	0.0001
Number of Observations		Log Like:	-2,737.700336
Non-censored: 331		Left Censored:	2,912.000

Table C.57
Tobit Model of Non-Standard Employment Weeks in 1989
Dependent Variable = Employment Weeks in 1989 Where Hours Worked < 15/Week
Married Females
Aged 16 to 24 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-79.632	7.176	0.0001
Dummy=1 if Non-English	19.340	4.719	0.0001
Dummy=1 If employed 19 or Less	17.032	5.570	0.0022
Dummy=1 If employed 500 or More	11.908	5.615	0.0339
Number of Observations		Log Like:	-1,196.49128
Non-censored: 178		Left Censored:	1,201.000

Table C.58
Tobit Model of Non-Standard Employment Weeks in 1989
Dependent Variable = Employment Weeks in 1989 Where Hours Worked < 15/Week
Married Females
Aged 25 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-170.564	9.013	0.0001
Dummy=1 if no education or elementary	11.185	4.338	0.0099
Dummy=1 if some high school	4.472	3.371	0.1846
Dummy=1 if some post secondary education	7.894	3.820	0.0388
Dummy=1 if certificate or diploma	7.171	3.094	0.0205
Dummy=1 if university	13.313	3.389	0.0001
Dummy=1 if trade	9.187	5.141	0.0740
Weeks unemployed in 1988	0.436	0.125	0.0005
Weeks not in the labour force-1988	0.492	0.064	0.0001
Dummy=1 if managerial or administrative	11.076	5.384	0.0397
Dummy=1 if professional	37.652	4.601	0.0001
Dummy=1 if clerical	33.587	4.450	0.0001
Dummy=1 if farm	21.888	8.683	0.0117
Dummy=1 if sales & services	36.821	4.512	0.0001
Dummy=1 if minority	-11.458	5.597	0.0406
Dummy=1 if foreign	-6.804	2.920	0.0198
Weeks to Needed qualify	4.363	0.567	0.0001
Dummy=1 if primary	-5.295	5.757	0.3577
Dummy=1 if utility	-10.351	5.451	0.0576
Dummy=1 retail trade & wholesales	-11.806	3.272	0.0003
Dummy=1 finance	-15.282	3.534	0.0001
Dummy=1 other service	-18.179	3.714	0.0001
Dummy=1 government	-17.239	4.832	0.0004
Dummy=1 If employed 19 or Less	30.413	2.584	0.0001
Dummy=1 If employed 500 or More	8.414	2.455	0.0006
Number of Observations		Log Like:	-10,678.61678
Non-censored:	1,699	Left Censored:	10,608.000

Table C.59
Logit Model of the Probability of Marriage
Dependent Variable =1 if Married in 1990
Females
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-3.843	0.189	0.0001
Dummy=1 if no education or elementary	-0.000	0.191	0.9979
Dummy=1 if some post secondary education	0.236	0.092	0.0104
Dummy=1 if certificate or diploma	0.083	0.100	0.4078
Dummy=1 if university	0.109	0.111	0.3267
Dummy=1 if trade	0.454	0.155	0.0034
Weeks unemployed in 1988	0.008	0.004	0.0281
Weeks unemployed in 1989	0.005	0.004	0.2694
Weeks of employment in 1989	0.005	0.002	0.0310
Average Weekly Wage - 1989	0.000	0.0002	0.0001
Difference in Earnings From 1988 to 1989	0.000	0.000	0.5577
Dummy=1 if total kids >0	-0.011	0.187	0.9535
Total number of kids	0.059	0.113	0.6047
Dummy=1 if Aged 16	-0.427	0.259	0.0999
Dummy=1 if Aged 17 to 19	0.182	0.163	0.2652
Dummy=1 if Aged 20 to 24	1.120	0.139	0.0001
Dummy=1 if Aged 25 to 34	0.871	0.137	0.0001
Dummy=1 if Aged 45 to 54	-0.652	0.263	0.0131
Dummy=1 if Aged 55 to 64	-1.484	0.371	0.0001
Dummy=1 if disabled	-0.050	0.022	0.0207
Dummy=1 if minority	-0.311	0.169	0.0661
Dummy=1 if foreign	-0.241	0.137	0.0791
Dummy=1 if Non-English	0.228	0.070	0.0012

Number of Observations		-2 Log L	6,927.5
Dependent >0:	938	Dependent = 0:	13,630

Table C.60
Logit Model of the Probability of Marriage
Dependent Variable =1 if Married in 1990
Males
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-3.757	0.194	0.0001
Dummy=1 if no education or elementary	-0.224	0.206	0.2775
Dummy=1 if some post secondary education	0.279	0.093	0.0028
Dummy=1 if certificate or diploma	0.030	0.104	0.7747
Dummy=1 if university	0.245	0.107	0.0223
Dummy=1 if trade	0.333	0.162	0.0396
Weeks unemployed in 1988	0.012	0.004	0.0036
Weeks unemployed in 1989	0.003	0.004	0.5056
Weeks of employment in 1989	0.008	0.002	0.0008
Average Weekly Wage - 1989	0.000	0.0001	0.0001
Difference in Earnings From 1988 to 1989	0.000	0.000	0.3762
Dummy=1 if total kids >0	0.271	0.219	0.2158
Total number of kids	-0.115	0.147	0.4347
Dummy=1 if Aged 16	-0.629	0.261	0.0158
Dummy=1 if Aged 17 to 19	-0.063	0.162	0.6994
Dummy=1 if Aged 20 to 24	0.842	0.134	0.0001
Dummy=1 if Aged 25 to 34	0.471	0.132	0.0003
Dummy=1 if Aged 45 to 54	-0.316	0.229	0.1685
Dummy=1 if Aged 55 to 64	-1.015	0.347	0.0034
Dummy=1 if disabled	-0.038	0.022	0.0814
Dummy=1 if minority	-0.216	0.165	0.1896
Dummy=1 if foreign	-0.175	0.132	0.1863
Dummy=1 if Non-English	0.134	0.072	0.0624
Number of Observations		-2 Log L	6,752.8
Dependent >0:	911	Dependent = 0:	12,273

Table C.61
Logit Model of the Probability of Divorce
Dependent Variable=1 if Divorced in 1990
Females
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-4.418	0.770	0.0001
Dummy=1 if no education or elementary	0.247	0.235	0.2924
Dummy=1 if some post secondary education	-0.527	0.283	0.0624
Dummy=1 if certificate or diploma	-0.171	0.193	0.3756
Dummy=1 if university	-0.367	0.243	0.1319
Dummy=1 if trade	0.381	0.281	0.1751
Weeks unemployed in 1988	0.006	0.008	0.4729
Weeks unemployed in 1989	0.023	0.013	0.0756
Dummy=1 if Unemployed in 1989	-0.039	0.411	0.9237
Weeks of employment in 1989	0.004	0.038	0.3191
Average Weekly Wage - 1989	0.000	0.0003	0.0011
Difference in Earnings From 1988 to 1989	0.000	0.000	0.3779
Dummy=1 if total kids >0	0.400	0.257	0.1197
Total number of kids	-0.038	0.117	0.7440
Dummy=1 if Aged 16 to 19	0.589	0.584	0.3130
Dummy=1 if Aged 20 to 24	0.563	0.245	0.0216
Dummy=1 if Aged 25 to 34	0.347	0.178	0.0517
Dummy=1 if Aged 45 to 54	-0.291	0.263	0.2689
Dummy=1 if Aged 55 to 64	0.090	0.284	0.7514
Dummy=1 if disabled	0.464	0.196	0.0179
Dummy=1 if minority	-0.887	0.500	0.0760
Dummy=1 if foreign	-0.026	0.217	0.9051
Dummy=1 if Non-English	-0.302	0.147	0.0395
Dummy=1 if Family Received Social Assistance in 1989	-0.400	0.313	0.2014
Total Family Earnings	-0.000	0.000	0.0431
Dummy=1 if Family Earnings > 65,000 in 1989	-0.065	0.349	0.8532
Dummy=1 if a Family Member is Unemployed in 1989	0.740	0.468	0.1138
Dummy=1 if No Family Member is Unemployed in 1989	0.671	0.426	0.1152
Dummy=1 if No Family Member Received UI	-0.071	0.219	0.7475
Dummy=1 if the Respondent did not receive UI but another family member did	-0.090	0.291	0.7567

Number of Observations		-2 Log L	2,351.5
Dependent >0:	236	Dependent = 0:	18,562

Table C.62
Logit Model of the Probability of Divorce
Dependent Variable =1 if Divorced in 1990
Males
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-3.180	0.801	0.0001
Dummy=1 if no education or elementary	-0.035	0.272	0.8990
Dummy=1 if some post secondary education	0.259	0.228	0.2562
Dummy=1 if certificate or diploma	-0.093	0.229	0.6885
Dummy=1 if university	0.060	0.220	0.7848
Dummy=1 if trade	0.598	0.236	0.0113
Weeks unemployed in 1988	-0.016	0.011	0.1390
Weeks unemployed in 1989	0.022	0.011	0.0554
Dummy=1 if Unemployed in 1989	0.289	0.346	0.4039
Weeks of employment in 1989	-0.003	0.006	0.5832
Average Weekly Wage - 1989	0.000	0.0003	0.0375
Difference in Earnings From 1988 to 1989	-0.000	0.000	0.3106
Dummy=1 if total kids >0	-0.210	0.271	0.4389
Total number of kids	0.018	0.122	0.8843
Dummy=1 if Aged 16 to 19	0.375	0.938	0.6894
Dummy=1 if Aged 20 to 24	0.775	0.258	0.0026
Dummy=1 if Aged 25 to 34	0.141	0.176	0.4240
Dummy=1 if Aged 45 to 54	-0.704	0.261	0.0070
Dummy=1 if Aged 55 to 64	-0.594	0.294	0.0434
Dummy=1 if disabled	0.177	0.218	0.4175
Dummy=1 if minority	-1.725	0.842	0.0406
Dummy=1 if foreign	-0.403	0.261	0.1226
Dummy=1 if Non-English	-0.062	0.149	0.6777
Dummy=1 if Family Received Social Assistance in 1989	-0.589	0.346	0.0890
Total Family Earnings	0.000	0.000	0.9522
Dummy=1 if Family Earnings > 65,000 in 1989	-0.430	0.352	0.2218
Dummy=1 if a Family Member is Unemployed in 1989	-0.087	0.420	0.8362
Dummy=1 if No Family Member is Unemployed in 1989	0.097	0.360	0.7873
Dummy=1 if No Family Member Received UI	-0.104	0.244	0.6701
Dummy=1 if the Respondent did not receive UI but another family member did	-0.060	0.294	0.8386

Number of Observations		-2 Log L	2,154.8
Dependent >0:	194	Dependent = 0:	17,539

Table C.63
Logit Model of the Probability of Having a Baby
Dependent Variable =1 if had a Baby in 1990
Females
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-4.234	0.443	0.0001
Dummy=1 if no education or elementary	0.024	0.177	0.8899
Dummy=1 if some post secondary education	-0.052	0.103	0.6143
Dummy=1 if certificate or diploma	0.266	0.085	0.0017
Dummy=1 if university	-0.014	0.106	0.8917
Dummy=1 if trade	-0.274	0.187	0.1413
Weeks unemployed in 1988	0.005	0.004	0.1977
Weeks of employment in 1989	-0.009	0.002	0.0001
Average Weekly Wage - 1989	-0.000	0.000	0.4357
Difference in Earnings From 1988 to 1989	-0.000	0.000	0.0003
Dummy=1 if total kids >0	0.894	0.121	0.0001
Total number of kids	-0.809	0.067	0.0001
Dummy=1 if Aged 16	1.894	0.400	0.0001
Dummy=1 if Aged 17 to 19	2.350	0.202	0.0001
Dummy=1 if Aged 20 to 24	2.694	0.141	0.0001
Dummy=1 if Aged 25 to 34	2.473	0.131	0.0001
Dummy=1 if disabled	-0.627	0.158	0.0001
Dummy=1 if minority	0.784	0.142	0.0001
Dummy=1 if foreign	0.142	0.115	0.2166
Dummy=1 if Family Received Social Assistance in 1989	0.242	0.212	0.2536
Dummy=1 if a Family Member Received UI	-0.049	0.073	0.5030
Total Family Earnings	-0.000	0.000	0.4724
Dummy=1 if Single	0.560	0.530	0.2910
Dummy=1 if Family Earnings > 65,000 in 1989	0.168	0.161	0.2961
Dummy=1 if Single and Received Social Assistance in 1989	-1.494	0.284	0.0001
Dummy=1 if Non-English	-0.154	0.068	0.0225

Number of Observations		-2 Log L	7,113.3
Dependent >0:	1,067	Dependent = 0:	17,585

Table C.64
Logit Model of the Probability of Having a Baby
Dependent Variable =1 if had a Baby in 1990
Males
Aged 16 to 64 Years

Variable Name	Estimated Coefficient	Standard Error	Pr > Chi - Squared
Constant	-3.554	0.464	0.0001
Dummy=1 if no education or elementary	-0.028	0.167	0.8662
Dummy=1 if some post secondary education	0.063	0.107	0.5521
Dummy=1 if certificate or diploma	0.150	0.093	0.1074
Dummy=1 if university	0.210	0.949	0.0273
Dummy=1 if trade	-0.160	0.147	0.2788
Weeks unemployed in 1988	0.005	0.005	0.3212
Weeks of employment in 1989	0.002	0.003	0.5031
Average Weekly Wage - 1989	0.0004	0.0001	0.0055
Difference in Earnings From 1988 to 1989	0.000	0.000	0.0068
Dummy=1 if total kids >0	1.088	0.128	0.0001
Total number of kids	-0.902	0.072	0.0001
Dummy=1 if Aged 16	1.619	0.492	0.0010
Dummy=1 if Aged 17 to 19	1.727	0.260	0.0001
Dummy=1 if Aged 20 to 24	1.984	0.133	0.0001
Dummy=1 if Aged 25 to 34	2.095	0.104	0.0001
Dummy=1 if Aged 45 to 54	-1.929	0.266	0.0001
Dummy=1 if Aged 55 to 64	-4.750	1.098	0.0001
Dummy=1 if disabled	0.183	0.123	0.1385
Dummy=1 if minority	0.558	0.142	0.0001
Dummy=1 if foreign	0.407	0.109	0.0002
Dummy=1 if Family Received Social Assistance in 1989	-0.092	0.225	0.6839
Dummy=1 if a Family Member Received UI	-0.041	0.074	0.5829
Total Family Earnings	-0.000	0.000	0.0384
Dummy=1 if Single	-2.902	0.936	0.0019
Dummy=1 if Family Earnings > 65,000 in 1989	0.066	0.161	0.6828
Dummy=1 if Single and Received Social Assistance in 1989	0.037	0.479	0.9384
Dummy=1 if Non-English	-0.065	0.070	0.3488
Number of Observations		-2 Log L	6,887.3
Dependent >0:	988	Dependent = 0:	24,706

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List of UI Evaluation Technical Reports

Unemployment Insurance Evaluation

In the spring of 1993, a major evaluation of UI Regular Benefits was initiated. This evaluation consists of a number of separate studies, conducted by academics, departmental evaluators, and outside agencies such as Statistics Canada. Many of these studies are now completed and the department is in the process of preparing a comprehensive evaluation report.

Listed below are the full technical reports. Briefs of the full reports are also available separately. Copies can be obtained from:

Human Resources Development Canada
Enquiries Centre
140 Promenade du Portage
Phase IV, Level 0
Hull, Quebec
K1A 0J9 Fax: (819) 953–7260

UI Impacts on Employer Behaviour

- **Unemployment Insurance, Temporary Layoffs and Recall Expectations**
  M. Corak, Business and Labour Market Analysis Division, Statistics Canada, 1995. *(Evaluation Brief #8)*

- **Firms, Industries, and Cross–Subsidies: Patterns in the Distribution of UI Benefits and Taxes**
  M. Corak and W. Pyper, Business and Labour Market Analysis Division, Statistics Canada, 1995. *(Evaluation Brief #16)*

- **Employer Responses to UI Experience Rating: Evidence from Canadian and American Establishments**
  G. Betcherman and N. Leckie, Ekos Research Associates, 1995. *(Evaluation Brief #21)*

UI Impacts on Worker Behaviour

- **Qualifying for Unemployment Insurance: An Empirical Analysis of Canada**
  D. Green and C. Riddell, Economics Department, University of British Columbia, 1995. *(Evaluation Brief #1)*

- **Unemployment Insurance and Employment Durations: Seasonal and Non–Seasonal Jobs**
  D. Green and T. Sargent, Economics Department, University of British Columbia, 1995. *(Evaluation Brief #19)*

- **Employment Patterns and Unemployment Insurance**
  L. Christofides and C. McKenna, Economics Department, University of Guelph, 1995. *(Evaluation Brief #7)*

- **State Dependence and Unemployment Insurance**
  T. Lemieux and B. MacLeod, Centre de recherche et développement en économique, Université de Montréal, 1995. *(Evaluation Brief #4)*

- **Unemployment Insurance Regional Extended Benefits and Employment Duration**
  C. Riddell and D. Green, Economics Department, University of British Columbia, 1995. *(To be released when available)*

- **Seasonal Employment and the Repeat Use of Unemployment Insurance**
  L. Wesa, Insurance Programs Directorate, HRDC, 1995. *(Evaluation Brief #24)*

UI Macroeconomic Stabilization

- **The UI System as an Automatic Stabilizer in Canada**
  P. Dungan and S. Murphy, Policy and Economic Analysis Program, University of Toronto, 1995. *(Evaluation Brief #5)*

- **Canada's Unemployment Insurance Program as an Economic Stabilizer**
  E. Stokes, WEFA Canada, 1995. *(Evaluation Brief #6)*

UI and the Labour Market

- **Unemployment Insurance and Labour Market Transitions**
  S. Jones, Economics Department, McMaster University, 1995. *(Evaluation Brief #22)*

- **Unemployment Insurance and Job Search Productivity**
  P.-Y. Crémieux, P. Fortin, P. Storer and M. Van Audenrode, Département des Sciences économiques, Université du Québec à Montréal, 1995. *(Evaluation Brief #3)*

- **Effects of Benefit Rate Reduction and Changes in Entitlement (Bill C–113) on Unemployment, Job Search Behaviour and New Job Quality**
  S. Jones, Economics Department, McMaster University, 1995. *(Evaluation Brief #20)*

- **Jobs Excluded from the Unemployment Insurance System in Canada: An Empirical Investigation**
  Z. Lin, Insurance Programs Directorate, HRDC, 1995. *(Evaluation Brief #15)*

- **Effects of Bill C–113 on UI Take–up Rates**
  P. Kuhn, Economics Department, McMaster University, 1995. *(Evaluation Brief #17)*

- **Implication of Extending Unemployment Insurance Coverage to Self–Employment and Short Hours Work Week: A Microsimulation Approach**
  L. Osberg, S. Phipps and S. Erksoy, Economics Department, Dalhousie University, 1995. *(Evaluation Brief #25)*

- **The Impact of Unemployment Insurance on Wages, Search Intensity and the Probability of Re–employment**
  P.-Y. Crémieux, P. Fortin, P. Storer and M. Van Audenrode, Département des Sciences économiques, Université du Québec à Montréal, 1995. *(Evaluation Brief #27)*

UI and Social Assistance

- **The Interaction of Unemployment Insurance and Social Assistance**
  G. Barrett, D. Doiron, D. Green and C. Riddell, Economics Department, University of British Columbia, 1995. *(Evaluation Brief #18)*
- **Job Separations and the Passage to Unemployment and Welfare Benefits**
  G. Wong, Insurance Programs Directorate, HRDC, 1995. *(Evaluation Brief #9)*
- **Interprovincial Labour Mobility in Canada: The Role of Unemployment Insurance and Social Assistance**
  Z. Lin, Insurance Programs Directorate, HRDC, 1995. *(Evaluation Brief #26)*

UI, Income Distribution and Living Standards

- **The Distributional Implications of Unemployment Insurance: A Microsimulation Analysis**
  S. Erksoy, L. Osberg and S. Phipps, Economics Department, Dalhousie University, 1995. *(Evaluation Brief #2)*
- **Income and Living Standards During Unemployment**
  M. Browning, Economics Department, McMaster University, 1995. *(Evaluation Brief #14)*
- **Income Distributional Implications of Unemployment Insurance and Social Assistance in the 1990s: A Microsimulation Approach**
  L. Osberg and S. Phipps, Economics Department, Dalhousie University, 1995. *(Evaluation Brief #28)*
- **Studies of the Interaction of UI and Welfare using the COEP Dataset**
  M. Browning, P. Kuhn and S. Jones, Economics Department, McMaster University, 1995.

Final Report

- **Evaluation of Canada's Unemployment Insurance System: Final Report**
  G. Wong, Insurance Programs Directorate, HRDC, 1995.