An Evaluation of the EI Pilot Project on Small Weeks, 1998-2001

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Abstract

On November 10, 1998, the Honorable Pierre S. Pettigrew, Minister of Human Resources Development Canada, announced the establishment of a Small Weeks Pilot Project in 31 high unemployment Employment Insurance (EI) economic regions. This new Project replaced the Small Weeks Adjustment Projects that ended on November 14, 1998. The Project started on November 15, 1998 and will terminate in November 2001.

This study evaluates the current Small Weeks Pilot Project. Its objectives are:

- to investigate the effectiveness of the Project in encouraging program participants to accept *small weeks* of work during the Rate Calculation Period (RCP, i.e., the twenty-six weeks preceding the last day of employment);

- to determine the Project's impact on program participants' earnings and weeks of work; and

- to assess the Project's impacts on male and female EI benefits claimants separately.

This report highlights the findings of the study available to date. The results presented here consist of observations from the "November 1998-August 2000" data, descriptive statistics, and calculations from our econometric evaluation model.

Based on the evidence available to date, we would have to conclude that the Project has accomplished its mission. In the 31 Small Weeks regions, a large number of EI claimants benefited from the Project. Nine percent of the male claimants and 17.8 percent of the female claimants were beneficiaries of the Project. These claimants increased their total weeks of work in the 26 weeks prior to their job separations significantly (2.1 weeks for male claimants and 2.4 weeks for female claimants, respectively). Econometric evidence shows that the Project was largely, if not entirely, responsible for the increased *small weeks* of work observed in the 31 Small Weeks regions. The additional weeks of work, along with their earnings, in the RCP were not the only benefits to these claimants. When they became unemployed, their benefit rates were higher and the number of weeks of benefit entitlements were greater. We estimate that the Project increased the total income (additional employment earnings plus additional EI benefits) of an average female program participant by $658, and of an average male program participant by $820. This gender difference was mainly due to the gender difference in average earnings.

Our results are consistent with the findings of Professor Friesen's evaluation of the 1997-1998 Small Weeks Adjustment Pilot Projects. This is not surprising, since the designs of the two consecutive Small Weeks Projects are almost identical.

1. Introduction

On November 10, 1998, the Honorable Pierre S. Pettigrew, Minister of Human Resources Development Canada, announced the establishment of a Small Weeks Pilot Project in 31 high unemployment Employment Insurance (EI) economic regions. This Pilot Project replaced the Small Weeks Adjustment Projects that ended on November 14, 1998. The new Pilot Project started on November 15, 1998 and will terminate in November 2001 in 31 high unemployment regions (the original 29 regions plus Hull and Sudbury). It has been estimated to cost $225 million over the three-year period.

The intention of EI's hours-based system has been to encourage workers to take all available work to maximize their EI benefits eligibility and entitlement. However, the new benefit rate calculation formula of EI has inadvertently produced an unintended effect. Under the new EI system the weekly benefit rate is based on average weekly-insured earnings during the Rate Calculation Period (RCP), which is the twenty-six weeks, preceding the last day of employment.[1] Average weekly earnings are calculated by dividing total earnings during the RCP by the greater of the number of weeks worked or the minimum divisor. For individuals who have a combination of regular and *small weeks* of work, *small weeks* of work can lower their EI benefit levels. Both employers and workers recognize the disincentive effect of this formula. For workers in high unemployment regions who are highly dependent on EI benefits, this disincentive may lead to a significant reduction in the number of *small weeks* worked by an individual.

In 1997, in its search for ways and means to solve the *small weeks* problem, Human Resources Development Canada (HRDC) introduced the original 1997-1998 Small Weeks Adjustment Projects to help workers in 29 high unemployment regions take all available work without affecting their benefit levels. The Projects' definition of a *small week* is any week with earnings less than $150. Phase I of the Small Weeks Adjustment Projects was designed to handle claims filed after May 4, 1997 in selected high unemployment regions, Phase II was for claims filed after August 31, 1997 in the remaining high unemployment regions. Both Phases of the Projects used two alternate ways (*excluding or bundling small weeks* from the calculation of average weekly earnings) of calculating EI benefits to increase claimants' incentive to accept *small weeks* of work.[2] The start and end dates of both Phases were announced in the first week of

1 The RCP can be extended by the number of "prescribed weeks" within the usual 26-week period. "Prescribed weeks" include weeks for which EI benefits were paid or payable. For example, a repeat user of EI may have collected EI benefits in the 26-week period, and may have had an extension of his RCP beyond 26 weeks.

2 The *bundling small weeks* method allows a worker to use all the regular weeks and the best *small weeks* to bring the number of insurable weeks up to the minimum divisor. The remaining *small weeks* are *bundled* for benefit calculation purposes. The *excluding small weeks* method is similar: The regular weeks and the best *small weeks* are used to meet the minimum divisor, but the remaining *small weeks* are excluded from the benefit rate calculation.

March 1997. The 1997-1998 Small Weeks Projects was evaluated by Evaluation and Data Development (EDD) in 1999, and the interested reader may find the report in HRDC's EDD Web site.[3]

The objectives of the present evaluation are to evaluate the effectiveness of the current (1998-2001) Small Weeks Pilot Project. Specifically, the study has been designed:

- to investigate the effectiveness of the Project in encouraging program participants to accept *small weeks* of work during the RCP;
- to determine the Project's impact on program participants' weeks of work and earnings; and
- to assess the Project's impacts on male and female EI benefits claimants separately.

This report highlights the evaluation findings available to-date. The results presented here consist of observations from the "November 1998-August 2000" data,[4] descriptive statistics, and calculations from our econometric evaluation model.

3 See Jane Friesen, "An Evaluation of the Impact of the 1997-1998 Small Weeks Projects on EI Program and Labour Market Outcomes." **http://www11.hrdc-drhc.gc.ca/edd/ISWP.html**.

4 The EI economic regions, and consequently Small Weeks regions, were changed on July 9, 2000. The July 2000 to August 2000 data are based on 34 Small Weeks regions. In this report, we use the term "31 Small Weeks regions" of the original Small Weeks design throughout to avoid confusion.

2. Outline of the "EI Pilot Project on Small Weeks, 1998-2001"

As mentioned earlier, under the Employment Insurance (EI) system, the formula for determining the weekly benefit rate creates a disincentive for individuals to accept *small weeks* of work during the Rate Calculation Period (RCP). In particular, seasonal workers with combinations of regular work-weeks (weekly earnings greater than $150) and *small weeks* of work could be greatly affected. The Small Weeks Pilot Project has been designed to encourage workers in regions of high unemployment (above 10 percent) to accept *small weeks* of work without affecting their benefit rates.

To be eligible to participate in the Project, the individual must reside in one of the 31 selected economic regions. It also requires that the individual's total number of insured weeks worked during the RCP meets or exceeds the minimum divisor in his/her region. The benefit period for the individual commences no earlier than November 15, 1998, or else the rules for the old (1997-1998) Small Weeks Adjustment Projects apply. In addition, the claimant must have at least one regular week and one *small week* worked.

To calculate the EI benefit level under this Project, an "excluding" method is used.[5] Under this method, EI benefit levels are not reduced because of *small weeks* earnings. If an individual's number of *regular weeks* worked is less than the regional minimum divisor, the *small weeks* worked with the highest earnings are used to bring the number of weeks up to meet the regional minimum divisor. The remaining *small weeks* are excluded for benefit calculation purposes. However, all hours worked are counted to determine eligibility and duration of benefits.

5 See footnote 2. Since both methods yield the same level of benefit rate with the same criteria for determining eligibility and duration of benefits, only the "excluding" method is used in the current Pilot Project. The main benefit in using the "excluding" method is its ease in calculating the benefit rate.

3. Behavioural Response Under Employment Insurance (EI) and Small Weeks

To-reiterate, the *small weeks* issue comes from the benefit-rate-calculation formula of EI. If the individual's insured weeks of work have met the minimum divisor, an extra week of work with earnings below his/her average weekly earnings will lower his/her weekly EI benefits in the future. In deciding to work an extra week, an individual has to consider the amount of earnings gained versus the amount of EI benefits lost in the future.[6]

Under the Small Weeks Pilot Project, an individual who has weeks of work that meet the minimum divisor requirement, an extra week of work with earnings of $150 or less will not lower his/her future benefit payment. It is thus inconsequential to the individual's decision to work or not. In essence, the disincentive to work *small weeks* has been eliminated.[7]

The following example illustrates the disincentives that may exist under the EI program in the absence of the Small Weeks Pilot Project for a typical female claimant. In particular, it shows the effect of accepting a week of work below average earnings and above the $150 upper limit. A female claimant may work for 21 weeks with total insurable earnings of $6,300. Her average weekly earning is $300 ($6,300 ÷ 21 = $300). For a regular claimant with no penalties, she will receive a weekly benefit of $165 ($300 x 55% = $165) for a maximum of 30 weeks in the absence of the Small Weeks Pilot Project.[8] If she works one more week and earns $200, her weekly benefit falls by 2 dollars (i.e., her weekly benefit rate is now ($6,500 ÷ 22) x 55% = $163).[9] Her $200 gain in earnings would be offset by a $60 reduction in benefits paid over 30 weeks. Her net increase in income over the time of the Rate Calculation Period (RCP) and the benefit period is $140.[10]

In deciding to work an extra week, an individual weighs the relative benefit of the amount of earnings gained versus the amount of EI benefits lost in the future. Under EI, working an extra week is less attractive the lower are the earnings generated in that week, the higher are earnings averaged over other weeks, and the greater is the length of the benefit period.

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6 Since the earning gained is immediate and the loss in EI benefits occurs sometime in the future, the decision also depends on the individual's discount rate.

7 In general, an individual who chooses not to work the extra week will also gain some hours to devote to non-market activities. The decision to supply labour for that week will thus also depend on the hours of work required to generate the extra earnings and the individual's valuation of leisure.

8 The rules governing the calculation of the benefit rates are discussed in the EI guide.

9 Weekly benefit rate is calculated to 2 decimals and rounded to the nearest dollar.

10 The effect of an additional week of work on the length of entitlement is ignored in this calculation because in general, an average participant does not exhaust his/her benefit entitlement.

With the Small Weeks Pilot Project, an extra weekly earning of $150 or less for a typical male/female program participant will yield him/her the same amount of weekly and total benefit. The increase in income is the full amount of the weekly earning in that week.

However, for an extra week of work with a below average weekly earning and above the $150 cut-off line, the disincentive effect on net income is still there. While the Project eliminates the disincentive to accept weeks of work with weekly earnings of $150 or less, the disincentive to take up weeks of work with a "below average weekly earning and above the $150 cut-off line" remains.

To what extent the current Project has succeeded in eliminating the disincentive effect for workers to accept *small weeks* of work in the 31 regions is primarily an empirical question. For example, the *small weeks* worked by claimants may or may not be induced by the Project. Claimants might have worked the same number of *small weeks* irrespective of the incentives created by the Project. In this case, the Pilot Project has not led to a change in the behavioral response of the claimants. However, some claimants might have changed their work patterns and worked an additional number of *small weeks* because of the Project. The essence of this evaluation is to estimate this incremental impact on claimants' behaviour (i.e., the difference between what they actually did and what they would have done in the absence of the Project).

4. Data Sources and Methodology

Data sources for this investigation are from Human Resources Development Canada (HRDC) administrative files, supplemented with information from the Labour Force Survey. The administrative files provide us with certain personal attributes, geographical locations, week-by-week employment data, week-by-week earning data, and claim information. The data from the Labour Force Survey tells us the economic conditions of the regions where Employment Insurance (EI) claimants reside, which are approximated by the regional unemployment rates. Data for this analysis cover the period November 1998 (start of the Small Weeks Pilot Project) to August 2000.[11] For a more detailed description of the administrative data used, the reader may consult Appendix C.

The evaluation is based on the comparison group methodology of non-experimental program designs. It treats EI benefit claimants in the 31 Small Weeks Pilot Project regions as the participant group, and claimants in the rest of the economy as the comparison group. For descriptive clarity, the following names are used to denote various groups of claimants in the remainder of this report.

- Program participants: Claimants in 31 Small Weeks regions whose claims included some *small weeks* of work;

- Program non-participants: Claimants in 31 Small Weeks regions whose claims did not involve *small weeks* of work;

- Comparison group members: Claimants with or without *small weeks*[12] of work outside of 31 Small Weeks regions.

This report begins with an analysis of descriptive statistics. The characteristics of program participants are compared with program non-participants from the 31 Small Weeks regions. In addition, program participants are compared with comparison group members from non-Small Weeks regions. Results for male and female participants are shown separately.

Descriptive statistics provide us with some general information on the labour market activities of program participants, program non-participants, and comparison group members. However, personal attributes, socio-economic backgrounds, and regional economic climates are not identical for these individuals. Furthermore, there may exist unobservable factors (e.g., motivation) that affect labour market performance as well. In short, descriptive statistics alone are insufficient to show the effectiveness of the Small Weeks Pilot Project.

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11 "August 2000" data are the latest observations that can be feasibly included in the analysis.

12 Strictly speaking, the term *"small week"* is not meaningful to claimants outside of 31 Small Weeks regions. However, for descriptive convenience, we use the term here to denote any work week that pays less than $150.

In this investigation, we therefore also use an econometric evaluation model to estimate the incremental effects of the Project. This approach accounts for the influences of all observed factors as well as the "*intangibles*". A non-technical summary of the model is presented later in this report, and a more detailed description of the econometric evaluation model, along with its estimated equations, can be found in Appendix A.

5. Program Participants and Non-participants in 31 Small Weeks Regions

5.1 Profile

This section presents some of the stylized facts about program participants and non-participants in the 31 Small Weeks regions. Table 1 shows the means (averages) of selected variables for program participants and non-participants who filed Employment Insurance (EI) benefit claims in November 1998 to August 2000.[13] More female claimants participated in the Project than male claimants (142,526 versus 93,637, or in relative terms 17.8 percent versus 9.0 percent). Compared with non-participants, program participants experienced slightly higher rates of unemployment, and worked fewer hours in the qualifying period than non-participants. Program participants had on average spent a greater number of weeks on EI benefits since July 1, 1996 than non-participants. By gender, female participants and non-participants were roughly of the same age, but male participants were about three years younger than their non-participant counterparts. The last row of Table 1 shows the difference between a typical participant's actual EI benefit rate and what the individual would have received in the absence of the Project.

TABLE 1
Profile of program participants and non-participants in 31 Small Weeks regions

	Participants	Non-Participants	Participants	Non-Participants
	Male		Female	
# of claimants	93,637 (9.0%)	940,725 (90.9%)	142,526 (17.8%)	659,446 (82.2%)
Average Age	35.6	38.3	38.0	37.6
Hours worked during qualifying period	1,154.4	1,343.2	1,060.9	1,338.6
Weeks of EI benefit received since July 1, 1996	33.2	28.5	28.4	16.4
Unemployment rate	12.4	11.6	12.3	10.8
Change in weekly benefits	$19.8	—	$17.3	—

13 Strictly speaking, the term "claim" differs from "claimant", since the same individual might file more than one claim in the period November 1998-August 2000. In the statistical work, the unit of analysis is "claim". However, for descriptive convenience, we use the terms "claim" and "claimant" interchangeably in the report. If a claimant had a claim with *small weeks* of work, then such a person would be identified as a program participant.

5.2 Program participation

The current Small Weeks Pilot Project of 1998-2001, became effective on November 15, 1998. Between this date and August 31, 2000, there were almost 1.84 million EI claims filed in the 31 Small Weeks regions. Out of the total number of claims, about 13.0 percent (or 236,000) of them involved *small weeks* of work,[14] which was 2 percentage points higher than the rate for the 1997-1998 Small Weeks Adjustment Projects.

In the period, there were 142,526 *small weeks* claims filed by women, exceeding the number filed by men by almost 50,000. Women were almost twice as likely to participate in the Project than men, 17.8 versus 9.0 percent. For women, the current participation was 3.2 percent higher than the participation rate of the 1997-1998 Projects. For men, the corresponding figure was 1.4 percent higher.

TABLE 2
Small Weeks participation and EI claims

	Participation rate[1]	Total number of EI claims[2]	
Overall	12.9%	1,836,334	100%
Male	9.0%	1,034,362	56.3%
Female	17.8%	801,972	43.7%
British Columbia	8.9%	200,408	10.9%
Prairies	4.8%	38,936	2.1%
Ontario	6.7%	259,521	14.1%
Quebec	13.5%	896,718	48.8%
Atlantic provinces	18.0%	429,570	23.4%

1. The participation rate is defined as "EI claims with *small weeks* of work/total number of EI claims" in the Small Weeks regions.
2. The number of claims in Canada is more than the sum of the number of claims in the five regions combined. This is because the number of claims in Canada includes the claims in the Northwest Territories, Yukon, and outside of Canada.

Table 2 shows that Employment Insurance (EI) claimants from the Atlantic provinces were more likely to participate in the Project followed by Quebec. Claimants from the Prairies, Ontario, and British Columbia were less likely to be Project participants. This pattern for participants is quite different from the distribution of EI claims by region (see Table 2.)[15]

14 For descriptive convenience, these will be called *small weeks* claims in the remainder of this paper. For an individual to be qualified for a claim involving *small weeks* of work, he or she must have had at least one regular week of work (i.e., weekly earnings of $150 and over) in the rate calculation period.

15 The claim figures refer to the claims in the *small weeks* regions in these provinces only.

FIGURE 1
"Claims with Small Weeks/Total Claims" in 31 Small Weeks Regions

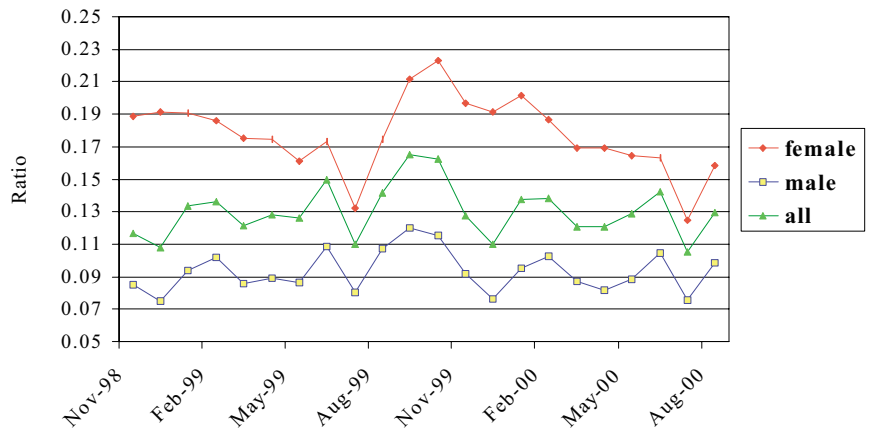

Figure 1 shows the participation rates[16] of men, women, and all claimants separately from November 1998 to August 2000. All three curves exhibit a fair amount of variation over time. However, there is no clear evidence of seasonal effects. Female participation rate increased slightly more in the fall of 1999, but the series is not long enough to show it as a recurrent increase in the fall of every year. The participation rates also reveal no trends,[17] which could be interpreted as an absence of "learning effects". That is, for the current Project, familiarity with the Small Weeks Project is not an issue, and therefore it had no effect on the participation rates over time. This lack of "learning effects" is consistent with our *a priori* expectation. While claimants might have been unfamiliar with the Small Weeks option in 1997, they were more aware of the Small Weeks Pilot Project by November 1998.

The female participation rate was higher than the male participation rate throughout November 1998-August 2000. The observed participation rates for both male and female claimants were generally higher in the current Small Weeks Project than their counterparts in the 1997-1998. These higher rates might have come from three possible sources: (i) claimants' familiarity with EI's Small Weeks option, (ii) factors such as differences in personal characteristics of claimants and economic climates might be partly responsible, and (iii) the current Project has been more effective in encouraging workers to accept *small weeks* of work than its earlier counterparts.

16 For descriptive convenience, the ratio of "claims with Small Weeks/total claims" is defined as the participation rate of the Small Weeks Pilot Project in the remainder of this paper.

17 These results have been confirmed by our multiple regression analysis. With the participation rate as the dependent variables, the constant term, three seasonal dummies, and the time trend as the independent variables, the estimated participation equation for male claimants show that the three seasonal dummies and the time trend are all statistically insignificant. The equation for female claimants is similar with one exception, which shows the participation rate in the third quarter is marginally significant (at the 10 percent level), while the other two seasonal dummies and the time trend remain statistically not different from zero.

6. Program Impacts

6.1 Program participants and comparison group members

The incremental effects of the Project cannot be measured by comparing the labour market performances of program participants and non-participants in the 31 Small Weeks regions. This is because some participants would have done some *small weeks* of work even in the absence of the Project. By definition, non-participants from the 31 Small Weeks regions could not have any *small weeks* of work. Therefore, comparing the performances of program participants with non-participants in the 31 Small Weeks regions would inevitably lead to biased estimates of the Project's incremental effects.

To circumvent this methodological difficulty, we have drawn the comparison group from claims filed outside of the 31 Small Weeks regions. From the administrative records of November 1998 to August 2000, we have randomly selected 260,131 claims. Among them, the individuals who filed the claims might or might not have worked any weeks for less than $150 per week. If these individuals were "clones" of program participants, then evaluating the program's incremental effects would be a simple task. All we would have to do is to calculate the differences in the labour market outcomes between the two groups of individuals. For example, if an average program participant worked three more *small weeks* in the Rate Calculation Period (RCP) than a comparison group member, then we would take this difference as the incremental impact of the Project on program participants. This would necessarily be the case because by definition a "clone" is identical to a program participant except that the clone did not participate in the Project. In the real world, since the assumption of "clones" is untenable, estimates from descriptive statistics can only be taken as very crude estimates. In the "first approximation" section, in addition to descriptive statistics, we have also used selected econometrically estimated equations to approximate the Project's impacts. They are technically superior to the information from descriptive statistics, but are still not our final estimates. In the last part of this report, we will use the econometric evaluation model to double-check the accuracy of these estimates. If necessary, in addition to generating more detailed results, we will use the model to re-estimate the impacts of the Project on claimants' labour market outcomes.

In the data file of the 31 Small Weeks regions, there were 236,163 claims identified with Small Weeks participation in November 1998 to August 2000. Unfortunately, some of these claims inadvertently miss certain essential information. Of the total 236,163 claims, only 162,830 (i.e., (162,830/236,163) = 68.9 percent)) have complete records.

While we may still use all 236,163 participating claims to profile participants, we may not use all of them to estimate program effects. In this report, our strategy is as follows:

- Use 236,163 participating claims in 31 Small Weeks regions, along with the about 1.6 million claims of non-participants, to profile Small Weeks participants and non-participants, and to estimate the participation rates in the 31 Small Weeks regions.

- For approximating program impacts, we restrict the sample to 162,830 participating claims[18] from the 31 Small Weeks regions and 260,131 claims (comparison group members) randomly selected from the rest of the country. This latter group of claimants might or might not have some weeks of work with earnings less than $150 per week in the RCP.[19]

6.2 A first approximation

TABLE 3
Small Weeks program participants and comparison group members — Selected characteristics and labour market outcomes*

	Participants	Comparison group members	Participants	Comparison group members
	Male		Female	
Number of claims	64,701	132,120	98,129	128,011
Age	35.53	37.39	38.25	36.95
Unemployment rate (%)	12.64	6.45	12.55	6.35
Weeks worked during the RCP	23.91	24.77	24.33	25.29
Insured earnings during the RCP ($)	10,101.50	14,790.01	7,292.13	12,206.02
Small weeks worked in the RCP**	2.74	0.02	3.39	0.03
Small weeks earnings in the RCP***($)	237.79	1.92	302.27	2.76

* A *small week* is defined as a week with earnings of less than $150. With the exception of the "number of claims" figures (Row 1), all other figures refer to the averages of the variables.
** These are *small weeks* that would be excluded for benefit calculation purposes for Small Weeks participants. For comparison group members, the figures refer to the corresponding statistics if the individuals' residences are part of the Small Weeks Project.
*** This refers to the earnings of the *small weeks* mentioned above.

Table 3 presents selected key statistics on program participants and comparison group members. From the data, we know that very few claimants outside of the 31 Small Weeks regions had *small weeks* of work in the RCP. This may suggest that the observed *small weeks* worked in the 31 Small Weeks regions could be partly attributed to the existence of the Project in the regions. Just exactly what were the program effects in quantitative terms remains ambiguous, because in addition to the presence of the Project, program participants and comparison group members had different socio-economic backgrounds, and were confronted with different employment opportunities. The observed differences

18 Our statistical test has confirmed that claims with missing information are a random sample of the 236,163 claims. This result is not surprising: Since these are administrative records, claimants have no choice in "what to report and what not to report".

19 The unemployment rate is different from the previous table since the sample has now been restricted to the 162,830 complete data records available for participants. The 162,830 participating claims and 260,131 claims from the rest of the country are also the data for the econometric evaluation to be discussed in Section 6.3.

in *small weeks* worked could be partly due to the impacts of the Small Weeks Project and partly due to differences in personal characteristics. For this reason, we have to rely on the estimated multiple regression equations to put the two groups on comparable footings. These estimated equations are by-products of our econometric evaluation model, which we will use to finalize the incremental impacts of the Project. These estimated equations are documented in Appendix A of this report.

The present approach is tantamount to approximating the influences of the Project and socio-economic factors simultaneously by two multiple regression equations. The first equation hypothesizes that *small weeks* of work in the RCP depend upon the claimant's personal attributes (gender, age, etc.), the labour market condition of the region where he or she resides (approximated by the unemployment rate of the region), the province of residence, industrial affiliation, and whether or not the individual is a program participant. The second equation estimates the relationship of the impact of *small weeks* worked on the total weeks of work in the RCP. This equation is based on the rationale that a *small week* of work may also lead to additional weeks of work.

The estimated equations (see Appendix A) confirm that, after controlling for all other factors, the Small Weeks Pilot Project had the effect of increasing the *small weeks* of work of a typical program participant by about two weeks in the RCP. Moreover, for the program participant, a *small week* of work tended to bring in an additional 0.2 week of work. More specifically, males worked an extra 2.1 weeks in total, while females worked for about 2.4 more weeks because of the Small Weeks Pilot Project.

FIGURE 2
Total Small Weeks of Work versus Small Weeks of Work Attributed to the Small Weeks Pilot Project

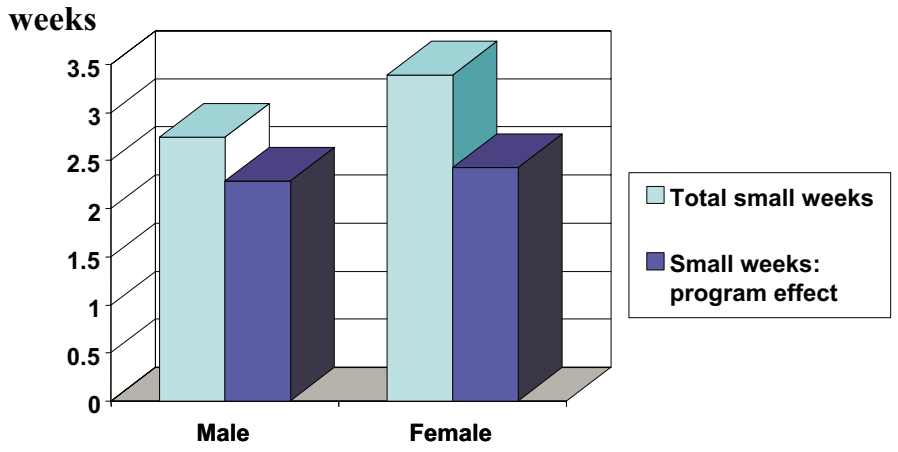

Figure 2 illustrates the estimated impacts of the Small Weeks Pilot Project pictorially. The estimates show that, after controlling for all other factors, the Project was largely responsible for the observed *small weeks* of work in the RCP for both male and females

claimants (77 percent and 72 percent, respectively).[20] In monetary terms, the Project increased the earnings of a male and female participant by more than $300 in the RCP period.[21] The reader should also note that there are other benefits of the Project not reported here:

- The outcome variable refers to the number of "*small weeks* excluded" from the EI benefits calculation formula. For about 83 percent of the claimants, this would also be the number of "*small weeks* worked" in the RCP. However, for 17 percent of the claimants, their *large weeks* (i.e., weekly earnings greater than or equal to $150) were insufficient to meet the minimum divisor requirements of their Employment Insurance (EI) regions. Some of their *small weeks* of work would have to be used to meet the minimum divisor requirements, and would therefore not show up in the key outcome variable of this study. Fortunately, we have the same information for program participants and comparison group members. Therefore, methodologically we are still "comparing apples with apples" and the estimated "*small weeks* worked" actually refer to "*small weeks* of work excluded" from the rate calculation formula, which is necessarily smaller than the "number of *small weeks* worked".

- In addition to the benefits accrued during the RCP period, program participants received higher benefit rates and were entitled to more weeks of benefits when they became unemployed. Total benefits (earnings from additional weeks of work plus additional EI benefits) to program participants are discussed in detail in Section 6.3.4 of this report.

6.3 Incremental effects

6.3.1 The evaluation model: A non-technical summary

The results presented in the "first approximation" section are based on the assumption that what is commonly known as *selection bias* in the evaluation literature is an irrelevant issue for the evaluation of the Small Weeks Pilot Project. Whether or not this is indeed the case is an empirical question.

Regardless of the evaluator's belief on the existence or non-existence of *selection bias* in any data set, this question must be settled empirically. Without any empirical tests, critics would find the results presented *too tentative* because they maintain that the influence of *selection bias* may change the results and conclusion completely. For example, they may think that *self-selection* is prevalent among program participants. This could be true; if program participants were personally more motivated to accept *small weeks* of work than were comparison group members. Under such circumstances, *selection bias* exists, and the results presented in the "first approximation" section could be misleading because they had not been corrected for the influence of *selection bias*.

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20 This includes the Project's direct effect on an individual's small weeks worked in the RCP as well as the effect of the increased small weeks worked on the total number of weeks worked in the RCP.

21 See Section 6.3.4 of this report. These figures include the indirect benefits discussed above. Since the effect of a *small week* of work could bring in additional weeks of "small or large" weeks of work, the estimated benefits of the Project for male and female participants are slightly larger than the observed small weeks earnings in the RCP.

The standard econometric method that deals with the *selection bias* issues explicitly is the Heckman *selection-bias* model. In a nutshell, the model estimates the influences of the intangibles (e.g., motivation) and tangibles (personal attributes, socio-economic factors, regional economic climates, etc.) through a system of participation and outcome equations. In the case of the Small Weeks Pilot Project, the model may consist of one participation equation and two outcomes (*small weeks* of work and total weeks of work in the RCP) equations. The evaluator usually has to consider two possible sources of *selection biases*, namely *administrative bias* and *self-selection bias*. *Administrative bias* refers to the case in which program officers tend to grant program participation to individuals who are most likely to succeed. Since the Small Weeks Pilot Project has been available to all labour force members in the designated 31 Small Weeks regions, *administrative bias* is by definition a non-issue in this investigation. However, *self-selection* remains an outstanding issue. The model first deals with it explicitly in the participation equation and then incorporates the results from the participation equation into the outcome equations. The estimated outcomes by this method are technically and conceptually free of the confounding effects of *selection bias*.[22]

To test the *selection bias* hypothesis, we have used the econometric techniques proposed by Heckman[23] and the data from 31 Small Weeks Pilot Project regions and the rest of the economy[24] to estimate the evaluation model of a three-equation system, namely equations for the probability of program participation, *small weeks* worked, and total weeks of work.[25]

The estimated equations for the evaluation model (Equations 1 to 3) and the two O.L.S. equations (Equations 4 and 5) used in the "first approximation" section are presented in Appendix A. Comparing the estimated coefficients of the evaluation model equations (Equations 2 and 3) with those from the equations (Equations 3 and 4) used in the "first approximation" section, we can easily see that they are extremely close to each other. This immediately leads to two obvious conclusions. First, *selection bias* is not an issue in the evaluation of the Small Weeks Pilot Project. Second, for all intents and purposes, the use of which set of equations would not make any material difference, and would lead to virtually the same conclusion. The results presented in the "first approximation" section, therefore, remain valid. For this reason, in the remainder of this paper, we use the evaluation model to perform the remaining calculations, but will not use it to re-calculate the statistics presented earlier.

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22 For a more detailed discussion of the Heckman evaluation model, see Heckman (1979).

23 See Heckman (1979).

24 The sample consists of 162,830 participating claims from 31 Small Weeks regions and 260,131 claims (comparison group) randomly selected from the rest of the country.

25 The term *"small weeks"* of work refers to the *small weeks* in the RCP that would be excluded for benefit calculation purposes for program participants. "Total weeks of work" denotes the sum of *small weeks* and regular weeks of work in the RCP.

6.3.2 Small Weeks by province: The impacts of regional economic conditions

As expected, an individual's probability in program participation and his or her subsequent labour market activities (e.g., *small weeks* of work and total weeks of work in the RCP) depend on many factors (see the estimated equations of the evaluation model, Appendix A.) To illustrate the impacts of two of the most important factors (the Project and regional economic conditions) on provincial *small weeks* of work, we have used the evaluation model, along with the actual data, to perform a series of simple simulations. Specifically, we attempt to answer two questions here:

1. To what extent regional economic conditions have contributed to the province's average *small weeks* of work?

2. In the absence of the Small Weeks Pilot Project, would the participants in 31 Small Weeks regions still work some *small weeks*?

To answer Question (1), we have to create a hypothetical scenario in which the unemployment rates of all 31 Small Weeks regions were the same, and were equal to the average of the 31 Small Weeks region (i.e., 12.6 percent), while leaving all other factors (actual data) unchanged. Conceptually this would be what would have happened to *small weeks* of work and total weeks of work by province, if all 31 Small Weeks regions experienced the same 12.6 percent unemployment. The simulated results from this scenario, along with the actual data, allow us to see the effect of provincial economic climate on provincial *small weeks* of work.

To answer Question (2), in addition to the unemployment rate assumption above, we impose the assumption of "*no* Small Weeks Pilot Project" in the 31 Small Weeks regions to create a second hypothetical scenario. The results from this simulation show us what the provincial *small weeks* of work would have been, if all 31 regions faced the same economic condition of 12.6 percent of unemployment and no Small Weeks Pilot Project in place.

FIGURE 3
Small Weeks of Work: Impacts of the Small Weeks Pilot Project and Regional Economic Conditions

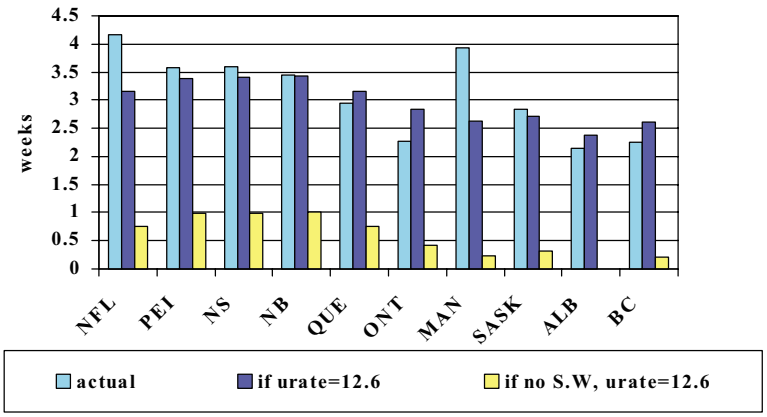

Figure 3 highlights the simulation results graphically.[26] The first column shows the actual average *small weeks* of work in that province. The second shows what the province's *small weeks* situation could have been, if the unemployment rates of the province's Small Weeks regions were equal to the average unemployment rates of the 31 Small Weeks regions in November 1998-August 2000 (12.6 percent.) In this scenario, the *small weeks* of work in Newfoundland and Manitoba would have been much lower than their actual numbers. This was because the unemployment rates in these two provinces' Small Weeks regions were in reality much higher than 12.6 percent. To a lesser extent, the *small weeks* of work of Prince Edward Island, Nova Scotia, New Brunswick, and Saskatchewan would also have been lower than the historical records for similar reasons. On the other hand, Quebec, Ontario, Alberta, and British Columbia would have had more *small weeks* of work than their historical records. This was due to the relative low rates of unemployment (i.e., less than 12.6 percent) in these provinces.

The second (darker) columns on Figure 3 show that by standardizing the economic climate, the variation across provinces in *small weeks* of work would have been less dramatic than the pattern illustrated by actual data. In particular, Manitoba, which had the second highest figure for actual *small weeks* worked, would have had its figure below the national average. Conceptually, the number of *small weeks* of work is determined by the demand for and supply of *small weeks*. Empirical results suggest that, in the *small weeks* market, the demand condition may have more or less dictated the outcome. Specifically, workers would have worked fewer *small weeks*, if the economy of where they lived was buoyant and *large weeks* were plentiful.

The difference between the second and third columns of each provincial group shows the contribution of the Small Weeks Pilot Project to a province's *small weeks* of work. Without any exception, the Project remains the most important factor in determining the number of *small weeks* of work for all 31 Small Weeks regions. The third (last) column shows what would have happened, if all the Small Weeks regions in these provinces experienced an unemployment rate of 12.6 percent and the Small Weeks Pilot Project was not implemented. Under such circumstances, claimants in Alberta would not have accepted any *small weeks* of work, but claimants in the remaining provinces would have worked from 0.4 to 1 week of a *small week*.

6.3.3 Female participants of similar personal attributes from different provinces

Historical data tells us that an average program participant from Newfoundland worked about 4.2 *small weeks* in the RCP, but on average a participant from Alberta accepted only 2.1 *small weeks* in the comparable period. Removing the effects of different economic conditions would have narrowed the gap considerably but nevertheless a gap still existed. The question is, "Can the provincial differences be attributed to tangible factors rather than to provincial cultures?" To answer this question, we have to know what comparable

26 It should be noted that all statistics presented here refer to the averages of the province's Small Weeks regions' data. Regions not designed as a Small Weeks region in the province are excluded.

program participants from different provinces would have done, if their personal attributes were identical and the only difference among them was their provincial residences. Once again, we may use the evaluation model to perform this "what if" calculation. Newfoundland and Alberta have been chosen here for illustrative purpose, but the same calculation could have been carried out for any two provinces.

The "what if" calculation has been performed for one participant from Newfoundland and one from Alberta. Both of them had similar personal characteristics: female, 38 years old, regular EI benefits recipients, main labour market activities in agriculture, not a member of new or re-entrant group, not a *repeat user*[27] of the UI/EI system, and not a recipient of Family Supplement. In other words, these two participants had a lot in common, except that they lived in two different provinces. The last *qualifier* is important, because the two different provinces had different unemployment rates and therefore *small weeks* and *large weeks* employment opportunities to the participants would not be the same.

FIGURE 4
Small Weeks of Work: Comparable Female Participants from Newfoundland and Alberta

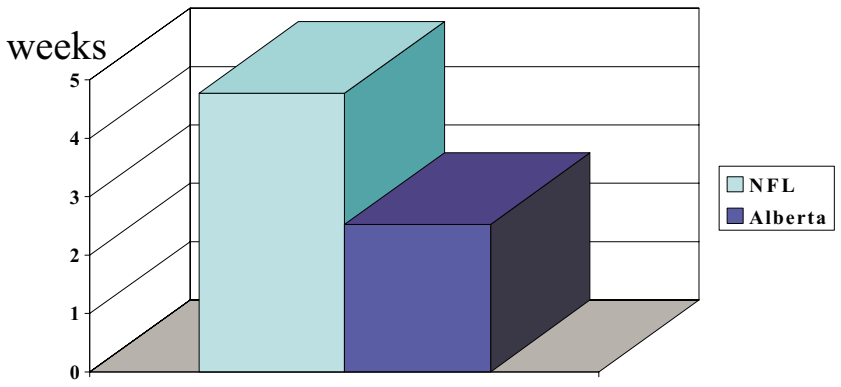

Figure 4 presents the results graphically. Given the existence of the Project and the difference in economic conditions in the two provinces, a female participant of these attributes would have worked 4.8 *small weeks* in Newfoundland and 2.5 *small weeks* in Alberta. The difference remained a noticeable 2.3 weeks. In November 1998 to August 2000, the average unemployment rate in Alberta's Small Weeks regions was 10.9 percent and the rate for Newfoundland's Small Weeks regions was 19.6 percent. Different economic conditions could have accounted for about 1.3 week of the 2.3 weeks difference. The remaining difference (1 week), in the absence of other empirical evidence, may be attributed to "provincial cultural difference".[28]

27 In this study, a *repeat user* is defined as an individual who, at the time of filing a new EI claim, has had 5 weeks or more weeks of regular benefits since July 1, 1996. This is a term created for descriptive convenience. It is not HRDC's official definition of a repeat user.

28 Our data does not allow us to quantify the contribution of seasonal work to the demand for *small weeks*. Of course, seasonal industrial activities are unique to specific provinces. In this context, seasonal effect is indistinguishable from the effect of "provincial cultural difference."

6.3.4 Total benefits to program participants

The timeframe for the analysis up to this point refers to the 26 weeks prior to the individual's job separation, and the unit of the analysis is implicitly the "additional weeks of work" in the RCP period. Since a program participant received payments for the "additional weeks of work", the additional employment induced by the Project is of course part of the total benefit to the participant. However, as noted earlier, the total benefit must also include the additional EI benefits received during unemployment. To avoid "mixing apples and oranges", total benefits to participants must be expressed in monetary terms (dollars). We have only touched upon this topic earlier, because we wish to discuss it in more detail in the present section.

Conceptually the Project's total benefit to a participant may go beyond the benefits mentioned above. For example, the Project might have enhanced an individual's attachment to the labour market, kept the person up-to-date with the skill of his or her occupation, minimized the risk of obsolescence, and maintained one's work discipline. Although these benefits could be very important, they could not be estimated by the available data. In this report, we simply acknowledge their existence without arbitrarily assigning dollar values to them.

In this context, the total (incremental) benefit to a typical program participant is the sum of the individual's incremental earnings resulting from additional weeks of work and additional EI benefits because of program participation.[29] With the information on additional weeks of work presented earlier and data on earnings from *small weeks*, insured earnings, number of divisor weeks, actual benefit rate, status quo benefit rate, and weeks of benefits received, we are able to estimate all tangible benefits to program participants, except the values of additional benefit entitlements. Although we have the information to calculate the worth of the additional weeks of entitlements for all program participants, it would be erroneous to add these figures to the total benefit figures indiscriminately. This is because only a very small number of program participants exhausted their EI benefits entitlements. The majority of program participants left the EI benefits system before their entitlements terminated. For these individuals, the additional entitlements were unrealized benefits. In this section, only realized benefits (entitlements) are included in the benefit figures. The micro-accounting framework that we use to perform the calculations tracks all benefit components person by person. The final results are then tabulated separately for male and female participants.

29 Total (incremental) benefit to a program participant = *small weeks* worked * wage of small weeks + 0.22 x small weeks worked x (insured earnings in the RCP/divisor weeks) + additional benefits from entitlement. The accounting identities used for calculating "incremental benefits" for female and male participants are, of course, more complex and lengthy than the stylistic formula shown here. However, this formula is sufficient to reveal the essentials of the approach.

FIGURE 5
Total Monetary Benefits to Male and Female Program Participants

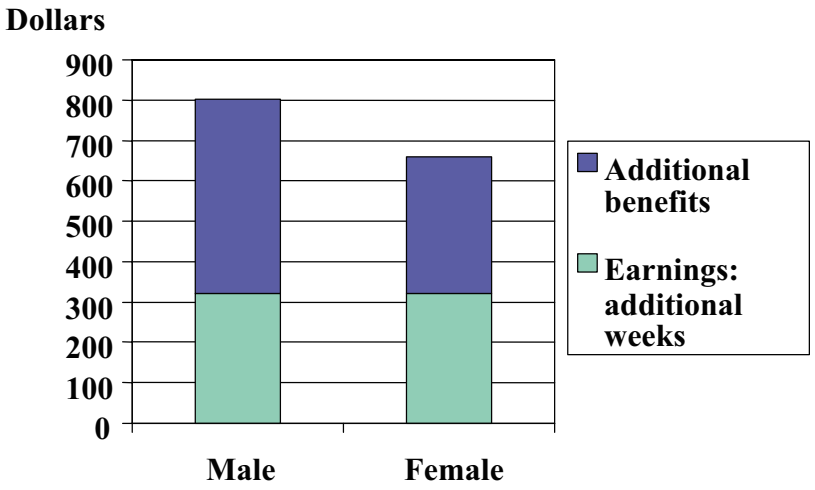

Figure 5 graphically summarizes the salient features of the results. In addition to presenting "total benefit by gender" the graphs shows the contributions to total benefit by additional weeks of work and by additional EI benefits received.

The Project increased the income of an average female participant by an estimated $658, and of an average male participant by $820. Although these additional earnings came in as either incremental employment earnings or EI benefits over many weeks (the RCP and EI benefit periods), they were undoubtedly essential to the livelihood of many claimants from the high unemployment regions of Small Weeks. The contribution of additional weeks of work (induced by the Project) to a male participant's total benefit was $320.90, and for a female participant it was $321.40. The closeness of these two figures was not surprising. It was partly because of the $150 *small week* definition, and partly the result of the existing wage differential between male and female claimants. The average male participant tended to have a higher wage rate than his female counterpart, but the female participant worked slightly more *small weeks*. In terms of additional benefits received, an average male participant received $499.50 and the female participant's benefit increment was $336.90. Once again, we may trace this finding to the average wage differential between male and female claimants.

These results should, however, not be construed as the Small Weeks Pilot Project benefiting males more than females. As shown earlier, program participation rate for female claimants was significantly higher than the rate for male claimants. While the total benefit to an average male participant was higher than that of an average female participant by $162, there were more female claimants in the Project than male claimants (see Table 1).

7. Conclusions

The objective of the Small Weeks Pilot Project, 1998-2001, is to encourage individuals to accept *small weeks* of work under Employment Insurance (EI). Based on the evidence available from our analysis, we conclude that the Project has accomplished this mission. These results show up in the descriptive statistical analysis of raw data, and are also confirmed by more sophisticated econometric estimates.

The results show that a large number of EI claimants benefited from the Project. In the 31 Small Weeks regions, 9.0 and 17.8 percent of the male and female claimants were program participants. For these claimants, the Project has approximately increased their total weeks of work by 2.1 and 2.4 weeks for male and female claimants, respectively, in the 26 weeks prior to their job separations. The additional weeks of work, along with their earnings, would also bring in other benefits.

When the participants became unemployed, their benefit rates would be higher and their weeks of benefits entitlement would also be longer. The study estimates that the Small Weeks Pilot Project increased the total income (additional employment earnings plus additional EI benefits) of an average female participant by $658, and of an average male participant by $820.

In conclusion, the Project encouraged many individuals to accept *small weeks* of work in range of "$0 to $150" per week. It eliminated penalty in the form of EI benefits for these *small weeks*. It subsequently generated increased incomes for many claimants in high unemployment regions where every dollar meant something to the recipients. These results are consistent with the findings of Professor Friesen's evaluation of the 1997-1998 Small Weeks Adjustment Pilot Projects. This is not surprising, since the designs of the two consecutive Small Weeks Projects are almost identical to each other.

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Appendix A: The Evaluation Model and Estimated Equations

In non-experimental program designs, *selection bias* is a major concern to the evaluator. Without any formal empirical tests, a critic may refuse to accept the findings from descriptive statistics and multivariate statistical methods that ignore the *selection bias* issue. For example, if, in the absence of the Project, program participants are more motivated to accept *small weeks* of work than comparison group members, then *selection bias* exists. Under such circumstances, estimates from econometric estimates without accounting for the influences of *selection bias* could be misleading, because the effects of *selection bias* on program outcomes have not been purged.

The standard econometric method that deals with *selection bias* explicitly, is the Heckman *selection bias* model. In a nutshell, the model estimates the influences of the intangibles (e.g., motivation) and tangibles (personal attributes, socio-economic factors, regional economic climates, etc.) on program participation and program outcomes. In a typical *selection bias* model, the evaluator has to consider the existence of two possible sources of *selection biases*, namely *administrative bias* and *self-selection bias*. *Administrative bias* refers to the cases in which program administrative officers tend to grant program participation to individuals who are most likely to succeed only. Since the Small Weeks Pilot Project has been available to all labour force members in the designated 31 Small Weeks regions, *administrative bias* is by definition a non-issue. However, *self-selection* remains an outstanding concern. For this investigation, the evaluation model consists of one participation equation and two outcome equations (*small weeks* of work and total weeks of work in the Rate Calculation Period (RCP)). The model deals with the issue directly in the participation equation. If program participants were more motivated to accept *small weeks* of work than comparison group members, then this intangible factor would be reflected in the estimated coefficients of the participation equation. This estimated participation equation could in turn be used to generate the necessary information for estimating the two outcome equations.[30] The estimated outcomes by this method are technically and conceptually free of the confounding effects of *selection bias*.[31]

30 There are two versions of the Heckman estimator. The first one uses the participation equation to calculate the Inverse Mills Ratio, and then include the Ratio as one of the explanatory variables in the outcome equations. The second version is essentially an instrumental variable method. It uses the participation equation to calculate the probability of program participation, and then use this calculated series as an instrumental variable to replace the participation variable (explanatory variable) in the outcome equations. The instrumental variable approach is used in our estimation.

31 For a more detailed discussion of the Heckman evaluation model, see Heckman (1979).

To test the *selection bias* hypothesis and to see whether or not *selection bias* exists in the *small weeks* data, we have used the econometric method proposed by Heckman, along with the data from 31 Small Weeks Pilot Project regions and the rest of the economy,[32] to estimate the participation equation, the *small weeks* worked equation, and the total weeks of work equation.[33] These estimated equations serve two purposes: (i) to test the relevance of the *selection bias* issue in the context of the present investigation, and (ii) to provide the evaluator with the necessary tool to shed more light on the importance of *small weeks* in 31 Small Weeks regions. For example, *a priori*, we know that a program participant's total benefits from the Project is equal to the increase in employment earnings from additional weeks of work in the RCP plus the extra EI benefits he or she may receive during unemployment. The estimated coefficients of the three-equation model, along with the actual data, would provide us with the necessary information to carry out this calculation.

The estimated equations for the evaluation model (Equations 1 to 3), along with a list of the definitions of variables used in the model, are presented at the end of this Appendix. Two O.L.S. equations (Equations 4 and 5), which are the basis for the quantitative results reported in Section 6.2 of this report, are also included here for reference. The reader may have noticed that Equations 2 and 3 and Equations 4 and 5 have the same dependent variables and explanatory variables. The only difference between the two sets is how they have been estimated.[34] Equations 2 and 3 have been designed to account for the potential influence of *selection bias*, but Equations 4 and 5 assume the non-existence of *selection bias*. The "no *selection bias*" assumption is valid if and only if the estimated coefficients of Equations 4 and 5 are not significantly different from the estimated coefficients of Equations 2 and 3. This has been statistically tested to be true. We may, therefore, conclude that *selection bias* is not a relevant issue for the evaluation of the Small Weeks Pilot Project.

The following is a brief summary of the salient features of the evaluation model and its estimated equations:

- The sample size for estimating the evaluation model is extremely large. It consists of a sample of 422,961 claimants who were either Small Weeks program participants or comparison group members. This sample size exceeds the usual sample size requirements for producing reliable micro-econometric estimates. The estimated

32 The sample consists of 162,830 participating claims from 31 Small Weeks regions and 260,131 claims (comparison group) randomly selected from the rest of the country.

33 The term "*small weeks*" of work refers to the *small weeks* in the RCP that would be excluded for benefit calculation purposes for program participants. "Total weeks of work" denotes the sum of *small weeks* and regular weeks of work in the RCP.

34 In particular, Equations 2 and 3 have been estimated with the Heckman estimator (instrumental variable), whereas Equations 4 and 5 have been estimated with the O.L.S. method.

equations are robust to minor specification changes or minor observation range changes.[35] This has been confirmed many times during the estimation process.[36]

- The obvious shortcoming of our (administrative) data is that it only has a limited number of variables for personal characteristics and the socio-economic factors. For example, HRDC administrative data has no information on the educational attainment of claimants, their spouses' educational attainment and income, their children's labour market activities, etc. In this study, we have to work with what is available and attempt to get the most out of it.

- The participation equation is based on the specification of a logistic model. This approach ensures that the estimated probability for a claimant's program participation is within the range of zero to 1. In this equation, the gender and age of the claimant is included as a control for the effects of these personal characteristics on program participation. The regional unemployment rate of the claimant's residence is used to capture the influence of labour market conditions on participation probability. A set of binary variables for provinces is included to control for the effects of "provincial culture". A set of industrial binary variables is used to control for systematic differences in labour market conditions across industries. All estimated coefficients except two are statistically significant at, at least, the 5 percent level and have the expected signs. For example, a male claimant has lower probability to be a program participant than a female claimant. The older the individual, the less likely he or she would become a participant. On the other hand, a region of relatively high unemployment rate tends to induce more claimants to accept *small weeks* of work in the RCP. This suggests that the demand for *small weeks* is largely determined by the buoyancy (or the lack of it) of the economy. When regular jobs are plentiful, most workers would prefer regular-hours jobs to *small weeks* work. The set of binary (0 and 1) provincial variables shed some light on provincial influence on program participation. British Columbia is the "reference province" in the equation. Thus a positive and statistical coefficient for a province means that a claimant from this particular province has a higher probability for program participation than a claimant from British Columbia. The pattern is quite clear: Program participation concentrates heavily in the Maritimes provinces; Quebec and Ontario are next; claimants from the Prairies and B.C. have the lowest probability for engaging in *small weeks* activities.

  The participation equation also demonstrates that an individual's industrial affiliation has some influence on an individual's decision on accepting *small weeks* of work. Claimants from fishing, forestry, transportation-storage-and communication, trade, and business and other miscellaneous services have a higher probability to engage in *small*

35 For example, if we randomly drop 10 percent of the claimants from the sample and re-estimate the model, the estimated equation would have remained more or less the same as the equations from the full sample.

36 The sample size and the actual number of cases included in estimating each equation vary slightly. This is because a few cases miss information for all explanatory variables. The computer program therefore automatically excludes these few cases from the sample during estimation. Since the three estimated equations of the model do not use the same list of explanatory variables, the actual number of cases included in estimating the equations vary slightly.

weeks of work than claimants from public administration sector, agriculture, mining, manufacturing, and finance-insurance-and real estate. Farmers and miners are mostly seasonal workers; one may think that they would probably like some *small weeks* of work during the off-seasons. Their relatively low probability in program participation is likely determined by the lack of *small weeks* work available in these sectors. Occupations in manufacturing and finance-insurance-and real estate are mostly regular jobs. Individuals from these sectors are unlikely *small weeks* participants, as suggested by the estimated coefficients.

- The second equation of the model refers to the "*small weeks* of work" of the claimant.[37] The equation specifies that "*small weeks* of work" depends upon a vector of personal attributes, socio-economic factors, Employment Insurance (EI) usage (i.e., whether or not the person is a member of new entrants or re-entrants, a repeat user,[38] and or a recipient of Family Supplement), and finally whether or not the person is a program participant. Variables for EI usage appear in this equation but not in the participation equation. This is based on the rationale that EI rules directly influence a claimant's number of *small weeks* worked but not necessarily the individual's participation decision. For example, a claimant might be willing to work one *small week* only, if he or she accepted more than one *small week* in the RCP, the claimant's total family income would have exceeded the maximum allowed by the Family Supplement (FS) rule and would have lost the extra income from the FS. As noted earlier, to circumvent the potential influence of *selection bias*, we have used the Heckman estimator to carry out the estimation.[39] The estimated coefficient for the participation variable is 1.97. This means that, after controlling for the influences of all other factors, the Project increases a typical program participant's *small weeks* of work by 1.97 weeks. Similar to the participation equation, with very few exceptions, the estimated coefficients for this equation have the expected signs and are statistically highly significant. Their interpretation is straightforward, and will not be elaborated here.

- The last equation models "total weeks of work" equation. As contended earlier, for program participants, a *small week* of work could lead to additional weeks of work with the same firm in the RCP. This equation is designed to capture this "indirect effect" of the Project. In the specification, this indirect effect is captured by the interaction term of "small weeks worked * program participation". Once again, to purge any possible influence of *selection bias*, we have used the Heckman estimator to estimate the coefficients of this equation. The estimated coefficient for this variable is 0.22, which is extremely close to its counterpart of 0.23 estimated by the O.L.S. used in the "first approximation" section. This result, along with the evidence from the second equation of the model, confirms that *selection bias* is a non-issue for this investigation.

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37 A *small week* is defined as a week with earnings less than $150. For a more detailed explanation of this dependent variable, see the footnotes of Table 3.

38 See footnote #27.

39 See footnote #30.

Evaluation model: Estimated equations

Equation #1 (model component): Probability of participation*

Dependent Variable (PARTICIPATION): With weeks of work earning less than $150 per week in the RC=1, otherwise=0
Sample: 422,961 cases
Cases included in analysis: 417,017
Method: Maximum likelihood — binary logit

Variable**	Coefficient	Standard Error	Z-Statistic	Significance
CONSTANT	-17.569	0.096	-182.052	0.000
MALE	-0.435	0.015	-27.570	0.000
AGE	-0.007	0.001	-10.583	0.000
URATE	2.037	0.010	202.554	0.000
NFL	2.778	0.140	19.839	0.000
PEI	1.650	0.616	2.676	0.007
NS	1.784	0.034	52.491	0.000
NB	7.710	0.104	74.161	0.000
QUE	1.658	0.020	83.314	0.000
ONT	2.252	0.025	89.746	0.000
MAN	-3.089	0.636	-4.860	0.000
SASK	-3.089	0.241	-12.811	0.000
ALB	-3.431	0.120	-28.679	0.000
TERRITORIES	0.176	1.145	0.154	0.878
AGRI	-0.195	0.057	-3.424	0.001
FISHING	1.881	0.191	9.837	0.000
FORESTRY	0.302	0.095	3.167	0.002
MINING	-1.129	0.131	-8.633	0.000
MANUF	-0.307	0.042	-7.255	0.000
CONS	-0.582	0.047	-12.478	0.000
TRS_ST_COM	0.290	0.048	5.983	0.000
TRADE	0.272	0.043	6.397	0.000
FIN_INS_RE	-0.423	0.056	-7.558	0.000
BUS_SER	0.088	0.046	1.889	0.059
ED_HEALTH	0.010	0.044	0.223	0.823
OTH_SER	0.348	0.043	8.160	0.000

Probability (LR stat) = 0.000; McFadden R-squared = 0.765
* For the definitions of all variables, see the mnemonic list at the end of this Appendix.
** "FEMALE", "BC", and "GOVERNMENT" are the *binary-reference* variables for gender, province, and industrial classification in estimation. They are not included on the mnemonic list.

Equation #2 (model component): Small Weeks worked*

Dependent Variable (EXC_SW): Weeks of work of earnings less than $150 per week
Sample: 422,961 cases
Cases included in analysis: 417,017
Method: Heckman's instrumental variable estimator

Variable**	Coefficient	Standard Error	Z-Statistic	Significance
CONSTANT	-1.154	0.021	-55.722	0.000
MALE	-0.288	0.006	-45.782	0.000
AGE	-0.000	0.000	0.063	0.950
URATE	0.145	0.002	96.582	0.000
NEW_REENT	0.165	0.019	8.535	0.000
REPEAT	0.236	0.006	37.977	0.000
FS	-0.153	0.010	-15.688	0.000
NFL	0.420	0.019	21.659	0.000
PEI	0.605	0.027	22.696	0.000
NS	0.469	0.015	31.670	0.000
NB	0.615	0.017	36.416	0.000
QUE	0.285	0.011	25.041	0.000
ONT	0.247	0.009	26.267	0.000
MAN	0.303	0.015	19.659	0.000
SASK	0.194	0.0171	11.353	0.000
ALB	0.214	0.011	18.893	0.000
TERRITORIES	-1.722	0.098	-17.652	0.000
REG_CLAIM	0.107	0.008	13.680	0.000
AGRI	-0.124	0.023	-5.412	0.000
FISHING	-0.985	0.033	-29.655	0.000
FORESTRY	-0.417	0.034	-12.219	0.000
MINING	-0.092	0.026	-3.571	0.000
MANUF	-0.156	0.014	-10.840	0.000
CONS	-0.058	0.016	-3.677	0.000
TRS_ST_COM	-0.001	0.017	-0.034	0.973
TRADE	0.304	0.015	20.552	0.000
FIN_INS_RE	0.103	0.019	5.298	0.000
BUS_SER	0.064	0.017	3.837	0.000
ED_HEALTH	-0.129	0.015	-8.630	0.000
OTH_SER	0.209	0.015	14.105	0.000
PARTICIPATION	1.971	0.015	131.141	0.000

Probability (F-statistic) = 0.000; adjusted R-squared = 0.435; Durbin-Watson = 1.995
* For the definitions of all variables, see the mnemonic list at the end of this Appendix.
** "FEMALE", "BC", and "GOVT" are the *binary-reference* variables for gender, province, and industrial classification in estimation. They are not included on the mnemonic list.

Equation #3 (model component): Total weeks of work*

Dependent Variable (WKS_STAT): Total weeks of work in the RCP
Sample: 422,961 cases
Cases included in analysis: 422,961
Method: Heckman's instrumental variable estimator

Variable**	Coefficient	Standard Error	Z-Statistic	Significance
CONSTANT	26.764	0.025	1051.994	0.000
MALE	-0.431	0.008	-53.433	0.000
AGE	-0.001	0.000	2.112	0.034
URATE	-0.216	0.003	-77.440	0.000
NFL	-0.557	0.028	-20.147	0.000
PEI	-1.165	0.039	-29.891	0.000
NS	-0.056	0.022	-2.606	0.009
NB	-1.177	0.025	-46.679	0.000
QUE	-0.136	0.016	-8.515	0.000
ONT	-0.061	0.013	-4.541	0.000
MAN	-0.122	0.022	-5.533	0.000
SASK	-0.171	0.024	-6.985	0.000
ALB	-0.281	0.016	-17.699	0.000
TERRITORIES	1.567	0.141	11.110	0.000
EXC_SW*				
PARTICIPATION	0.219	0.008	28.550	0.000

Probability (F-statistic) = 0.000; adjusted R-squared = 0.085; Durbin-Watson = 1.999
* For the definitions of all variables, see the mnemonic list at the end of this Appendix.
** "FEMALE", "BC", and "GOVT" are the *binary-reference* variables for gender, province, and industrial classification in estimation. They are not included on the mnemonic list.

Equation #4 (supplementary equation): Small Weeks worked*

Dependent Variable (EXC_SW): Weeks of work of earnings less than $150 per week in the RCP Sample: 422,961 cases
Cases included in analysis: 417,017
Method: Ordinary least squares

Variable**	Coefficient	Standard Error	Z-Statistic	Significance
CONSTANT	-1.152	0.020	-57.865	0.000
MALE	-0.283	0.006	-46.492	0.000
AGE	-0.000	0.000	1.784	0.075
URATE	0.146	0.001	115.746	0.000
NEW_REENT	0.143	0.019	7.601	0.000
REPEAT	0.192	0.006	31.870	0.000
FS	-0.154	0.009	-16.272	0.000
NFL	0.425	0.019	22.567	0.000
PEI	0.615	0.026	24.044	0.000
NS	0.475	0.014	33.426	0.000
NB	0.625	0.016	39.677	0.000
QUE	0.292	0.010	28.169	0.000
ONT	0.246	0.009	27.024	0.000
MAN	0.305	0.015	20.464	0.000
SASK	0.195	0.017	11.818	0.000
ALB	0.214	0.011	19.623	0.000
TERRITORIES	-1.736	0.095	-18.356	0.000
REG_CLAIM	0.095	0.008	12.439	0.000
AGRI	-0.116	0.022	-5.246	0.000
FISHING	-0.980	0.032	-30.417	0.000
FORESTRY	-0.409	0.033	-12.330	0.000
MINING	-0.087	0.025	-3.465	0.000
MANUF	-0.155	0.014	-11.140	0.000
CONS	-0.047	0.015	-3.083	0.002
TRS_ST_COM	0.002	0.017	0.129	0.898
TRADE	0.299	0.014	20.842	0.000
FIN_INS_RE	0.097	0.019	5.111	0.000
BUS_SER	0.063	0.016	3.903	0.000
ED_HEALTH	-0.127	0.015	-8.710	0.000
OTH_SER	0.208	0.014	14.463	0.000
PARTICIPATION	1.975	0.009	210.652	0.000

Probability (F-statistic) = 0.000; adjusted R-squared = 0.468; Durbin-Watson = 1.999

* For the definitions of all variables, see the mnemonic list at the end of this Appendix.

** "FEMALE", "BC", and "GOVT" are the *binary-reference* variables for gender, province, and industrial classification in estimation. They are not included on the mnemonic list.

Equation #5 (supplementary equation) : Total weeks of work*

Dependent Variable (WKS_STAT): Total weeks of work in the RCP
Sample: 422,961 cases
Cases included in analysis: 422,961
Method: Ordinary least squares

Variable**	Coefficient	Standard Error	Z-Statistic	Significance
CONSTANT	26.737	0.022	1242.911	0.000
MALE	-0.395	0.008	-50.346	0.000
AGE	-0.001	0.000	2.509	0.012
URATE	-0.218	0.002	-126.932	0.000
NFL	-0.557	0.027	-20.471	0.000
PEI	-1.171	0.037	-31.459	0.000
NS	-0.095	0.021	-4.593	0.009
NB	-1.184	0.022	-52.889	0.000
QUE	-0.172	0.014	-11.921	0.000
ONT	-0.055	0.013	-4.118	0.000
MAN	-0.095	0.022	-4.366	0.000
SASK	-0.143	0.024	-5.920	0.000
ALB	-0.254	0.016	-16.278	0.000
TERRITORIES	1.646	0.138	11.903	0.000
EXC_SW*				
PARTICIPATION	0.234	0.002	109.417	0.000

Probability (F-statistic) = 0.000; adjusted R-squared = 0.108; Durbin-Watson = 1.998

* For the definitions of all variables, see the mnemonic list at the end of this Appendix.

** "FEMALE", "BC", and "GOVT" are the *binary-reference* variables for gender, province, and industrial classification in estimation. They are not included on the mnemonic list.

Mnemonic list: Definitions of variables

AGE: Age of the claimant at benefit period commencement.

AGRI: Binary variable equal to “1”, if the claimant’s industrial affiliation is agriculture, otherwise equal to “0”.

ALB: Binary variable equal to “1”, if the claimant’s most recent residence is Alberta, otherwise equal to “0”.

BUS_SER: Binary variable; equal to “1”, if the claimant’s industrial affiliation is “business services”, otherwise equal to “0”.

CONS: Binary variable; equal to “1”, if the claimant’s industrial affiliation is “construction”, otherwise equal to “0”.

ED_HEALTH: Binary variable; equal to “1”, if the claimant’s industrial affiliation is “education, health, and related services”, otherwise equal to “0”.

EXC_SW: Number of *small weeks* (weekly earnings less than $150 per week) of work in the RCP.

FIN_INS_RE: Binary variable; equal to “1”, if the claimant’s industrial affiliation is “finance, insurance and real estate”, otherwise equal to “0”.

FISHING: Binary variable; equal to “1”, if the claimant’s industrial affiliation is “fishing and trappings”, otherwise equal to “0”.

FORESTRY: Binary variable; equal to “1”, if the claimant’s industrial affiliation is “forestry”, otherwise equal to “0”.

FS: Binary variable; equal to “1”, if the claimant is a recipient of EI Family Supplement, otherwise equal to “0”.

MALE: Binary variable; equal to “1”, if the claimant’s gender is male, otherwise equal to “0”.

MAN: Binary variable equal to “1”, if the claimant’s most recent residence is Manitoba, otherwise equal to “0”.

MANUF: Binary variable; equal to “1”, if the claimant’s industrial affiliation is “manufacturing”, otherwise equal to “0”.

MINING: Binary variable; equal to “1”, if the claimant’s industrial affiliation is “mines, quarries, and oil wells”, otherwise equal to “0”.

NB: Binary variable equal to “1”, if the claimant’s most recent residence is New Brunswick, otherwise equal to “0”.

NEW_REENT: Binary variable; equal to “1”, if the claimant is a member of EI’s “new entrant and re-entrant” group, otherwise equal to “0”.

NFL: Binary variable equal to “1”, if the claimant’s most recent residence is Newfoundland, otherwise equal to “0”.

NS: Binary variable equal to “1”, if the claimant’s most recent residence is Nova Scotia, otherwise equal to “0”.

ONT: Binary variable equal to “1”, if the claimant’s most recent residence is Ontario, otherwise equal to “0”.

OTH_SER: Binary variable; equal to “1”, if the claimant’s industrial affiliation is “services other than “public administration and defense” and the service industries listed”, otherwise equal to “0”.

PARTICIPATION: Binary variable; equal to “1”, if the claimant has some *small weeks* (weekly earnings less than $150 per week) of work in the RCP, otherwise equal to “0”.

PEI: Binary variable equal to “1”, if the claimant’s most recent residence is Prince Edward Island, otherwise equal to “0”.

QUE: Binary variable equal to “1”, if the claimant’s most recent residence is Quebec, otherwise equal to “0”.

REG_CLAIM: Binary variable; equal to “1”, if the person is a “regular EI benefits” claimant, otherwise equal to “0”.

REPEAT: Binary variable; equal to “1”, if the claimant at the time of filing a new EI claim has had 5 weeks or more weeks of “regular EI benefits” since July 1, 1996, otherwise equal to “0”.

SASK: Binary variable equal to “1”, if the claimant’s most recent residence is Saskatchewan, otherwise equal to “0”.

TERRITORIES: Binary variable equal to “1”, if the claimant’s most recent residence is Northwest Territories or Yukon, otherwise equal to “0”.

TRADE: Binary variable; equal to “1”, if the claimant’s industrial affiliation is “wholesale or retail trade”, otherwise equal to “0”.

TRS_ST_COM: Binary variable; equal to “1”, if the claimant’s industrial affiliation is “transportation, storage, communication, and other utilities”, otherwise equal to “0”.

URATE: Regional unemployment rate of where the claimant resides.

Appendix B: The Distribution of Average Weekly Earnings of Program Participants

In the main text of this report, we have briefly mentioned the implication of the $150 per week limit of the *small-week* definition to workers' behaviour in the Rate Calculation Period (RCP). The following table, which shows the distribution of average weekly earnings of program participants in the RCP by gender, sheds further light on this topic.

Distribution of average weekly earnings in the RCP: Program participants in 31 Small Weeks regions, November 1998 to August 2001

	Male		Female	
Weekly earnings	**Percent**	**Cumulative percent**	**Percent**	**Cumulative percent**
$0-49	0.00	0.00	0.01	0.01
$50-99	0.18	0.18	0.62	0.63
$100-149	1.54	1.73	5.73	6.36
$150-199	4.96	6.69	15.63	22.00
$200-249	9.00	15.68	19.28	41.27
$250-299	12.18	27.87	17.56	58.83
$300-349	12.91	40.78	13.58	72.42
$350-399	11.05	51.83	9.17	81.59
$400-449	9.26	61.09	5.99	87.58
$450-499	8.08	69.16	4.17	91.75
$500-549	6.90	76.06	2.96	94.71
$550-599	5.72	81.78	1.95	96.66
$600-649	4.61	86.39	1.26	97.91
$650-699	3.83	90.21	0.78	98.69
$700-749	2.83	93.04	0.55	99.23
$750-800	6.96	100.00	0.77	100.00

The descriptive statistics show that only about 1.7 percent of male participants and 6.4 percent of female participants had average weekly earnings below the $150 limit of the Small Weeks definition in November 1998-August 2000. For these claimants, the program objective of encouraging workers to take all available work in the RCP was clearly tenable. By accepting all available work, they gained additional earned incomes, Employment Insurance (EI) benefits, and benefit entitlements. For claimants whose average weekly earnings were above $150, they would also be willing to accept weeks of work of less than $150 a week if they were unemployed, but they would have less incentive to accept a week of work that paid between "$150 and the average of their weekly earnings" in the RCP. The data tells that more than 98 percent of male participants and 93 percent of female participants in the 31 Small Weeks regions belonged to this latter group.

Appendix C: A Technical Note on Data Sources

The evaluation of the Small Weeks Pilot Project relied primarily on Human Resources Development Canada (HRDC) administrative data. Fundamental claim data, including summary claim information, personal attributes, and geographic location, were derived from the Status Vector file. This file is maintained by Data Development for purposes of research, analysis and evaluation. It is derived from the Benefits and Overpayments File (the file used by HRDC to administer unemployment claims and pay benefits) and is updated quarterly.

The evaluation also required information from claimants' Records of Employment (ROE). The ROE file maintained by Data Development was used but was supplemented by more detailed earnings data from HRDC Systems. Specifically, Systems provided data from the Support System for Agents (SSA) database.

SSA is a microcomputer-based system tool used by insurance staff to assess claims for Employment Insurance benefits. It has two main functions: (1) a rule based program to assess and calculate a claim for benefits based on current policy and procedures; and (2) a user interface with the On-line Insurance System (OLIS). SSA input data and resulting calculations are stored on the LAN of the local Human Resources Centre (HRCC) offices.

Calculation of a *small weeks* claim relies heavily on the SSA facility. The system retains information on earnings in each week of the rate calculation period. The weekly earnings are derived from Block 15C of the ROE, the application for EI benefits, the small weeks questionnaire, from earnings while on claim, or from pay records of the claimant or the employer. The agent reviews the weekly earnings to distinguish *small weeks* from regular weeks, to compare total weeks with the regional divisor, and to identify those *small weeks* eligible for exclusion. The weekly earnings and the results of the agent's assessment are stored on the LAN.

Two years ago, during an initial evaluation of the 1997-1998 Small Weeks Adjustment Projects, Evaluation and Data Development (EDD) obtained the weekly earnings data from the LAN of each local office. Close to 100 offices forwarded *small weeks* data to NHQ. Each file was converted from the SSA software to an ASCII format using a program written by Systems. Once converted, the local office data were transferred from microcomputer to the mainframe for processing at EDD.

In 1999, Systems began to centralize the *small weeks* files. They gradually transferred the data from the local offices to the four Information Technology Centers (ITCs) across the country. In August 2000, about half of the transfer was complete.

For the present evaluation, it was necessary to acquire the data using two approaches. For those offices whose data had not been transferred, EDD followed the same method as in the initial evaluation, namely receipt directly from the local office. For those offices whose data had been transferred, a new set of procedures was implemented. Systems wrote additional programs to extract the necessary data from the SSA database and to convert the data from a UNISYS format to an IBM readable format. Systems applied rigorous standards to their extract programs before forwarding them to the Information Technology Centers for execution. They put the programs through a series of tests using a working data file and also required EDD to apply a further set of tests to ensure that the files were readable and contained the requisite information. Once the Systems' program was approved, program documentation was prepared and an implementation date was arranged with the ITCs. The program was run at the ITCs and the data were copied to cartridges and forwarded to EDD.

EDD combined the files from the four ITCs and the approximately 45 non-transferred local offices. At this stage, the combined file contained *administrative* data — not research data. It was data based on working files, files where fields could be used to flag a potential situation but where agents would not necessarily go back and make a correction to the flag if the situation was not realized. The implication was that the data could not always be taken at face value. Furthermore, the data were not in a format for analysis. Earnings were reported by ROE, not by rate calculation period. Substantive reformatting had to occur to isolate weeks within the rate calculation period, to combine earnings from multiple jobs, and to identify weeks between ROEs with no earnings. Reconciliation of ROE and BNOP total earnings with weekly earnings presented another challenge. Considerable data "cleaning" had to occur before the file was ready for analysis.

Appendix D: 31 Economic Regions included in the "EI Pilot Project on Small Weeks, 1998-2001"

Newfoundland-Labrador
St. John's, Newfoundland
Prince Edward Island
Eastern Nova Scotia (i.e. Guysborough, Louisbourg, North Shore, etc.)
Central Nova Scotia (i.e. Truro, Springhill, New Glasgow, etc.)
Kings, Nova Scotia (i.e. Lunenburg, Kingston, Windsor, etc.)
Yarmouth, Nova Scotia (i.e. Liverpool, Weymouth, Middleton, etc.)
Restigouche-Charlotte, New Brunswick (i.e. Campobello, Bathurst, Shediac, etc.)
Fredericton-Moncton-Saint John, New Brunswick
Eastern Quebec (i.e. Matane, Rimouski, Gaspe, etc.)
Northern Quebec (i.e. Matagami, Sept-Iles, Baie Comeau, etc.)
Quebec Centre (i.e. Magog, Joliette, Asbestos, etc.)
Western Quebec (i.e. Maniwaki, Temiscaming, Rouyn-Noranda, etc.)
Chicoutimi-Jonquiere, Quebec
Trois-Rivieres, Quebec
Quebec City, Quebec
Montreal, Quebec
Sherbrooke, Quebec
Hull, Quebec
Eastern Ontario (i.e. Brockville, Gananoque, Kingston, etc.)
North-Central Ontario, (i.e. Parry Sound, Peterborough, Owen Sound, etc.)
Northern Ontario, (i.e. Elliot Lake, Kenora, Moosonee, etc.)
Niagara, Ontario
Huron, Ontario
Sudbury, Ontario
Northern Manitoba (i.e. Lynn Lake, Flin Flon, The Pas, etc.)
Northern Saskatchewan (i.e. Prince Albert, La Ronge, Buffalo Narrows, etc.)
Southern Interior British Columbia (i.e. Cranbrook, Kamloops, Vernon, etc.)
Southern Coastal British Columbia (i.e. Port Alberni, Powell River, Comox, etc.)
Northern British Columbia (i.e. Fort Nelson, Prince Rupert, Prince George, etc.)
Yukon/Northwest Territories