Who Moves? A Panel Logit Model Analysis of Inter-Provincial Migration in Canada

by

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Abstract

This paper addresses the topic of inter-provincial migration in terms of the basic question: "who moves?". Panel logit models of the probability of moving from one year to the next are estimated using samples derived from the Longitudinal Administrative Database covering the period 1982-95. Explanatory variables include "environmental" factors, personal characteristics, labour market attributes, and a series of year variables. Separate models are estimated for eight age-sex groups.

The major findings include that: i) migration rates have been inversely related to the size of the province, presumably capturing economic conditions, labour market scale effects, and pure geographical distance, while language has also played an important role; ii) residents of smaller cities, towns, and especially rural areas have been less likely to move than individuals in larger cities; iii) age, marriage, and the presence of children have been negatively related to mobility, for both men and women; iv) migration has been positively related to the provincial unemployment rate, the individuals' receipt of unemployment insurance (except Entry Men), having no market income (except for Entry Men and Entry Women), and the receipt of social assistance (especially for men); v) beyond the zero earnings point, migration has been positively related to earnings levels for prime aged men, but not for others, and these effects are generally small (holding other factors constant); vi) there were no dramatic shifts in migration rates over time, but men's rates dropped off a bit in the 1990s while women's rates (except for the Entry group) generally held steadier or rose slightly, indicating a divergence in trends along gender lines.

Keywords: Mobility, Unemployment, Social Assistance and Gains


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I. Introduction

Inter-provincial migration is an interesting and important phenomenon for many reasons. Relevant labour market issues include the relationships between mobility and individuals' earnings, productivity in the source and destination provinces, and labour market efficiency more generally. Migration also has important implications for various social insurance and income support programmes, such as unemployment insurance, social assistance, and health care, in that the portability of benefits must be assured for those who move, while adverse incentives which encourage mobility of the unwanted sort (e.g., moving to a particular province because it offers more generous social assistance payments) or barriers which inhibit mobility of a more desirable type (e.g., not moving from a high unemployment region because unemployment benefits might be less generous elsewhere) should be minimised. Third, mobility is relevant to various human resource issues; for example, the returns to public investments in education and training—the former completely under provincial jurisdiction and the latter partially (and increasingly) so—depend on local employment opportunities and are embodied in individuals and therefore move when they do, thus twisting the benefit-cost ratios of these programmes along provincial lines. Migration is also an item of concern in the context of certain regulatory rules, such as those pertaining to professional certification and licensing and certain commercial regulations, which are sometimes alleged to represent barriers to the free flow of citizens to where their employment opportunities—or quality of life—might be greatest. Finally, inter-provincial migration is of central importance to the most fundamental issues of nationhood facing Canada, with inter-provincial mobility presumably reflecting some of the important benefits of being a country.

Given this importance, it is not surprising that there is by now a fairly substantial literature on inter-provincial mobility, based on both micro and aggregate data and using various analytical approaches. We thus now know a fair amount regarding the general extent and direction of inter-provincial mobility, some of the determinants of these flows, certain implications for economic adjustment, the broad effects on individuals' earnings, and so on.[1]

[1] Anderson [1966], Courchene [1974], Grant and Vanderkamp [1976], Lin [1995], Osberg, Gordon and Lin [1994], Robinson and Tomes [1982], Statistics Canada [1993], Stone [1969], and Vachon and Vaillancourt [1998] collectively provide evidence on gross outflows, gross inflows, net flows, and the specific province-to-province patterns of inter-provincial mobility, as well as the basic characteristics of movers and non-movers and the associated income patterns. The different "types" of migration (primary, return, onward), are focused on in Hiscott [1987], Grant and Vanderkamp [1984, 1986], Newbold and Liaw [1990], Rosenbaum [1988, 1993], and Vanderkamp [1971, 1972]; Hiscott [1987] and Hou and Beaujot [1995] concentrate on migration between Atlantic Canada and Ontario; and Day and Grafton [1998] look at students. Econometric studies of the determinants of inter-provincial mobility, including an important sub-literature on the role of fiscal variables (including relative wage structures), can be found in Courchene [1970], Day [1992], Day and Winer [1994], Dean [1992], Grant and Vanderkamp [1976], Lin [1995], Mills, Percy, and Wilson [1983], Osberg, Gordon, and Lin [1994], Robinson and Tomes [1982], Shaw [1986], Vachon and Vaillancourt [1998], and Winer and Gauthier [1982]. The effects of inter-provincial mobility on provincial wage structures and related policy issues are focused on in Courchene [1974], Graham [1964], Rosenbluth [1996], Shaw [1986], and Vanderkamp [1988]. Finally, the effects of migration on individuals' incomes are addressed in Courchene [1974], Grant and Vanderkamp [1976, 1980], and Marr and Millard [1980], as well as in more of a passing manner in Osberg, Gordon, and Lin [1994] and Robinson and Tomes [1982]. Important U.S. work includes Gallway [1969], Greenwood [1975], Laber and Chase [1971]. Mincer [1978], Nakosteen and Zimmer [1980] Polachek and Horvath [1977], Schwartz [1973], and Sjaastad [1962].

Previous research has, however, been limited by the unavailability of the sort of general and extended Canadian longitudinal database which is best suited to the topic of inter-provincial migration which—being a dynamic process—requires similarly dynamic data to be properly studied. The purpose of this paper is, therefore, to shed new light on the topic by presenting the results of an empirical analysis of inter-provincial migration in Canada based on the Longitudinal Administrative Database ("LAD") which has been constructed by Statistics Canada from Revenue Canada tax filer records

More specifically, this research addresses the question: "Who moves?". It does so by estimating a panel logit model where the probability that a person moves from one province to another from any one year to the next is taken to be a function of various "environmental" factors (current province of residence, the provincial unemployment rate, the area size of residence), personal characteristics (language, age, marital status, the presence of children), some key labour market attributes (earnings level, the receipt of unemployment insurance and social assistance), and a series of year variables to capture any shifts over time. All non-student adults aged 20-54 are included in the analysis, with separate models estimated for eight different age-sex groups to facilitate comparisons across these different segments of the population.[2]

As far as this author is aware, this is the first Canadian study to address the "who moves" issue econometrically using a broad-based longitudinal database over an extended period of time and should, therefore, contribute to our understanding of who benefits from migration, the determinants of these movements, and the trends over time, with associated implications regarding the spatial structure of labour markets, the relationship between migration and social programme participation, the role of gender in migration patterns, and so on.[3]

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[2] This paper is one of a series on the topic based on the LAD data. Finnie [1998a, b, and c] provide descriptive (non-econometric) analysis of migration patterns and longitudinal migration profiles and the associated income dynamics, while Finnie [1998d] exploits the longitudinal aspect of the LAD to estimate fixed effects models which control for pre-move earning levels and other individual attributes in order to isolate the effects of inter-provincial mobility on individuals' earnings.

[3] Most previous research on the characteristics of movers and the determinants of moving, including econometric models similar to those estimates here (e.g., Vachon and Vaillancourt [1998], have used census data, which have numerous important limitations. First, only the individual's current province of residence and that as of the previous census is known, resulting in incomplete, biased samples of all moves which occur over time (e.g., return moves and multiple moves which occur over the inter-census period are missed). Second, there is very little information on the earlier ("pre-move") situation, meaning that any analysis of the effects of individual characteristics or environmental factors is significantly limited to such basic items as the individual's age. Finally, the limit of the data to a given five-year inter-census period precludes any direct testing for shifts in the structure of inter-provincial migration over time. (Census data includes, on the other hand, the individual's province of birth, which is not available from tax files.)

Alternatively, previous studies based on longitudinal data—notably the earlier Labour Market Activity Survey (e.g., Osberg et al., [1994] , Lin [1995])—have been limited by the small number of years over which individuals were followed and the relatively small sample sizes, which has limited the generalisability of the results in terms of the period of time covered and (again) precluded tests for shifts over time, while requiring the analysis to be carried out at an aggregate level which cuts across groups with distinctly different mobility behaviour (e.g., the pooling of men and women of different ages).

Finally, previous research based on tax-based longitudinal files (i.e., the work by Courchene and Grant and Vanderkamp) is now simply dated in terms of the period covered and the methods used.

While obviously based on the Canadian situation, the paper might also have some relevance at the international level, providing the basis for comparisons with inter-jurisdictional movements elsewhere, and perhaps having certain implications for comparable inter-state or inter-regional movements in the U.S. or even cross-national movements in the New Europe.

The next section of the paper describes the LAD data and the construction of the samples used in the analysis; the third section describes the econometric model; the fourth section presents the empirical findings; and the concluding section provides a summary of the major findings, identifies some implications of the results, and offers some ideas for future work.

II. The Data

Since the LAD data are new and relatively unknown, this section begins with a general description of the database in the context of the topic of inter-provincial mobility, then describes the specific samples and variables used in the estimation.[4]

An Overview of the Longitudinal Administrative Database (LAD)

The Longitudinal Administrative Database (LAD) is a ten percent representative sample of Canadian tax filers (and identified spouses) followed as individuals over time and matched into family units on an annual basis, thereby providing individual and family-level information on incomes, taxes, and basic demographic characteristics, including province of residence, in a dynamic framework. The first year of LAD data is 1982 and the file ran through 1995 at the time this project was undertaken, thus determining the period covered by the analysis.

The LAD is constructed from Revenue Canada tax files, with individuals selected into the LAD according to a random number generator based on Social Insurance Numbers and followed over time through a SIN-based linking of records across years. Individuals drop out of the LAD if they become non-filers, the principal reasons being that they have a low income and are, therefore, not required to file (and choose not to do so—see below); are out of the country; or have died. (Drop-outs are picked up again if they begin filing anew—so attrition is not necessarily permanent.) New filers (young people, immigrants, etc.) automatically refresh the database in the basic one-in-ten ratio.)

The LAD's coverage of the adult population is very good since, unlike some other countries (such as the U.S.) the rate of tax filing in Canada is very high: higher income Canadians are required to do so, while lower income individuals have incentives to file in order to recover income tax and other payroll tax deductions made throughout the year and, especially since 1986, to receive various tax credits. The full sets of annual tax files from which the LAD is constructed are estimated to cover from 91 to 95 percent of the target adult population (official population estimates), thus comparing favourably with other survey-based databases in this regard.

Furthermore, given that most individuals file tax forms every year (or are identified by other filers), attrition from the LAD is quite low, meaning that it remains representative on a longitudinal basis as well as cross-sectionally. This compares to the situation for survey databases, which typically have greater problems than administrative data in locating—or, in the case of longitudinal data,

[4] See Finnie [1997a-g] for further discussions of the LAD data and their use in other contexts.

following—individuals, especially those who move, potentially resulting in serious endogenous sampling problems in the context of any study of inter-provincial mobility. In short, the LAD is a good performer in terms of its representativeness on both a cross-sectional basis and longitudinally.[5]

The large number of records available on the LAD (roughly two million per year) means that even the one-in-ten sub-sample of the full LAD used in the estimation of the models used here (samples derived from the full LAD were intractably large) provides enough observations to identify all parameters for each age-sex group.

The Sample Selection Rules

Individuals were included in the estimation samples if they met the following criteria for any consecutive pair of years—the unit of observation of the analysis. (Individuals could be included for certain pairs of years but not others, depending on their inclusion in the LAD and whether they passed the sample selection criteria for the given years.)

First, as well as being a tax filer or the imputed spouse of a tax filer with a trackable SIN (as provided by the filer) and thus being included on the LAD file, the individual had to be between the ages of 20 and 54 (inclusive) in the first of each pair of years. The lower age cut-off was adopted to eliminate the majority of pre-university/college students and other young people still living at home and to generally restrict the analysis to decision making "adults". The upper age limit focuses the analysis on the working age population while avoiding issues related to the transition to retirement—a dynamic worthy of its own study.

Second, full-time post-secondary students were excluded from the analysis on the grounds that their mobility decisions are driven by different factors than those obtaining for the rest of the population and would be better investigated using other data sources. This exclusion was accomplished by imputing student status based on the relevant tax deductions available in the LAD data.[6]

III. The Econometric Model

In this section, the panel logit model used in the analysis is introduced, the precise nature of the dependent variable is explained, and the regressors included in the model are discussed.

The Panel Logit Model Specification

A panel logit model framework is employed, with the endogenous variable defined as whether or not the individual's province of residence changed from one year to the next. The relationships between the explanatory variables and the probability of moving are then estimated using maximum likelihood techniques with the underlying stochastic process assumed to follow an extreme value distribution.

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[5] Atkinson et al., [1992] and OECD [1996] discuss the typically better coverage and lower attrition of administrative databases over survey databases. See Finnie [1998a] for evidence on attrition from the LAD and the relationship of this attrition to migration behaviour over selected intervals.

[6] See Finnie [1997a, c, d, e] for further discussion of the identification of post-secondary students.

The regressors are meant to capture various costs and benefits—broadly interpreted—associated with moving, and are entered in terms of the values holding as of the first year (the "pre-move" year) for each pair of years passing the selection criteria enumerated above. This specification represents a stochastically well behaved conditional expectation function which well suits our purposes of identifying the various individual characteristics, labour market attributes, environmental factors, and year effects associated with inter-provincial mobility for different segments of the population.

The model essentially comprises a reduced form formulation where the coefficient estimates reflect the total/net effects of the regressors on the probability of moving. For example, marital status generally affects both the costs and benefits of moving (see below), and the coefficient estimates represent the overall effect of these influences.

The Endogenous Variable: Province of Residence and the Identification of Inter-Provincial Moves

The individual's province is taken to be that in which taxes were payable—essentially where the individual was residing at year end. This variable is well-suited to the analysis due to its being conceptually appropriate, tightly defined (including its year-end specificity—corresponding to the other tax-based information contained in the records), and verified by Revenue Canada. An inter-provincial move is then identified as a change in the individual's tax province from one year to the next.[7]

Province, Language, and Area Size of Residence

The models include a set of dummy variables representing the individual's province of residence. (Ontario is the omitted category.) These will capture, first of all, general economic conditions not otherwise captured by the provincial unemployment rate and the individual-based unemployment and income variables included in the models (see below). Second, the province indicators will pick up labour market scale effects, with the smaller population jurisdictions providing fewer job opportunities, at least for certain types of workers, than the larger ones.[8] Third, there is also a purely geographical distance effect, in that a move of a given distance will leave an individual in a larger province in the original jurisdiction but take another person in a smaller province across a provincial border. Fourth, each province has its own specific geography, climate, cultural make-up, and other characteristics which will affect migration behaviour. Finally, the province variables will pick up any other effects which vary along this dimension and are not otherwise accounted for in the models.

Integral to the province indicators are two minority language variables representing anglophones in Quebec and francophones outside of that province. The province variables thus actually represent province-*cum*-language variables. Given the precise specification adopted here, Ontario

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[7] See Vanderkamp and Grant [1988] for a discussion of the various ways of identifying inter-provincial migration in different databases and the advantages of tax-based data in this regard.

[8] For example, individuals in the retail service sector will generally face relatively local markets with a representative distribution of employment opportunities nearby, whereas certain professionals (and other workers) often face markets which are more national in scope, meaning that within-province employment opportunities will depend on the province's size.

anglophones are the general omitted province-language category. The province indicators other than Quebec imply the use of English (omitted) and capture the differences between anglophones in those provinces and the baseline English-speaking Ontario group. The Quebec variable (representing all Quebec residents), on the other hand, implicitly captures the effect of being a francophone in that province relative to the omitted Ontario anglophone baseline group, since the English-Quebec variable allows for differences between anglophones and francophones in that province, and the total of the Quebec and English-Quebec coefficients represents the effect of being an anglophone in that province relative to the Ontario anglophone benchmark. Finally, the English-ROC ("Rest of Canada") variable captures the differences between francophones and anglophones in whichever province the individual resides outside of Quebec (with that effect assumed to be constant across all provinces).

This joint treatment of province and language has certain advantages over the more typical specification where province and language effects typically enter independently (various province/region indicators and a single variable to represent francophones regardless of where they live). The conventional specification does not, in particular, capture any specific differences between the anglophone minority and francophone majority in Quebec, while the typical omnibus "French" variable captures an amalgam of what may be quite diverse effects for francophones inside and outside Quebec—differences which would seem to be especially important to inter-provincial migration. It should be noted that language pertains to that used to complete the tax form, meaning that it measured with some error, while bilingualism and the use of non-official languages are not captured.[9]

A series of dummy variables representing the individual's area size of residence is included to capture various economic, cultural, and other influences similar to those represented by the province variables. The effects of these variables are not necessarily predictable *ex ante*. For example, individuals living in rural areas might have fewer local job opportunities, thus increasing the probability of leaving; but might also be more tied—economically, culturally, or on a more personal level—to the local situation, such as owning the family farm, being the member of a tightly knit small town or rural community, or having close family ties in an environment where such relations might be particularly important, thus reducing the probability of a move. The omitted category is large urban areas (500,000 or more), with the series of five dummy variables indicating smaller urban centres, towns, villages, and rural areas.[10]

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[9] This might be especially important in the case of Quebec, where the substantial proportion of allophones (close to the number of anglophones in the most recent census) will be included in one of the official language groups, depending on the language in which individuals decide to file their tax forms. The English-Quebec variable therefore includes anglophones *and some allophones*, while the Quebec variable on its own represents not just francophones, but also those allophones who file their tax forms in French—thus blurring the "French-English" interpretation of the results to some degree. In other provinces, individuals who speak a third language are probably most likely to file their tax forms in English, leaving the French-ROC variable to reflect a purer minority (official) language effect.

[10] This variable is constructed by linking the postal code information included on the LAD to the relevant census based information. There are a relatively small number of individuals for whom the area size of residence variable is incorrect: individuals who had changed their place of residence—*and* area size—between the end of the relevant tax year and their latest correspondence with Revenue Canada in the following year (i.e., the year tax forms are filed), since it is the postal code information in the latter which is the basis for identifying the area size of residence. In the vast majority of cases, however—including virtually all individuals who do not move, the postal code information will generate the correct area size of residence.

Age and Family Status

Age is handled in two ways. First, separate models are estimated by age group for each sex: "Entry" (20-24 inclusive), "Younger" (25-34), "Prime-Younger" (35-44), and "Prime-Older" (45-54). The reasons for restricting the analysis to those aged 20-54 have been discussed above, while the specific categories chosen are simply meant to split individuals into various major phases of the life cycle.

Age is also entered as a quadratic in each of the separate age-sex models, thus allowing for further within-group effects. Age should generally have a negative effect on moving, reflecting both the increased costs (psychological and economic) and decreased expected future benefits (shorter time horizon) of moving for older individuals. These effects would, however, not necessarily be very strong over the relatively narrow ranges corresponding to the four age categories used here.

Marital status and the presence of children are expected to affect both the costs and benefits of moving, and perhaps differently for men and women. For example, an increased income flow resulting from a move might, on the one hand, typically imply a greater benefit for those with larger families, but moving costs will also be higher. The effects of these variables are, therefore, not necessarily predictable *ex ante.* The effects of children are allowed to vary by marital status through the inclusion of a lone parent indicator along with variables indicating couples and couples with children (the omitted category is not married and no children).

Unemployment, Social Assistance, and Earnings

A series of labour market and income variables are included to reflect local labour market conditions and individuals' specific labour market situations. First, "local" labour market opportunities (in the context of inter-provincial moves) are captured by the provincial unemployment rate, with variation over time and across jurisdictions identifying the relevant effects.

At the more individual level, whether or not the person received unemployment insurance benefits will capture a number of effects on the probability of moving. On the one hand, the receipt of UI (now "EI") might indicate the absence of good job opportunities—presumably at a more local level and more specific to the individual's own skills than the provincial unemployment rate variable mentioned above. On the other hand, individuals might hesitate to move if this would place their unemployment benefits at risk—currently or in the future. (The variation in qualification periods and benefits according to current place of residence have often been cited as a deterrent to labour mobility in Canada (e.g., Courchene [1970])). Unemployment insurance might also be correlated with other personal characteristics or situational factors related to job market opportunities and the individual's desire and/or ability to capitalise on such opportunities which might affect the propensity to move. The effects of the unemployment insurance variable is, therefore, not predictable *ex ante*.

Although the relationship between the receipt of social assistance and migration is an interesting one, social assistance income is separately identified on the LAD only since 1992.[11] As a result, the

[11] Social assistance has been a separate item on individuals' general T-1 tax forms (where it enters tax credit calculations) and the corresponding "T-5 SA" forms have been sent out to individuals by the provinces only since 1992. From 1986 to 1991, social assistance was supposed to be included on T-1 forms (again affecting tax credit

model is re-estimated over the 1992-95 period with an indicator of having received social assistance included in order to provide estimates of the SA-mobility relationship. This variable should, like the UI measure, reflect a mix of programme effects and individual characteristics.

The individual's earnings level (and earnings squared to allow for a quadratic effect) should capture, in reduced form, the degree to which employment opportunities in the current province versus other provinces vary by earnings level, as well as individual characteristics not captured by other variables. We eschew, at this point, any more sophisticated statistical approach to estimating the relevant relationships between earnings and mobility at the individual level, such as adopting a formal mover-stayer econometric framework or constructing the sorts of measures of alternative income opportunities across provinces at the aggregate level which characterises much of the literature on aggregate flows, thus reflecting the focus of this paper on the "who moves" question. (These other possibilities are discussed in the concluding section of the paper.)

The relevant income concept employed is labour market earnings: wage and salary income plus net self-employment income, expressed in constant 1995 dollars, and capped at the average income level of the top one-tenth percentile in each year. This measure is consistent with the general focus in this paper on the relationship between inter-provincial mobility and labour market outcomes.[12]

Finally, an indicator that the individual was a non-filer and his or her record was imputed from a spouse's tax form in the given year (a relatively small number of observations) is included as a control variable.

Current Year

Finally, the models include a series of year indicators, running from 1983 through 1994 (1982 is the omitted category). These allow the probability of moving to shift in a general way over time due to both cyclical influences not otherwise captured by the various unemployment and income variables included in the models, as well as any general shifts in the tendency for individuals to move from one province to another over the period covered by the analysis.

IV. The Empirical Findings

Table 1a, and 1b present the basic characteristics of the samples used in the estimation. Table 2 shows the relevant coefficient estimates and associated standard errors for the estimated models for each of the age-sex groups. Table 3 shows the effects of each of the variables on the probability of moving in percentage terms relative to the baseline levels.[13]

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calculations), but in an income category which included other non-taxable government transfers (workers' compensation, GIS) and T-5 forms were not sent out. Before 1986, social assistance was not included in any manner on individuals' tax forms.

[12] The models have also been estimated using a broader "market income" measure. The results are generally very similar to those reported below based on the earnings measure.

[13] These are calculated as the change in the probability of moving associated with each of the variables divided by the base line probability—that is, the percentage effect of "switching on" each of the indicator variables individually in turn, or a change in earnings of $1,000 for that particular variable. (The baseline probabilities are

Province, Language, and Area Size of Residence

Relative to the (omitted) Ontario baseline, living in Quebec has had a strong, negative effect on inter-provincial mobility for all age-sex groups, while living in other provinces has been associated with a higher probability of moving (positive, statistically significant coefficients in almost all cases). Thus, even after controlling for the provincial unemployment rate, individuals' earnings levels and receipt of unemployment insurance, and so forth, rates of out-migration have varied to a significant degree by province, shifting the probability of moving by 50 percent or more across jurisdictions (Table 3).

More specifically, the pattern of coefficients generally indicates a strong negative population effect (i.e., higher migration rates for the smaller provinces), presumably reflecting the importance of economic conditions (which have been generally correlated with population) and labour market scale effects along with the purely geographical distance factor.

There are, however, some interesting deviations within the general size-mobility rule. Perhaps most obvious in this regard is Quebec: it is considerably smaller than Ontario, yet its associated rates of out-migration are (*ceteris paribus*) considerably lower, rather than higher as the size rule would predict. British Columbia comes after the two largest provinces in terms of mobility rates, thus corresponding to its population rank, but then the coefficients for Alberta are in the same general range as those of the other smaller provinces, indicating that mobility out of Alberta has been higher than its size alone might have predicted, presumably reflecting the boom-bust nature of its energy sector driven economy.[14] Finally, New Brunswick has, like Quebec, been characterised by less than expected out-migration given its size—and perhaps for similar reasons, given its relatively large francophone community.

The "minority language" effects are very important as well. A very sharp divide between the migration behaviour of anglophone Quebecers and the French-speaking majority in that province is indicated by the strongly positive coefficients on the English-Quebec interactions for all age-sex groups, with "English" speakers in some cases more than twice as likely to leave as francophones of similar characteristics (with language inferred from tax forms, as discussed above).

Furthermore, summing the English-Quebec interaction terms and the general Quebec coefficients (which apply to both language communities) generate exit rates for anglophone Quebecers (holding other factors constant) more like those of the smaller, lower income provinces in Atlantic Canada and the Prairies than those of Ontario or British Columbia.[15] In short, francophone Québecois have tended to move to other provinces at inordinately low rates, English-speaking Quebecers at fairly high ones.

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calculated using the omitted categories for the categorical variables and the means for each sex-age group for age, earnings, and the unemployment rate.)

[14] Finnie [1998a, b] shows that the simple rates of out-migration from Alberta were the highest of all provinces in the earlier years covered by the data and then declined steadily thereafter to finish in the middle rank.

[15] The total of the Quebec and English-Quebec coefficient estimates in the eight equations are: .383, .405, .413, .355 (men); and .278, .318, .315, and .146 (women).

The large positive coefficient estimates on the French-ROC variable indicate that francophones living outside of Quebec have—much like anglophone Quebecers—also been more likely to move relative to the majority language group—in this case the baseline English speaking group in each province—although the differences are not as great as in the case of Quebec. This model does not, however, tell us anything further about the underlying flows, such as where precisely these individuals were moving to or from. Such questions are interesting, but beyond the scope of the present paper.[16]

As for area size of residence, the clearest and most interesting result is that living in a rural area has been associated with lower rates of inter-provincial mobility than all other area types—for all age-sex groups, and significantly so in every case except Entry Men. On the other hand, the magnitudes of these effects are not especially great, shifting the probability of moving no more than 15 percent in any case. The coefficient estimates for the other area size categories are more mixed, but some general patterns can be discerned: the coefficients on the variables representing the second tier cities (100,000 - 500,000) are positive for almost all groups and significantly so in the case of Entry, Prime-Younger, and Prime-Older Men, and then there is a tendency towards progressively less mobility from the smaller cities, towns, and villages—culminating in the more uniform rural effects just mentioned.

Age and Family Status

Age is of course strongly related to inter-provincial mobility, with related work Finnie [1998a, b, c] finding the anticipated pattern that younger individuals are generally more mobile than older ones, consistent with the standard life-cycle model discussed above. Here, however, we are looking at the effects *within* each of the age groups which define the separate models, so it is perhaps not surprising that none of the coefficients (age, age squared) are statistically significant—although the general patterns make sense, with age negatively related to mobility for all age-sex groups.

Relative to being single and having no children, being married (legally or common law) has generally had a significantly negative effect on inter-provincial mobility, the two exceptions being a still negative but not significant effect for Prime-Younger Women and essentially no impact for Prime-Older Women. Being married *and* having children has had even stronger negative effects, while being a single parent has also been associated with a lower probability of moving than the benchmark single/childless category, although the patterns relative to the other two categories are somewhat mixed (sometimes stronger, sometimes weaker).[17]

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[16] See Finnie [1998a, b, c] for descriptive evidence regarding the specific directions of the flows and the classification of individuals according to their longitudinal profiles into one-time movers, multiple movers, and those who eventually returned to their province of origin.

It might also be interesting to investigate the issue of linguistic assimilation by, for example, following migrant francophones who moved to see where they moved to and what happened thereafter, such as the number that married non-francophones, switched to filing their tax forms in English, had their children file their own tax forms in English, and so on, perhaps with the aid of linking the individual (and family) level data provided on the LAD with census track information to look at the effect of neighbourhood characteristics on the assimilation process.

[17] The benchmark "single" category includes never married, widowed, separated, and divorced individuals, corresponding to the information directly available in the LAD data in this respect.

It would thus appear that being married and/or having children increases the costs of inter-provincial mobility more than any associated benefits. Interestingly, the effects are stronger for men than women in more than half the cases, suggesting that the influences of family responsibilities are generally as great for the former as the latter—which is not typically the case for other labour market related outcomes, such as the effects of marriage and children on annual earnings.

Unemployment and Income Effects

As anticipated, mobility has been positively related to the provincial unemployment rate, and significantly so for all groups of men and all women except the Prime-Older group. Mobility would, therefore, appear to have in many cases been the response to generally poor employment opportunities and—presumably—part of the search process for better ones.[18]

Consistent with this finding, individuals who have themselves received unemployment insurance in a given year have, *ceteris paribus*, been more likely to move, presumably to seek employment opportunities elsewhere. These effects have been particularly strong for the Prime groups, aged 35-44 and 45-54 (both men and women). For Younger Men and Women (25-34) and Entry Women (20-24), the effects have been smaller, but still negative and statistically significant. The effect for Entry Men is, however actually negatively signed, and although the effect is small and not statistically significant, it is perhaps somewhat worrying from the point of view of labour market efficiency and longer-term employment prospects that this particular group of workers has been less likely to move in the face of being unemployed.

Having zero labour market earnings has also been positively related to the probability of moving in most cases, further indicating that individuals have tended to move in the absence of good employment opportunities in their current province of residence. Entry Men are, however, once again an exception: for this group, the estimated coefficient on zero earnings is negative, of a sizeable magnitude, and statistically significant, again suggesting a different set of responses to being out of the labour market in terms of inter-provincial mobility. They are, furthermore, joined here by Entry Women, for whom the coefficient estimate is also negative, although the effect is not nearly as large as for Entry Men and is not statistically significant.

After allowing for a discontinuity at the origin, inter-provincial mobility has been negatively related to individuals' earnings levels for Entry and Younger Men, while earnings and mobility have been positively correlated for Prime-Younger and Prime-Older males—presumably reflecting differences in the local-national structure of labour markets for these groups.[19]

For women, the earnings-mobility relationship has been negative for all age groups except the youngest—offering an interesting contrast to the case of men. That is, women of almost all ages who have had "better" (i.e., higher paying) jobs have been *less* likely to move than those with lower earnings, whereas this was true only for the younger men's groups, while mid-career men with higher earnings were *more* likely to move.

[18] The specific province-to-province mobility patterns reported in Finnie [1998a, b] provide further evidence in support of this.

[19] These assessments reflect the joint effects of the linear and quadratic earnings terms.

The coefficient estimates on the variable which controls for an individual being a non-filer is significant in just two of the eight cases and would seem to carry no special meaning.

Table 4 shows the results for the model estimated over the 1992-95 period with the social assistance indicator included. Again generally consistent with the unemployment and zero earnings effects, receiving social assistance in one year is positively related to the probability of moving in the following months for all the male groups, and the magnitude of this effect is generally substantial (although less so for the Prime Older group). For women, however, the effects are generally much smaller or even negative, except for the Prime Older group, for whom the effect is more like that of the various male groups.[20]

Year Effects

The year variables capture the general shifts in migration behaviour which occurred after controlling for the other influences captured by the models (e.g., changes in the provincial unemployment rate, the receipt of UI, having zero earnings, etc.). The results suggest there has been no great general shift in mobility patterns over the 1982-95 period covered by the data: of the 96 parameter estimates representing the year variables, only 16 are statistically significant.

On the other hand, the coefficients are mostly negative through the early 1990s for all of the male groups (and significantly so in the case of Younger Men), as well as in the Entry and Younger Women equations, suggesting there may indeed have been a more subtle shift towards less mobility in the later years for these groups.

The fact that there is no evidence of an early-1990s downward shift in inter-provincial mobility rates for the Prime-Younger and Prime-Older Women groups, for whom the coefficient estimates for these years were mostly positive, if not statistically significant, is interesting.[21] Furthermore, this divergence occurred as the gender earnings gap was narrowing significantly, with women's earnings generally rising (except for the Entry group), despite the recession, while men's earnings fell.[22] Furthermore, those shifts in gender earnings patterns as measured on a cross-sectional basis were accompanied by similar divergences in earnings mobility patterns from one year to the next, with all the women's groups (again except the youngest group), enjoying increased upward earnings mobility right through the early 1990s, while men's rates of earnings growth fell off.[23]

The differences in male and female trends for inter-provincial mobility thus appear to be consistent with certain other important labour market changes, and it is natural to speculate as to what degree the two developments might be related. For example, perhaps women were gradually moving more

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[20] It would be interesting to know if these "social assistance leavers" are moving into jobs or—as is sometimes alleged—simply collecting better social assistance payments in other provinces. The LAD data could certainly support such an analysis, but this is left to another project (as discussed in the conclusion).

[21] The generally opposite signs of the male and female coefficients might indicate statistically significant divergences—even if the direction of the changes for each group, as represented in the standard errors and t-tests, were not.

[22] Finnie [1997a, b].

[23] Finnie [1997c, d, e].

and enjoying the economic benefits of those moves in the form of higher earnings as part of more fundamental changes in their labour market behaviour and related outcomes.

V. Conclusion

This paper has presented the findings of the estimation of a panel logit model of inter-provincial mobility 1982-95 where the probability that an individual changed province from one year to the next is assumed to be a function of various situational factors and personal attributes.

Summary of the Findings

The major findings may be summarized as follows:

- Mobility rates were generally inversely related to the size of the province, presumably reflecting general economic conditions, labour market scale effects, and the distances involved. Language effects were also important, seen in the extra low rates of out-migration of francophones in Quebec, the relatively high mobility rates of anglophone Quebecers, and the positive effects of being a francophone (versus anglophone) in the rest of Canada. Alberta also had relatively high rates of out-migration, presumably reflecting the boom and bust nature of its economy over the period in question.

- Individuals in small cities, towns, and especially rural areas were generally less likely to move than were those in larger cities.

- Age has been negatively related to mobility, although the greatest effects in this regard are captured by the cross-group patterns seen in related research—as opposed to the smallish within-group effects found here. Being married and having children have generally had significantly negative effects on inter-provincial mobility, with the effects being—interestingly—generally as strong for men as women.

- Inter-provincial mobility has been positively related to the provincial unemployment rate for both men and women; the receipt of unemployment insurance has had a positive effect on out-migration for all groups except Entry Men; and moving has generally been positively related to having no market income for all age-sex groups except (again) Entry Men and (now also) Entry Women. Beyond this discontinuity at zero, mobility has been positively related to the individuals' earnings levels in the case of Prime Men, but negatively related to earnings for the other age-sex groups, but these effects are generally not large. Finally, the receipt of social assistance has been positively related to moving for men, but not for women, except for the Prime Older group.

- There appear to have no dramatic shifts in mobility behaviour over the 1982-95 period covered by the data, but while men's rates hint at a moderate falling off in the 1990s, women's rates (except for the Entry group) generally held steadier or rose slightly, pointing to a moderate divergence in trends along gender lines which appear to be related to other improvements in women's labour market outcomes over this period.

Implications of the Findings

These results indicate that the decision to move from one province to another has been affected by a variety of influences: the size of the province, cultural factors (language in particular), general labour market conditions, various personal attributes, and the labour market situation at the individual level.

Regarding the relationship between inter-provincial mobility and the various labour market indicators, it is perhaps encouraging—at least from an efficiency standpoint—to find that inter-provincial mobility has generally been positively related to the provincial unemployment rate, the receipt of unemployment insurance, having no market income, and (at least for the male groups) the receipt of social assistance, while the higher flows out of the smaller provinces might also be presumed to represent (at least to some degree) the efficient flow of human resources from where their value (as determined by labour markets) is lower to where it is higher.

It is worth noting, however, the potentially worrying finding that receiving unemployment insurance or having zero earnings have not been similarly related to higher rates of out-migration for Entry Men or, to a lesser degree, Entry Women. Why is this? Are there generally fewer employment opportunities in other provinces for more youthful workers or, alternatively, are such individuals less likely to take advantage of the opportunities which are there? Finding the answers to these and related questions—begged by the results reported here—could have potentially significant benefits in terms of improving labour market efficiency and enhancing the long-run career profiles of young workers, especially those who start off badly.

The general implication, however, is that inter-provincial mobility has been driven to a significant degree by individuals seeking better economic opportunities, with presumably beneficial results for both the individuals involved and labour market efficiency more generally. (The hypothesis of positive earnings effects of inter-provincial mobility is strongly supported in a companion paper (Finnie [1998d].) Thanks to this analysis, we now have a better idea of who those individual beneficiaries are, and the proximate factors which have been influencing their moves.

From a political/cultural perspective, however, these results might be seen to illuminate a problem which dates back to at least the time of Confederation—the steady net population losses experienced by the smaller Atlantic and Prairie provinces, with commensurately negative effects on the economic, social, and cultural vitality of these regions.

The positive relationship between mobility and earnings levels for prime-aged men—beyond the zero income effect noted above—suggests, on the other hand, that the benefits of inter-provincial mobility for such men already in the labour market have more commonly accrued to those in the upper labour market echelons, presumably reflecting the spatial elements of various labour sub-markets. For example, higher income professionals almost certainly face wider labour markets which are more commonly associated with movements across provincial boundaries. There thus appear to have been two groups of men who have benefited most from inter-provincial mobility: those completely shut out of the labour market ("economic refugees") and those in its higher reaches.

For women, we tend to observe the first type (benefits to those out of the labour market), but not the second; in particular, migration has *not* been more concentrated amongst women at higher earnings levels, suggesting that the underlying job-migration dynamic has differed in an important way along

gender lines, presumably reflecting women's traditional secondary labour market roles. (Again, the evidence on the effects of inter-provincial migration on earnings reported in Finnie [1998d] supports this finding.)

Directions for Future Work

Future research could go in many directions. Possibilities would include the following:

- Push the analysis of the relationship between inter-provincial mobility and the receipt of unemployment insurance and social assistance further, ranging from simple cross-tabulations of inter-provincial mobility and the receipt of unemployment insurance and/or social assistance (the latter just for the years since 1992 that it is reliably measured in the LAD) in the years before and after any move, to tight econometric modelling of these relationships in the context of the probability of moving (as here) and the related income dynamics (as in Finnie [1998d]). There is no doubt that this would be a feasible, interesting, and useful line of research for which the LAD data are very well suited.

- Break the analysis down completely by province (or region)—estimating separate models along these lines. This is technically feasible with the LAD data (due to its large number of observations) and would certainly be an interesting undertaking, but would obviously result in a rather great quantity of findings which would be challenging to present and discuss in a compact fashion. (Other authors have estimated separate models by province or region, but at the cost of pooling individuals by age and sex together—precisely the level of detail focused on here and found to be necessary.)

- Short of such a fully disaggregated approach, specific province-language effects could perhaps be investigated further by adding to the general models specified here separate year variables by province and language group to see how closely these track various economic and political changes: the boom and bust of the various provincial economies, political developments in Québec, and so on.

- Address the interesting and important topic of *intra*-provincial migration. Although the number of observations and detailed locational information available on the LAD would in many ways make it ideal for such a study, the critical postal code variable on the file represents the address of the last communication between the individual and Revenue Canada (typically where a refund was sent) which usually occurs well into the following year—that is, the place of residence will not necessarily correspond to where the individual lived in the relevant tax year and to which the other information on the file corresponds. Any analysis of intra-provincial would obviously have to deal with this problem.

- Take fuller account of the longitudinal profiles. One could, for example, restrict the analysis to individuals who appear in the LAD all years and then follow the categorisation adopted in Finnie [1998a, c] to classify individuals into stayers, one-time movers, multiple movers, and returners, and estimate models of these profiles or the particular kind of move in any given year. On the other hand, the pre-1982 province is not known in the LAD, meaning that the suggested categorisations are defined only relative to the longitudinal window opened at that point, which would significantly

complicate and limit the analysis (e.g., a "one time mover" might actually be someone returning to the pre-1982 province, a "single mover" might have had previous moves, and so on.)

- Pursue the income effects further. This could include the development of a full mover-stayer model, involving the multi-stage estimation of earnings in the current province and potential earnings in other provinces and including the relevant difference terms in the move models (e.g., Robinson and Tomes [1982]), although such modelling would be a challenging exercise in a multi-jurisdictional and dynamic time framework and it is not clear if the limited range of variables available on the LAD file would support such an undertaking in terms of providing the critical identifying variables. An alternative approach would be to add the sorts of matrices representing earnings opportunities, general labour market conditions, and other provincial characteristics which characterise some of the aggregate level analyses into the individual level model used here (as suggested in Day [1992]), but this would comprise an elaborate exercise requiring the careful construction of such indicators and/or their addition to the LAD from other sources for every province in every year and the specification of the appropriate choice variables and model structure which takes all possible choice sets into account.

Final Remarks

The goal of this paper was to provide new empirical evidence on inter-provincial migration based on a broadly based longitudinal database, and it is hoped that it has enhanced our understanding of "who moves"—helping identify the sorts of individuals who have been benefiting from inter-provincial migration and the factors which have been affecting those movements, with implications for our understanding of labour market structures, the interaction between migration and some of the country's basic social programmes, gender outcomes, and more. At the same time, there are many avenues for further research, including those listed above and perhaps some to be explored with the LAD data used here, and so it is also hoped that while providing new evidence, this paper also represents a useful point of departure for such further investigations.

Table 1a - Descriptive Statistics, Male

	Entry (20-24)		Younger (25-34)		Prime-Younger (35-44)		Prime-Older (45-54)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Province								
NFLD	0.024	0.154	0.020	0.141	0.020	0.138	0.019	0.137
NS	0.040	0.195	0.034	0.181	0.032	0.175	0.032	0.176
PEI	0.005	0.070	0.004	0.065	0.005	0.069	0.005	0.070
NB	0.032	0.177	0.027	0.162	0.028	0.165	0.026	0.160
QUE	0.265	0.441	0.262	0.440	0.266	0.442	0.262	0.440
ONT	0.356	0.479	0.364	0.481	0.360	0.480	0.376	0.484
MAN	0.048	0.213	0.044	0.205	0.041	0.199	0.040	0.197
SASK	0.038	0.190	0.035	0.185	0.033	0.179	0.032	0.176
ALTA	0.097	0.295	0.101	0.301	0.097	0.296	0.086	0.280
BC	0.097	0.295	0.108	0.310	0.119	0.323	0.123	0.328
Min. Language (ENG/FR)								
English-Quebec	0.032	0.176	0.032	0.176	0.035	0.183	0.037	0.190
French-ROC	0.012	0.111	0.011	0.102	0.009	0.094	0.008	0.087
Area Size								
500,000+	0.146	0.353	0.142	0.349	0.141	0.348	0.138	0.345
100,000-499,999	0.109	0.312	0.106	0.308	0.109	0.311	0.110	0.313
30,000-99,999	0.031	0.174	0.032	0.175	0.031	0.173	0.031	0.173
0-14,999	0.144	0.352	0.138	0.345	0.140	0.347	0.133	0.339
Rural Area	0.126	0.331	0.110	0.313	0.111	0.314	0.110	0.313
AGE								
Age	22.2	1.4	29.6	2.8	39.3	2.9	49.2	2.9
Age^2	493.0	62.2	885.1	167.6	1549.6	225.2	2433.0	285.0
Family Status								
Single	0.323	0.467	0.239	0.426	0.153	0.360	0.127	0.333
Married, no children	0.137	0.344	0.201	0.401	0.108	0.310	0.213	0.410
Married with children	0.458	0.498	0.519	0.500	0.702	0.457	0.625	0.484
Lone parent	0.081	0.272	0.040	0.196	0.035	0.185	0.034	0.181
Unemp. and Earnings								
Prov. Unemp. Rate	10.18	2.82	10.06	2.75	10.09	2.71	10.10	2.71
Unemp. Ins.	0.355	0.479	0.258	0.438	0.174	0.379	0.158	0.365
Zero Earnings	0.070	0.255	0.070	0.255	0.081	0.272	0.104	0.305
Earnings	16,100	1.41E+04	29,400	2.42E+04	38,600	5.03E+04	39,700	5.29E+04
Earnings^2	4.60E+08	6.45E+09	1.45E+09	1.45E+10	4.02E+09	4.17E+11	4.38E+09	1.15E+11
Imputed	0.005	0.069	0.014	0.119	0.018	0.134	0.023	0.149
Year								
1982	0.092	0.289	0.073	0.260	0.063	0.242	0.068	0.252
1983	0.090	0.286	0.074	0.261	0.065	0.246	0.067	0.250
1984	0.087	0.282	0.074	0.262	0.066	0.249	0.067	0.250
1985	0.085	0.279	0.075	0.263	0.069	0.253	0.068	0.251
1986	0.083	0.275	0.076	0.265	0.071	0.257	0.069	0.253
1987	0.079	0.269	0.077	0.267	0.073	0.260	0.070	0.255
1988	0.076	0.264	0.079	0.269	0.076	0.265	0.073	0.260
1989	0.071	0.257	0.080	0.271	0.079	0.270	0.076	0.265
1990	0.069	0.253	0.080	0.272	0.082	0.275	0.079	0.270
1991	0.068	0.252	0.079	0.270	0.084	0.278	0.083	0.276
1992	0.068	0.251	0.079	0.269	0.088	0.283	0.088	0.284
1993	0.066	0.248	0.078	0.269	0.091	0.287	0.094	0.291
1994	0.068	0.251	0.076	0.266	0.093	0.291	0.098	0.297

Table 1b - Descriptive Statistics, Female

	Entry (20-24)		Younger (25-34)		Prime-Younger (35-44)		Prime-Older (45-54)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Province								
NFLD	0.025	0.156	0.020	0.141	0.021	0.143	0.020	0.139
NS	0.039	0.194	0.034	0.181	0.032	0.177	0.031	0.173
PEI	0.005	0.072	0.005	0.067	0.004	0.066	0.005	0.069
NB	0.032	0.175	0.028	0.164	0.026	0.160	0.027	0.162
QUE	0.257	0.437	0.262	0.440	0.270	0.444	0.277	0.447
ONT	0.349	0.477	0.362	0.481	0.364	0.481	0.375	0.484
MAN	0.047	0.211	0.040	0.197	0.040	0.195	0.038	0.192
SASK	0.036	0.187	0.035	0.184	0.031	0.174	0.032	0.177
ALTA	0.102	0.303	0.102	0.303	0.092	0.289	0.081	0.273
BC	0.108	0.310	0.112	0.315	0.120	0.325	0.115	0.319
Min. Language (ENG/FR)								
English-Quebec	0.033	0.179	0.035	0.183	0.041	0.198	0.071	0.257
French-ROC	0.010	0.101	0.010	0.100	0.009	0.096	0.008	0.091
Area Size								
500,000+	0.147	0.354	0.147	0.354	0.145	0.352	0.143	0.350
100,000-499,999	0.112	0.315	0.106	0.308	0.108	0.310	0.111	0.314
30,000-99,999	0.032	0.175	0.032	0.176	0.032	0.175	0.030	0.171
0-14,999	0.136	0.343	0.131	0.338	0.127	0.333	0.126	0.332
Rural Area	0.113	0.317	0.106	0.308	0.104	0.305	0.106	0.308
AGE								
Age	22.2	1.4	29.6	2.8	39.2	2.9	49.2	2.9
Age^2	494.7	61.9	882.2	167.6	1547.6	225.0	2431.5	285.0
Family Status								
Single	0.233	0.423	0.138	0.345	0.095	0.293	0.128	0.334
Married, no children	0.219	0.413	0.174	0.380	0.096	0.295	0.270	0.444
Married with children	0.407	0.491	0.567	0.495	0.682	0.466	0.507	0.500
Lone parent	0.141	0.347	0.120	0.324	0.126	0.331	0.091	0.288
Unemp. and Earnings								
Prov. Unemp. Rate	10.22	2.82	10.09	2.75	10.11	2.73	10.13	2.71
Unemp. Ins.	0.254	0.435	0.240	0.427	0.159	0.366	0.136	0.342
Zero Earnings	0.181	0.385	0.240	0.427	0.245	0.430	0.310	0.463
Earnings	11,100	1.01E+04	15,300	1.54E+04	17,500	1.89E+04	15,900	1.98E+04
Earnings^2	2.24E+08	3.44E+08	4.71E+08	1.14E+09	6.62E+08	4.06E+09	6.44E+08	6.28E+09
Imputed	0.015	0.123	0.023	0.149	0.041	0.198	0.122	0.328
Year								
1982	0.096	0.295	0.072	0.259	0.061	0.240	0.065	0.247
1983	0.095	0.293	0.073	0.260	0.064	0.244	0.065	0.246
1984	0.090	0.287	0.074	0.261	0.066	0.248	0.065	0.247
1985	0.087	0.282	0.075	0.263	0.068	0.252	0.066	0.249
1986	0.083	0.276	0.076	0.264	0.071	0.256	0.068	0.251
1987	0.079	0.269	0.076	0.266	0.072	0.259	0.070	0.255
1988	0.074	0.261	0.078	0.268	0.076	0.264	0.073	0.260
1989	0.069	0.254	0.078	0.269	0.079	0.269	0.077	0.266
1990	0.067	0.251	0.080	0.271	0.082	0.275	0.080	0.271
1991	0.066	0.248	0.080	0.271	0.085	0.279	0.084	0.278
1992	0.064	0.245	0.080	0.271	0.088	0.284	0.090	0.287
1993	0.064	0.244	0.080	0.272	0.093	0.290	0.096	0.295
1994	0.065	0.247	0.078	0.269	0.095	0.294	0.100	0.300

Table 2 - Panel Logit Model Results of the Probability of Moving

	Men				Women			
	Entry (20-24)	Younger (25-34)	Prime-Younger (35-44)	Prime-Older (45-54)	Entry (20-24)	Younger (25-34)	Prime-Younger (35-44)	Prime-Older (45-54)
Intercept	-2.714	-1.040	-.243	.806	-6.740 **	-1.356	-4.129 *	-1.389
	(2.567)	(.721)	(1.667)	(3.693)	(2.559)	(.731)	(1.737)	(3.983)
Province (ONT)								
NFLD	.427 **	.336 **	.161	.110	.323 **	.197 **	.149	.308 *
	(.098)	(.069)	(.091)	(.127)	(.097)	(.070)	(.093)	(.134)
NS	.420 **	.379 **	.381 **	.257 **	.431 **	.371 **	.342 **	.252 **
	(.053)	(.038)	(.048)	(.069)	(.052)	(.038)	(.050)	(.076)
PEI	.315 **	.324 **	.354 **	.355 **	.413 **	.408 **	.542 **	.042
	(.117)	(.084)	(.100)	(.135)	(.106)	(.077)	(.093)	(.179)
NB	.259 **	.213 **	.216 **	.118	.147 *	.143 **	.149 *	.140
	(.064)	(.045)	(.057)	(.082)	(.065)	(.046)	(.060)	(.088)
QUE	-.392 **	-.495 **	-.433 **	-.487 **	-.431 **	-.485 **	-.425 **	-.547 **
	(.045)	(.033)	(.041)	(.061)	(.045)	(.033)	(.042)	(.069)
MAN	.453 **	.438 **	.469 **	.468 **	.441 **	.483 **	.445 **	.462 **
	(.038)	(.026)	(.033)	(.046)	(.038)	(.026)	(.034)	(.048)
SASK	.583 **	.479 **	.439 **	.487 **	.594 **	.540 **	.538 **	.412 **
	(.040)	(.029)	(.038)	(.053)	(.040)	(.029)	(.038)	(.057)
ALTA	.491 **	.488 **	.457 **	.485 **	.492 **	.493 **	.444 **	.435 **
	(.030)	(.019)	(.025)	(.035)	(.029)	(.019)	(.026)	(.038)
BC	.275 **	.196 **	.169 **	.113 *	.210 **	.160 **	.126 **	.068
	(.041)	(.027)	(.033)	(.046)	(.040)	(.027)	(.034)	(.050)
Min. Language (ENG/FR)								
English-Quebec	.775 **	.900 **	.846 **	.842 **	.709 **	.803 **	.740 **	.693 **
	(.051)	(.035)	(.043)	(.063)	(.052)	(.035)	(.044)	(.070)
French-ROC	.437 **	.583 **	.487 **	.409 **	.519 **	.561 **	.529 **	.377 **
	(.062)	(.042)	(.058)	(.091)	(.065)	(.044)	(.058)	(.095)
Area Size (500,000+)								
100,000-499,999	.108 **	.021	.077 **	.100 **	.036	.014	-.013	.031
	(.029)	(.020)	(.026)	(.036)	(.029)	(.021)	(.027)	(.039)
30,000-99,999	.070 *	.003	.023	-.043	.042	-.029	-.026	.020
	(.031)	(.021)	(.028)	(.041)	(.030)	(.022)	(.029)	(.041)
15,000-29,999	.118 *	-.011	-.037	.019	-.050	-.002	.091 *	-.050
	(.049)	(.035)	(.048)	(.064)	(.052)	(.035)	(.042)	(.073)
0-14,999	.060 *	-.055 **	-.011	-.017	.005	-.007	-.009	-.043
	(.028)	(.019)	(.025)	(.035)	(.028)	(.020)	(.026)	(.038)
Rural Area	-.044	-.155 **	-.124 **	-.095 *	-.109 **	-.116 **	-.144 **	-.164 **
	(.031)	(.023)	(.030)	(.041)	(.032)	(.023)	(.031)	(.045)
AGE								
Age	.070	-.057	-.100	-.127	.430	-.041	.107	-.024
	(.234)	(.049)	(.085)	(.150)	(.233)	(.050)	(.089)	(.162)
Age^2	-.0018	.0006	.0010	.0011	-.0098	.0003	-.0016	.0000
	(.0053)	(.0008)	(.0011)	(.0015)	(.0053)	(.0009)	(.0011)	(.0016)

continued...

Table 2 - Panel Logit Model Results on the Probability of Moving (concluded)

Family Status (Single)								
Married, No Children	-.160 **	-.178 **	-.073 *	-.137 **	-.184 **	-.169 **	-.066	.004
	(.029)	(.018)	(.029)	(.034)	(.026)	(.021)	(.035)	(.038)
Married, Children	-.282 **	-.211 **	-.192 **	-.309 **	-.250 **	-.278 **	-.206 **	-.280 **
	(.020)	(.014)	(.021)	(.030)	(.023)	(.018)	(.027)	(.037)
Lone Parent	-.302 **	-.214 **	-.095 *	-.269 **	-.182 **	-.170 **	-.119 **	-.143 **
	(.037)	(.034)	(.044)	(.068)	(.030)	(.023)	(.033)	(.050)
Unemp. and Earnings								
Prov. Unemp. Rate	.020 *	.012 *	.015 *	.025 *	.022 **	.025 **	.015 *	.012
	(.008)	(.006)	(.007)	(.010)	(.008)	(.006)	(.008)	(.011)
Unemp. Ins.	-.015	.074 **	.150 **	.161 **	.065 **	.065 **	.112 **	.180 **
	(.019)	(.015)	(.021)	(.031)	(.021)	(.015)	(.022)	(.034)
Zero Earnings	-.152 **	.026	.189 **	.281 **	-.057	.090 **	.039	.096 *
	(.040)	(.028)	(.032)	(.040)	(.031)	(.019)	(.024)	(.038)
Earnings	-6.45E-06 **	-5.13E-07	1.14E-06 **	2.49E-06 **	-1.00E-05 **	-4.26E-06 **	-5.60E-06 **	-3.92E-06 **
	(.9E-06)	(.4E-06)	(.4E-06)	(.5E-06)	(.2E-05)	(.7E-06)	(.7E-06)	(.1E-05)
Earnings^2	5.00E-12 **	2.45E-13	-1.41E-12	-3.56E-12 **	1.41E-10 *	1.77E-11 **	6.50E-12 **	4.15E-12 *
	(1.7E-12)	(6.6E-13)	(9.9E-13)	(1.4E-12)	(5.6E-11)	(5.3E-12)	(1.3E-12)	(1.8E-12)
Imputed	3.27E-01 **	9.69E-02	1.23E-02	-1.15E-01	-6.12E-03	3.00E-02	-1.91E-02	-1.40E-01 **
	(1.1E-01)	(5.1E-02)	(5.6E-02)	(7.5E-02)	(7.1E-02)	(3.7E-02)	(4.0E-02)	(4.5E-02)
Year (1982)								
1983	-.036	-.010	-.027	-.099	-.046	-.032	.028	-.029
	(.043)	(.031)	(.045)	(.061)	(.041)	(.032)	(.047)	(.072)
1984	.009	-.065 *	-.135 **	-.106	.009	-.060	-.056	.108
	(.042)	(.031)	(.047)	(.062)	(.040)	(.033)	(.048)	(.067)
1985	.049	.004	.016	.019	-.032	-.015	.067	.069
	(.041)	(.030)	(.043)	(.057)	(.041)	(.032)	(.045)	(.068)
1986	.014	-.007	.059	-.024	-.010	.061 *	.078	.092
	(.042)	(.030)	(.042)	(.059)	(.042)	(.031)	(.045)	(.067)
1987	-.012	.032	.038	.022	.042	.072 *	.085	.055
	(.045)	(.031)	(.043)	(.059)	(.042)	(.032)	(.046)	(.070)
1988	.057	-.006	.061	-.096	.019	.090 **	.138 **	.077
	(.047)	(.033)	(.045)	(.066)	(.047)	(.034)	(.048)	(.072)
1989	.071	-.030	.062	.029	.088	.064	.132 **	.148 *
	(.049)	(.034)	(.046)	(.064)	(.048)	(.035)	(.048)	(.072)
1990	.012	-.048	.018	.045	-.027	.035	.098 *	.140 *
	(.049)	(.033)	(.045)	(.061)	(.049)	(.034)	(.048)	(.070)
1991	-.107 *	-.084 **	.001	-.042	-.068	-.037	.032	.097
	(.047)	(.031)	(.041)	(.056)	(.045)	(.032)	(.044)	(.064)
1992	-.060	-.095 **	-.048	-.071	-.078	-.112 **	-.019	.035
	(.046)	(.031)	(.041)	(.055)	(.045)	(.033)	(.045)	(.064)
1993	-.028	-.094 **	-.010	-.101	-.052	-.046	.080	.064
	(.046)	(.031)	(.041)	(.056)	(.045)	(.032)	(.043)	(.063)
1994	-.053	-.066 *	-.056	-.076	-.053	-.035	.054	-.006
	(.046)	(.031)	(.041)	(.055)	(.045)	(.032)	(.043)	(.065)
No. Obs.	92,960	259,700	235,970	168,450	98,560	273,870	239,070	165,640
Log-Likelihood	21,987	45,774	25,609	12,700	22,398	44,224	24,583	10,946

Standard errors are shown in parentheses. One asterisk indicates that the coefficient is significatively different from zero at the .05 confidence level according to a two-tailed t-test, two asterisks indicates significance at the .01 level.

Table 3 - Effects in Percentage Terms (Relative to Baseline Probabilities)

	Men				Women			
	Entry (20-24)	Younger (25-34)	Prime-Younger (35-44)	Prime-Older (45-54)	Entry (20-24)	Younger (25-34)	Prime-Younger (35-44)	Prime-Older (45-54)
Province (ONT)								
NFLD	.492	.339	.141	.108	.316	.189	.145	.326
NS	.481	.388	.365	.269	.439	.381	.362	.261
PEI	.344	.325	.335	.386	.418	.425	.621	.040
NB	.276	.205	.193	.116	.135	.134	.145	.138
QUE	-.312	-.362	-.297	-.369	-.319	-.357	-.327	-.404
MAN	.527	.459	.466	.536	.450	.518	.490	.524
SASK	.721	.508	.431	.562	.640	.591	.616	.457
ALTA	.582	.520	.451	.559	.512	.531	.489	.488
BC	.295	.187	.148	.110	.198	.152	.122	.065
Min. Language (ENG/FR)								
English-Quebec	1.046	1.108	.976	1.133	.794	.967	.920	.868
French-ROC	.505	.643	.488	.456	.544	.619	.604	.412
Area Size (500,000+)								
100,000-499,999	.107	.019	.065	.097	.032	.012	-.011	.029
30,000-99,999	.068	.003	.019	-.039	.037	-.025	-.023	.018
15,000-29,999	.118	-.009	-.030	.017	-.042	-.001	.087	-.045
0-14,999	.058	-.047	-.009	-.016	.004	-.006	-.008	-.039
Rural Area	-.041	-.130	-.097	-.085	-.091	-.099	-.124	-.142
AGE								
Age	-.009	-.020	-.023	-.024	-.004	-.022	-.010	-.025
Family Status (Sgl.)								
Marr., No Chil.	-.141	-.147	-.058	-.121	-.150	-.141	-.059	.004
Marr., Chil.	-.236	-.172	-.145	-.253	-.198	-.222	-.173	-.231
Lone Parent	-.250	-.174	-.074	-.224	-.148	-.142	-.104	-.125
Unemp. and Earnings								
Prov. Unemp. Rate	.019	.010	.012	.023	.019	.022	.014	.011
Unemp. Ins.	-.014	.068	.131	.161	.058	.059	.107	.181
Zero Earnings	-.134	.023	.167	.297	-.048	.083	.037	.092
Earnings*	-5.65E-03	-4.50E-04	1.04E-03	2.29E-03	-8.55E-03	-3.77E-03	-5.11E-03	-3.63E-03
Imputed	3.60E-01	8.91E-02	1.01E-02	-1.02E-01	-5.32E-03	2.70E-02	-1.74E-02	-1.23E-01
Year (1982)								
1983	-.033	-.009	-.022	-.088	-.039	-.028	.026	-.027
1984	.009	-.056	-.105	-.094	.008	-.053	-.050	.106
1985	.047	.004	.013	.017	-.028	-.013	.063	.066
1986	.013	-.006	.049	-.022	-.008	.056	.074	.089
1987	-.012	.029	.032	.021	.037	.065	.080	.052
1988	.056	-.005	.051	-.086	.016	.083	.134	.074
1989	.070	-.026	.052	.027	.079	.058	.128	.147
1990	.012	-.042	.015	.043	-.023	.032	.094	.138
1991	-.097	-.072	.001	-.038	-.058	-.032	.029	.094
1992	-.055	-.081	-.039	-.064	-.066	-.095	-.017	.033
1993	-.026	-.081	-.008	-.090	-.045	-.040	.076	.061
1994	-.049	-.057	-.045	-.069	-.045	-.031	.050	-.006

* Marginal probability was calculated under the assumption of a $1000 change in earnings

Table 4 - Panel Logit Models With Social Assistance Variable Included (1992-95)

	Men				Women			
	Entry (20-24)	Younger (25-34)	Prime-Younger (35-44)	Prime-Older (45-54)	Entry (20-24)	Younger (25-34)	Prime-Younger (35-44)	Prime-Older (45-54)
Intercept	-.367	.119	-.016	-.198	.212	-.315	-.789 *	-.452
	(.593)	(.162)	(.329)	(.719)	(.590)	(.166)	(.341)	(.777)
Province (ONT)								
NFLD	.459	.334	-.365	-.940	.109	.175	.525	-.987
	(.693)	(.475)	(.576)	(.792)	(.676)	(.487)	(.588)	(.870)
NS	.502 *	.266	.195	.136	.698 **	.201	.429 *	-.243
	(.245)	(.170)	(.207)	(.277)	(.239)	(.175)	(.211)	(.321)
PEI	.436	.155	-.110	-.026	.979	.200	.686	-.103
	(.554)	(.392)	(.461)	(.601)	(.538)	(.390)	(.462)	(.730)
NB	.180	.150	-.069	.119	.236	.000	.159	-.272
	(.189)	(.131)	(.161)	(.209)	(.191)	(.137)	(.163)	(.244)
QUE	-.415 *	-.466 **	-.496 **	-.561 **	-.270	-.415 **	-.330 *	-.831 **
	(.185)	(.125)	(.149)	(.202)	(.180)	(.127)	(.154)	(.231)
MAN	.537 **	.484 **	.435 **	.433 **	.320 **	.404 **	.426 **	.570 **
	(.110)	(.071)	(.089)	(.121)	(.109)	(.075)	(.087)	(.128)
SASK	.756 **	.433 **	.531 **	.552 *	.330	.574 **	.416 *	.925 **
	(.203)	(.141)	(.169)	(.234)	(.203)	(.142)	(.170)	(.251)
ALTA	.538 **	.409 **	.523 **	.494 **	.425 **	.467 **	.399 **	.566 **
	(.102)	(.067)	(.079)	(.110)	(.099)	(.067)	(.079)	(.119)
BC	.300 **	.215 **	.192 **	.211 **	.111	.172 **	.093	.157
	(.078)	(.048)	(.058)	(.077)	(.077)	(.050)	(.059)	(.086)
Min. Language (ENG/FR)								
English-Quebec	.932 **	.900 **	.882 **	.841 **	.553 **	.734 **	.698 **	.749 **
	(.115)	(.072)	(.081)	(.108)	(.131)	(.073)	(.090)	(.129)
French-ROC	.622 **	.619 **	.698 **	.304	.514 **	.671 **	.624 **	.554 **
	(.133)	(.085)	(.103)	(.165)	(.158)	(.091)	(.106)	(.158)
Area Size (500,000+)								
100,000-499,999	.134 *	.056	.091	.093	.134 *	.081	.011	.039
	(.067)	(.042)	(.049)	(.067)	(.063)	(.041)	(.051)	(.072)
30,000-99,999	.191 **	-.011	.033	-.052	.040	-.005	-.002	.063
	(.068)	(.048)	(.054)	(.080)	(.073)	(.047)	(.055)	(.074)
15,000-29,999	.262 *	.128	-.004	.109	-.143	.225 **	.301 **	.053
	(.107)	(.071)	(.095)	(.114)	(.138)	(.067)	(.074)	(.123)
0-14,999	.137 *	.034	-.030	-.005	.081	-.031	-.041	-.168 *
	(.066)	(.042)	(.051)	(.069)	(.065)	(.045)	(.052)	(.081)
Rural Area	.116	-.034	-.037	-.125	.024	-.079	-.179 **	-.311 **
	(.070)	(.048)	(.057)	(.083)	(.072)	(.049)	(.062)	(.098)
AGE								
Age	.120	-.229 *	-.139	-.042	-.347	.072	.309	.037
	(.536)	(.105)	(.166)	(.291)	(.534)	(.108)	(.172)	(.314)
Age^2	-.0024	.0036 *	.0015	.0002	.0081	-.0017	-.0041	-.0006
	(.0122)	(.0018)	(.0021)	(.0030)	(.0121)	(.0018)	(.0022)	(.0032)

Table 4 - Panel Logit Models With Social Assistance Variable Included (1992-95) (concluded)

Family Status (Single)																		
Married, No Children	-.169	**	-.173	**	-.080		-.089		-.104		-.127	**	-.085		.034			
	.065		.038		.053		.065		.062		.045		.067		.071			
Married, Children	-.253	**	-.174	**	-.182	**	-.246	**	-.207	**	-.228	**	-.189	**	-.294			
	.046		.031		.039		.059		.054		.040		.052		.072			
Lone Parent	-.411	**	-.143	*	-.161		-.210		-.160	*	-.160	**	-.108		-.200			
	.092		.069		.087		.124		.069		.052		.063		.095			
Unemp. and Earnings																		
Social Assistance	.173	**	.188	**	.247	**	.075		-.046		.034		-.041		.232			
	.059		.044		.054		.085		.063		.045		.060		.087			
Prov. Unemp. Rate	.018		.017		.066		.100		-.044		.033		-.021		.143			
	.070		.048		.057		.078		.068		.049		.059		.087			
Unemp. Ins.	.071		.097	**	.084	*	.035		.100	*	.000		.052		.176			
	.045		.031		.040		.062		.050		.033		.043		.065			
Zero Earnings	-.211	**	-.053		.146	**	.316	**	.049		.077	*	.139	**	.148			
	.072		.050		.054		.067		.069		.039		.046		.072			
Earnings	-1.00E-05	**	3.63E-07		5.17E-07		1.10E-06		-3.10E-06		-7.41E-06	**	-6.66E-06	**	-3.21E-06			
	3.87E-06		7.95E-07		6.07E-07		7.55E-07		8.13E-06		1.47E-06		1.47E-06		1.93E-06			
Earnings^2	3.01E-11		-5.58E-13		-2.15E-13		-7.91E-13		-1.74E-10		2.21E-11	**	2.06E-11	**	3.18E-12			
	7.29E-11		1.38E-12		5.92E-13		1.00E-12		2.45E-10		8.41E-12		5.97E-12		2.74E-12			
Imputed	.382		.344	**	.318	**	.051		.036		.053		.044		.008			
	.277		.112		.102		.133		.202		.110		.103		.089			
Year (1982)																		
1993	.026		-.009		.032		-.030		.023		.062		.094	*	.049			
	.050		.032		.037		.052		.050		.032		.039		.056			
1994	.004		.024		.028		.052		-.024		.079		.035		.081			
	.076		.052		.063		.085		.074		.054		.065		.097			
No. Obs.	18,720		60,660		64,180		47,140		19,050		65,340		66,030		47,450			
Log-Likelihood	4,200		9,827		6,859		3,479		4,166		9,597		6,624		2,972			

Standard errors are shown in parentheses. One asterisk indicates that the coefficient is significatively different from zero at the .05 Confidence level according to a two-tailed t-test, two asterisks indicates significance at the .01 level.

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