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The Receipt of Guaranteed Income Supplement (GIS) Status Among Canadian Seniors – Incidence and Dynamics

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"The Receipt of Guaranteed Income Supplement (GIS) Status Among Canadian Seniors – Incidence and Dynamics"

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Abstract:

Our topic is the receipt patterns of low-income support benefits in the form of the guaranteed income supplement (GIS) benefit amongst Canadians who are 65 and older. The GIS regime is the only means-tested public retirement benefit that is targeted to the group of retired individuals and couples. The primary outcome variables are the incidence of receipt of payment amongst this population and the dynamics of entries and exits from this state. Our study is based on administrative data drawn from tax returns. The analysis is in the spirit of the poverty/low-income literature that is fairly developed in regards to the working-age population. In a point of departure from that literature, however, we take a retrospective approach by including in our analysis several phases of the life cycle. We estimate multivariate econometric models of the incidence of receipt among the eligible population, as well as hazard models of both entry and exit from that state. In our estimating equations we include indicators for age and entry cohort. We subsequently include regressors to reflect demographic variables such as gender, marital status, immigration status, minority language status, and regional effects. The fullest specification includes indicators for permanent income and prior savings activity, all calculated based on retrospective information observed when the individual was 50-52 years old. Among our numerous empirical results are an incidence rate that rises sharply with age and is much lower for married than single individuals. In regards to the dynamics, a majority (but not all) of GIS receipt is characterised as persistent.

JEL codes: *H22, H23, H55, J14*

Key words: *old age security payment, incidence rate, dynamics, age profile, permanent income, retirement savings*

Executive Summary:

This paper consists of a statistical and econometric analysis of the both the incidence rate for receiving guaranteed income supplement (GIS) benefits among age-eligible Canadians as well as the dynamic aspects. Our study is based on administrative data drawn from tax returns. The simplest of our specifications include the explanatory variables of age and then year-of-entry (capturing cohort effects). We subsequently include regressors to reflect demographic variables such as gender, marital status, immigration status, and minority language status. At the next stage, we include regressors to reflect regional effects such as province of residence and the area size-of-residence. The fullest specification includes indicators for permanent income and prior savings activity, all calculated based on retrospective information observed when the individual was 50-52 years old.

The raw estimates for the incidence rate over our interval range from 30.5 % in 2006 to 34 % in 1992. The univariate age profile rises monotonically from 31.2 % at age 65 to 32.6 % at age 67, and it tends to rise rapidly after age 70. This rising trend that we observe for the age variable still holds after separating numerous different cohorts of workers. After controlling for regional effects and the influence of marital status, the strong age patterns are still present but weaker, so some of it is attributable to compositional effects. With or without the inclusion of control variables, both men and women with partners have lower incidence rates. In regards to the regional factors, rural areas and areas with relatively low population densities have higher rates than urban areas. Ontario has the lowest incidence rate, while Newfoundland has by far the highest.

The gender-based analysis yields remarkable disparities. After netting out the effects of the variables related to permanent income, single women are slightly less likely than single men to receive GIS benefits, but women with partners are much less likely than their male counterparts to receive them.

The estimates for our proxy variable for permanent income reveal a strongly negative, non-linear, monotonic relationship. This finding indicates that the program is at least fairly well-targeted at those who had relatively low permanent incomes when they were in their prime earning years. Those who were previously self-employed are less likely to benefit even after controlling for the effect of permanent income. As expected, those individuals who contributed to RRSPs and/or RRPs are less likely to receive GIS benefits, ceteris paribus.

The analysis of the dynamics of GIS receipt patterns indicate that some beneficiaries do not receive benefits when they first reach the age of eligibility of 65 years, but then subsequently enter the regime at older ages. Almost three quarters of the group of users between 66 and 70 years of age display persistent use. The univariate average annual *entry* rates by age among those eligible for GIS benefits display a saucer-shaped profile, falling from 4.2 % for 67-year olds to 3 % for those in their mid-70s, and then rising to 5.8 % by age 90. We discerned a spike in the entry

rate in the year 2002, which corresponds with the ‘GIS outreach initiative’. The univariate average annual *exit* rates by age among those receiving GIS benefits are calculated at 8 % for 67 year-olds, and they decline monotonically thereafter. For the multi-variate transition equations, the probability of exiting conditional on receipt of GIS benefits during the preceding year declines monotonically between the ages of 67 and 76, and subsequently levels off. Relative to native-born Canadians and long-time immigrants, more recently arrived immigrants have a very high probability of entry. Women who transit from married to single status are more likely to enter the GIS regime.

The hazard model for the risk of exiting the GIS regime conditioned on the duration of the on-going spell of GIS receipt reveals a sharp pattern of negative duration dependence; leaving the GIS rolls becomes less and less likely the longer that spell lasts. The hazard model for the risk of entering the GIS regime conditioned on the particular event of not receiving the benefit when one is initially eligible (i.e. at age 66), which we label ‘delayed entry’, becomes less and less likely the older the individual becomes.

1. Introduction

> Retirement Lost – Canada's aging work force hasn't saved enough to retire. Pension benefits are being slashed, employees are working longer, and the elderly are selling their homes and going back to work: Is this what your retirement will look like?

Such was the headline of the Globe and Mail on 17 October 2009. Recent Statistics Canada figures for 2010 include that only 38.8 % of the Canadian labour force is covered by a Registered Retirement Plan (RPP). Of this group, about 64 % (28.7 / 38.8) benefit from the highly valued defined benefit plans, while 16 % (6.2 / 38.8) participate in less secure defined contribution plan. These figures mask a striking contrast between public sector and private sector worker. While 87 % of all public sector workers are covered by some form of RRP (94 % of which are defined benefit plans), only 24.4 % of their private sector counterparts are (just over half of which are defined benefit).[1]

In contrast to this gloomy perspective, other recent writers have argued that the entire framework of private and public savings vehicles along with seniors-targeted government benefit programs "appears to be doing relatively well in ensuring basic standards of well-being among seniors who had a substantial attachment to the labour force, at least for individuals near the median (of family

[1] Source: The Labour Force Survey

income)"[2] (La Rochelle-Cote *et al.*, 2008, p. 73). Other have noted that, at least until recently, the combined retirement income system has dramatically reduced the incidence of low income among seniors over time (Myles 2000, Uppal *et al* 2009).

Amidst these apparently conflicting story lines, the income security of retired Canadians has increasingly become a major challenge concern for Canadian policy makers. This has resulted from a combination of factors which are enumerated in Abbott *et al.*, 2008, including the following. First, the last 20 years have seen a significant decline in the cove rage of workplace pensions in the private sector and a dramatic shift in the structuring of private-sector pensions away from defined-benefit plans and towards defined-contribution plans. Secondly, many employees covered by workplace pensions in the private sector have been forced to accept major pension reductions in the face of under-funded private and quasi-public pension plans. A third factor is that life expectancies of both men and women are continuing to rise, which implies that pensions need to last longer. Further on the demographic front, the network of retirement income programs will face a tidal wave of oncoming retirements to the tune of 8 million baby boomers leaving the labour force over the next 15 years (out of a labour force of 18.7 million in 2007). These factors can be expected to place severe financial pressures on retirement income schemes, with implications for the economic well-being of oncoming retirees. A related policy issue is the goal of supporting flexibility in transitions to retirement with an eye on improving incentives for more seniors to

[2] More specifically, according to their estimates, the overall income replacement rates (relative to peak-year, pre-retirement earnings) is 100 % for low-income individuals, close to 80 % for middle-income recipients, and about 70 % for high-income workers.

remain in the labour force, as outlined in the 2008 report of the expert panel on older workers reporting to the Minister of Human Resources and Social Development.

In this paper, we focus on one particular aspect of the retirement incomes policy nexus: individuals' receipt of the Guaranteed Income Supplement (GIS) benefit, which is the only *incomes-tested* public retirement benefit targeted on seniors with the intention of raising the incomes of those without sufficient resources of their own or from other government sources to an acceptable level. In this way, the GIS complements the Canada/Quebec Pension Plan (CPP/QPP) and the Old Age Security Pension (OAS), including the OAS spousal allowance benefit (sometimes referred to as 'the spouse's pension allowance', or SPA) paid to partners of an OAS recipients. In contrast to the GIS, the CPP/QPP is a social insurance program that operates on a pay-as-you-go basis. Contributions during the working phase are mandatory, and benefits are based in large part on these prior contributions subject to a fairly low ceiling. The OAS benefit takes the form of a universal demogrant (with a clawback for high income seniors). The GIS is thus the principal income source of last resort for seniors deemed to be in financial need, and thus constitutes a quintessential 'safety net' type provision which is the primary targeted income support program aimed at low-income seniors.[3]

This policy issue has attracted the attention of the federal government, and it addressed it in the Federal government's 2011 budget. With the objective of alleviating financial hardship for those 680,000 (approximately) seniors who rely heavily (but not

[3] The existence of these three 'pillars' invariably brings up the question of the interactions between them. As Atkinson (1991) points out in the context of unemployment insurance programs, tightening benefits paid by regimes that are financed by prior contributions has repercussions for the assistance regimes. These interactions are beyond the scope of this paper, but would be fertile ground for an extension.

necessarily exclusively) on the OAS and the GIS regimes, the Harper government allocated an estimated additional $ 300 million per year (relative to a base of approximately $ 7 billion) to the GIS regime by raising benefit levels by $ 600 annually to singles and by $ 840 annually to couples. The subsequent federal budget for 2012, however, pushed back the age of eligibility for receiving either OAS or GIS benefits from 65 to 67 years, which will be phased in gradually over the next 15 years.

Our analysis is based on the Longitudinal Administrative Databank (LAD), which is constructed from Canada Revenue Agency tax files. The LAD is a large (20% of all taxpayers) representative sample of Canadian tax filers which links individuals into couples/families, follows people over time, has rich and accurate income information including whether or not the individual (or their spouse) received GIS in any given year, and runs from 1982 through 2010 (for this analysis). It thus serves the purposes of our analysis very well.

Under the ideal policy scenario, only workers who earned relatively low incomes during their working would receive GIS benefits during their retirement phase. Middle and upper income workers should be able and willing to save in order to provide themselves with at least a modest private pension or an employer-sponsored pension. A key question for economic policy is the extent to which this latter group *does* rely subsequently on GIS benefits. We address that question by linking proxies for permanent income received during the working phase of the life cycle with GIS receipt outcomes during the retirement phase. If a worker who was not in a low-income state for much of his/her working life receives GIS benefits, it could be due to two sets of factors. First, certain workers fail to save adequately for retirement. This phenomenon could be caused by myopia, a low level of financial literacy, a high

discount rate applied to the receipt of future income, a flawed investment strategy, or a moral hazard effect whereby workers under-save in anticipation of receiving GIS benefits. Second, they might have suffered negative shocks to their earnings and/or wealth over the late stages of their careers, such as disability, loss of a spouse, undue expenses incurred by family responsibilities, or persistent bad luck in financial or real estate markets.

Our empirical analysis consists of two main components. In the first main component, we analyse the incidence of GIS receipt among all those who are age-eligible (i.e., 65 years or older). We do this by first looking at the incidence of GIS by age and along a range of other demographic characteristics (province, marital status, area size of residence), as well as a number of measures relating to the labour market histories of seniors during their pre-retirement years (age 50-52), including not only overall earnings levels, but also various indications of savings behaviour. We then extend our analysis to the use of multivariate regression methods in order to identify the differences that remain across these various attributes once various other combinations of our list of explanatory factors is taken into account. In the second component, we look at the dynamics of individuals' histories of GIS receipt over extended periods of time, as well as the entry into and exit from GIS conditional on explanatory variables. Again these aspects are studied using both descriptive statistics and various econometric approaches, including both simple entry and exit models, as well as hazard models of the probability of leaving GIS once a spell of receipt has started and the probability of entering GIS in later years for those who do not enter GIS in the first year or two of eligibility.

The paper is laid out in a conventional fashion, including a literature review, a description of the LAD and samples used, the empirical findings, and a conclusion which also points to some possible policy implications of our findings.

2. Literature Review

The major public policy issues facing Canada's retirement system are discussed in Abbott *et al.* (2008). The most pertinent one for the purposes of this study is the adequacy of the old-age benefits in maintaining living standards in terms of security. Veall (2008) measures and analyzes the degree of inequality of the distribution of income among seniors, and determines that it has risen over the past 25 years. Some of the policy debate and suggestions for reform have been centered on the labour market incentives for the public pension schemes of CPP, OAS, and the GIS. (Baker *et al.* 2003, Milligan 2005, Milligan and Schirle 2008, HRSDC Round Table 2008). One of their conclusions is that the GIS program may have the unintended consequence of inducing low-income seniors to retire too early.

Our focus in this paper on GIS receipt is related to the issues of income security and stability from the perspective of the individual retiree. One risk in particular is longevity. Halliwell (2008) demonstrates the trend towards increasing life expectancy at age 65 in support of the obvious ramification that 'pensions must last longer, especially when combined with earlier retirement'. From the perspective of the retiree, this problem presents itself in the case of defined-contribution pension plans, but not in the case of either public pension plans or defined-benefit plans. This is particularly true for elderly women given their longer life expectancies.

From the perspective of the government, our findings do have repercussions for the long-term financial viability of the GIS and the OAS regimes.

There are a few studies that have focused narrowly on the workings of the GIS regime. Luong (2009) and Poon (2005) examine empirically the application and take-up among the population of the elderly who meet the eligibility criteria. Surprisingly, a minority of this group does not apply for the benefit. In 2006 an estimated 1.4 million eligible seniors received the GIS benefit, but an estimated 159,400 eligible seniors did not take it up. Poon (2005) also compares the financial profiles of senior GIS families to senior non-GIS families.

Our paper is in the spirit of a recent piece by Uppal *et al.* (2009), whose title is 'pathways into the GIS'. Using essentially the same data set that we exploit, namely the LAD file (through the year 2006), those authors conduct an empirical analysis of the incidence of GIS receipt and its determinants. More specifically, they model in both a uni-variate and multivariate framework the event of a subject receiving full or partial GIS benefits for three consecutive years for those aged 66 to 68 years.[4] In a similar vein to the first component of our project, their primary explanatory variables are indicators for the subjects' prior income levels (including labour market income, non-labour market income, and other family income), indicators for major *changes* in prior income levels, and proxies for the degree of stability of labour market income. They determine that the probability of receiving GIS benefits was strongly correlated with prior income levels, but that low earnings observed at that stage of the life-cycle "do not presage an immutable path

[4] Partial GIS benefits implies that part of the initial amount to which the recipient is entitled is clawed back.

into later GIS receipt." (p. 13). This is because for workers there exists a fair degree of income mobility between the late 40s and the mid 60s stages of the age-earnings profile. Negative labour market and health shocks occurring between those two stages significantly increased the probability of becoming a GIS recipient, as did the occurrence of a spell on social assistance. Participation in employer pension plans and RRSPs had the opposite impact. All of the effects that they discern were stronger at the lower end of the income distribution. Our study is based on more recent data and includes a wider range of explanatory variables, some of which measure contemporaneous attributes.

Uppal *et al.* (2009) note "…some individuals will have income near the boundaries of GIS eligibility and cycle in and out of receipt regularly, while others may drop into or out of receipt because of one-time factors such as RRSP withdrawals or investment gains" (p. 11). They deliberately abstract from such variability by restricting their sample and modeling only the incidence of the event described above.[5] By contrast, we include all observations (at an annual frequency) of GIS receipt into our analysis of the incidence of GIS receipt. We also extend the scope at a later stage of this paper by analyzing transitions in and out of GIS-receipt status. The methodology for this task is borrowed from a number of fairly recent studies from the sub-strand dealing with poverty dynamics for the working-age population (Finnie and Irvine (2008), Finnie, Irvine, and Sceviour (2005), Finnie, Irvine, Sceviour (2004), Finnie and Sweetman (2003)).

[5] Another reason for which the authors make this sampling restriction is that (as mentioned above) a non-trivial number of eligible recipients do not apply for benefits, which will cause lags in receipt (in those instances in which they eventually do apply).

It is instructive to describe briefly the rules and the provisions for the GIS benefit, which is sometimes coupled with the OAS spouse's pension allowance benefit (SPA). This summary is borrowed partially from Milligan and Schirle (2008). The benefit is paid to eligible residents of Canada aged 65 years or older. The recipient must qualify for OAS benefits but receive little in the way of other income. Pensioners must initially take the initiative to apply for the GIS benefit, but thereafter they need not re-apply provided that they file an income tax return each year. The payment of GIS benefits is based on this requirement, which in turn permits us to observe the event of GIS receipt. Like the CPP and the OAS benefits, it is indexed to consumer price inflation, but unlike those benefits, they are not taxable income. As of 2012, the maximum monthly GIS benefit was $ 739 for a single individual and $ 490 each spouse or partner of a couple (for a total combined benefit of $ 980). In the latter case, each partner declares his/her allocation separately on his/her tax return. Eligibility for the GIS depends critically on the reported income of the beneficiary, which is defined in the same fashion as for federal income tax purposes, with the exception of OAS income.

. Technically, benefits under either the GIS or the OAS programs are payable to individuals rather than couples. Benefits go to each separate individual within in a couple. Nevertheless, if the beneficiary is married or living in a common-law relationship, the combined income of both partners must be declared and is taken into account in the determination of the benefits, and the amount always depends on the pensioner's marital status. There are two basic components. The first applies to a) single pensioners, including widowed, divorced, or separated persons and to b) married pensioners whose partners do not receive either the basic OAS pension or

the OAS spousal allowance (to be described below). The second component applies to couples where both spouses are OAS pensioners. In this case, both spouses/partners receive the GIS benefit, but the per-person amount is lower than in case a).[6]

Given its income-tested nature, the GIS payments are subjected to very high clawback or reduction rates. For each marginal dollar of income earned from any source, the GIS benefit is reduced by $ 0.50 for the singles benefit and by $ 0.25 for each partner of the married benefit. In 2012 the break-even annual income level at which the entire GIS benefit is phased out is $ 16,368 for a single and $ 21,648 for a couple in the case where both are GIS recipients. The phase-out thresholds vary according to marital status and the factors and whether the spouse received the Spousal Pension Allowance, regular GIS, or neither the GIS or the SPA benefit. .

The regulations regarding the spousal allowance are more complicated. It is paid only to individuals between 60 and 64 years of age. As our analysis is restricted to those retirees aged 65 and over, we do not sample anyone who receives the spousal allowance.

3. Data

[6] More specifically, there are four categories of GIS recipients: Unattached GIS recipients (the never-married, the widowed, divorced, etc.). These individuals can also collect OAS benefits. b) GIS recipients whose spouse/partner is also a GIS recipient. Both of these individuals can also collect OAS benefits, but the per person amount for the GIS is lower. c) GIS recipients whose spouse/partner receives no income-tested benefits under the OAS program, either the GIS or the Spousal Pension Allowance (but might still receive regular OAS). The maximum benefit entitlement is the same as in case a). d) GIS recipients whose spouse/partner receives the Spousal Pension allowance. The GIS recipient has the same maximums as a GIS recipient under category (b). The Spousal Pension Allowance maximum is always equal to the maximum combined GIS and OAS for a GIS recipient in the married category. For the couple, the total would be the same as for category (b).

Our data set is the Longitudinal Administrative Database (LAD), which is based on tax data drawn from 'T1' forms. This data set has the advantage of having very large sample sizes, as it now consists of a 20 % sample of the underlying population of adult Canadians. The frequency is annual. It contains detailed information on both the levels of income and a breakdown income by source. Its longitudinal nature allows us to track individuals for long periods of time (up to 26 years in some cases) and to derive transitions between states on an annual frequency.

The critical record is a flag for receipt of GIS benefits which is reported at individual level and is labeled "Net Federal Supplements – GIS or spouse's allowance". For individuals aged 65 years, the amount reported could be either the spousal allowance, the GIS, or a combination of both (spousal allowance received for the period before his/her 65 birthday, and GIS received after it). If the individual is 66 years or older, the amount reported is unambiguously GIS. Given that we are dealing with a discrete choice (of whether or not the individual received GIS benefits), such a distinction is not required for our analysis.[7]

Before 1992, this information was reported as part of the overall non-taxable income, rather than being reported separately, and thus it was not available in the LAD. Moreover, the LAD file during that earlier period was not representative of all of the relatively low-income, senior individuals because they had little incentive to file a tax return, and so we cannot include in our sample anyone who retired before 1992. Since 1992, however, not only is GIS information reported on a separate line on the tax return, but

[7] Because we restrict our sample to those aged 65 or older, there is only one case in which the spousal allowance enters into our analysis, namely that of an individual who is turning 65 and has a spouse or partner between 60 and 65 years of age and who is receiving the spousal allowance before his/her birthday in that year. In cases for which there is no partner between 60 and 65 years of age, this individual must be a GIS recipient for the reference year.

also it should contain more accurate information for a representative sample of adult Canadians due to the fact that starting from 1992, it has been required that these 'net federal supplements' be reported and included in total income as defined by the Canada Revenue agency (CRA). This information is then used to calculate the appropriate rebate for the payment of the value added taxes (GST/HST). For this reason, almost all low-income individuals who start receiving federal supplements have an incentive to file a tax return. Our sampling years therefore commence in 1992, but we can however make use of *pre*-retirement labour market histories of subjects as of 1982 and include information derived from them as explanatory variables.

Eligibility for the GIS benefit is determined half-way through the current calendar year based on the level of income that was declared in the previous calendar year. Benefits are then paid at that rate from July 1 of the current year until June 30 of the following year, at which time eligibility will be re-evaluated based on the income that was declared during the current calendar year. The last half of any year over which eligibility is determined overlaps with the first six months of payment of the GIS benefit. Due to the particularities of the eligibility conditions and to lags in processing payments, it is possible for a 65-year old worker to be eligible for the GIS benefit and receive it without that benefit being reported on his/her tax return for that same calendar year. In this case, the benefit would not be reported for that year in the LAD file, and that worker-year observation would be mis-classified. Most but not all cases of receipt or non-receipt, however, should be correctly reported for the reference year during which the individual turns 66 years old. Nonetheless, for rather intricate reasons, it is only when the individual turns 67 years old can one be certain that all cases of

actual GIS receipt are accurately reported. We include all individuals who are 65 years or older in our estimating sample, but we take account of their age in the reference year in order to capture the effects tied to these reporting issues.

We make no attempt in our analysis to account for the labour force status of the subjects for two reasons. First, as Halliwell (2008) points out, the event of formal retirement from the labour force does not have a precise definition, and it is not straightforward to pinpoint the exact timing. Second, we view it as a secondary issue that is not central to our primary focus on this particular social insurance regime. For the purposes our research, we are interested in those who meet the age eligibility criteria for GIS receipt. Any such individual who is not retired from the labour force will not qualify for that benefit, and indeed is not targeted by the program.

4. Empirical Approach

4.1 Incidence of GIS Receipt

The first component of the empirical work is an analysis of the *incidence* of GIS receipt in any year during which the subject was 65 years of age or older, and hence eligible according to the age criterion. The second component focuses on the *dynamics,* including entries into the state of GIS receipt conditional on the event of *not* having received it upon reaching the age of 66 years, and exits from that state.

The central thrust and the technique for the incidence analysis are both borrowed in part from Uppal *et al.* (2009). Our equations share many of the same covariates. Our analysis is slightly more recent, however, as we include data for the years of 2007

and 2008. There are also some differences between their specification and the one that we estimate.[8] The incidence analysis has an analogue in the literature on post-secondary education (PSE), an application of which is Finnie and Mueller (2009), in which outcomes occurring during the PSE period are linked to outcomes and variables occurring during the lengthy *pre*-PSE period. In this longitudinal approach, researchers retrospectively 'peel back the histories' of subjects in order to examine the statistical relationship between current outcomes (often in the form of take-up or incidence rates) and lagged variables. We seek to model the incidence of GIS benefits as a function of selected contemporaneous attributes and pre-retirement variables, such as a proxy for permanent income during the working life. The dependent variable is dichotomous and captures the event of receipt of GIS benefits during the reference year.

We draw from a sample of subjects who became eligible for GIS benefits between 1997 and 2008, which constitutes our risk set for the event of receiving GIS benefits. The oldest individuals in our sample reached the age of 65 years in 1997. For this cohort we consider income data going back to 1982, when he/she was approximately 50 years old. We cannot include earlier cohorts in this stage of the analysis because the lagged income variables are not available for them. Our entire sample is comprised of 12 cohorts of individuals; the structure is displayed in Text table 1.

[8] One source of difference is that those authors include indicators for an individual's income that pertain to periods of the life cycle right up to the age of retirement.

Text Table 1

Year in which subject turned 65	Year in which subject turned 50
1997	1982
1998	1983
1999	1984
2000	1985
2001	1986
2002	1987
2003	1988
2004	1989
2005	1990
2006	1991
2007	1992
2008	1993

Only some of the contemporaneous variables can be included as explanatory variables. Most notably it is not appropriate to include any variables that are related to retirement income drawn from other sources, as one would only be capturing mechanical (and essentially tautological) effects that are of no interest. The core of our empirical analysis is to assess the impact of longer-term life-cycle factors, some of which are hard to observe. First and foremost, there is the subject's permanent income when he/she was active in the labour market. There are a number of other attributes of the individual that are pertinent yet mostly unobservable, such as the propensity to save, the subjective rate of time preference (i.e. discount rate for future income), tastes toward risk, innate ability, level of financial literacy, and whether he/she was affected by myopia when planning (or not) for retirement.

The key explanatory variable is the level of permanent income during the person's working life, which means essentially the maximum point (or near the peak) of the worker's age-earnings profile. This measure expressly does not account for transitory deviations that can occur from year to year. It is a notional variable that must be estimated. While proxies for the permanent income variable are pre-determined with respect to post-retirement income levels, they tend to be correlated with contemporaneous income variables. Low-income status *ex post* is caused in large part by low-income status *ex ante*, and this is driven in part by relatively time-invariant, unobservable factors. The exogenous variables that we do include, such as coverage by a private pension plan, coverage by an individual retirement fund, holding a unionized job, and self-employment status during the working phase are pre-determined, but they are likely to be somewhat endogenous. One might argue that evidence of preparation for retirement in the form of RRSP and/or RRP contributions, while being functions of income, should also exhibit some independent variation.

Our procedure for calculating the subject's permanent income (and other variables drawn from that prior stage of the life cycle) is based on the following procedure. Luong and Hébert (2009) determine that earnings typically peak over the age-earnings profile when the worker is in their late 40s and early 50s. We thus adopt a measure based on earnings that are observed during that age range. More precisely we calculate the permanent income as the simple average of actual income received over the window during which the subject was 50-52 years old in order to smooth out some of the transitory fluctuations in actual income that do not

reflect permanent income.[9] This window places some distance in time from the outcomes that we model (i.e. the incidence of GIS receipt), which should strengthen the degree of exogeneity of our indicator for permanent income in light of the econometric challenge noted above. The proxy involves values of actual income lagged 15 years from the point in time at which the subject reached 65 years of age; the lags are obviously longer for any of the observations at older ages.[10]

The remaining explanatory variables are divided into three major groups, the first of which consists of policy variables. There was a policy change that applied directly to the GIS regime in 2002, and we will search for evidence of its effect – this involved the outreach program treated in Poon (2005) and Luong (2009). This consisted of a joint initiative between Human Resources and Skills Development Canada (HRSDC), Service Canada, and the Canada Revenue agency designed to better inform potential beneficiaries of their entitlements and to facilitate their applications for GIS benefits – a sort of awareness campaign targeting low-income retirees. In 2003 HRSDC streamlined the application process. In order to strengthen the incentive for recipients to work part-time, in 2008 the implicit tax rate applied to labour market earnings was cut considerably. Specifically, the threshold of earnings that can be reached

[9] The precise record that we draw from the LAD is called 'market income', which consists of total income excluding government transfer payments. Here is a list of the sources: earnings from T4 slips, other employment income, self-employment income (net), limited partnership income, Indian exempt employment income, interest and investment income, rental income (net), dividends, alimony or support income, other income, and retirement income (which should involve very few subjects).

[10] This proxy is similar to the one utilized by Uppal *et al.* (2009) In their estimating equation, they include as regressors the average *level* of employment income between ages 45-49, the *change* in average level of employment income between the ages 45-49 and 50-54, the *change* in average level of employment income between the ages 50-54 and 55-59, and the *change* in average level of employment income between the ages 55-59 and 60-64. Because a simple linear combination of these values is equivalent to the average level of income between the ages of 60-64, the equation as specified will capture a mechanical effect to some extent.

before the GIS benefit is clawed back (called the 'allowable earnings' threshold) was raised. In an effort to capture the impact of such changes on the incidence rate, a time trend variable and binary variables for each calendar year are included in the estimating equation. It is probable, however, that the change in 2008 occurred too late in order for us to discern its effect based on our sample.

The second group of explanatory variables includes demographic indicators. Information is available for the following attributes: cohort year (identified by when they turned 65, age, sex, marital status (single versus couple), province of residence, urban/rural residency status, language (minority language status), residency status in Canada, and immigrant status (including indicators for years since immigration).[11]

The final group of regressors pertains to income and wealth effects that are tied to events occurring at earlier stages of the retiree's life-cycle: specifically the window between the ages of 50 and 52 years. These indicators are designed to supplement the variable of permanent income described above. We also include a flag for the existence of self-employment income in effort to capture an effect specific to self-employed workers. This indicator assumes a value of unity if the worker is observed to have received over $ 1,000 in come net of expenses (in real terms with base year 2008) during the same window. While this is a very low threshold, we seek to mark those whose involvement was anything more than trivial.

[11] According to program regulations, any recipient must have been in residence of Canada for 10 years in order to qualify for GIS. Therefore, certain immigrants will not qualify.

There is an indicator for contributions to a registered retirement savings plan. It assumes a value of unity if the individual contributed to an RRSP during any year over this window. Since 1986 there is a record for coverage in an employer-sponsored pension plan (registered retirement plan, or RSP). This indicator can be included for the eight cohorts between the years 2001 and 2008. If the subject received *employment insurance* EI for any year over the entire window, the indicator for EI status assumes a value of unity.[12] The impact of union membership during this window is captured by a binary regressor. If the subject used the disability deduction between ages 50-52, the disability indicator assumes a value of unity. Due to reporting inconsistencies over time (particularly before 1992), we elected not to include an indicator for having received social assistance or workers' compensation benefits between the ages of 50 and 52 years.

The parametric form of our incidence model is the linear probability model due primarily to its ease of interpretation, but the logit specification is also estimated for the sake of robustness.

4.2 Transitions Into GIS Receipt

[12] The LAD file does not allow us to distinguish between regular EI benefits and special EI benefits, such as sickness and maternity/paternity/parental benefits. Nonetheless, given the age restrictions of 50-52 years old, there should not be many cases of the latter.

The second part of our econometric analysis pertains to the transitions into and out of the state of GIS receipt. To this end we exploit the longitudinal nature of the LAD file by tracking individuals from age 66 and thereafter. Before we estimate multivariate equations, we calculate descriptive statistics in order to show how common those transitions are after the initial point of retirement.

The first two equations will model on an annual basis the event of transiting from the state of non-receipt to the state of receipt. The initial conditions for this event are being at least 66 years old and not receiving GIS benefits during the first two years of potential eligibility: i.e. ages 65 and 66. The sample is expressly selected such that it consists of those who apparently met the age criterion for eligibility without receiving GIS benefits. Although this is a selected sample, it is well-defined and is designed to address the pointed question of whether the retiree experiences diminishing income over time (including the case of exhausted savings). An important correlate is a change in marital status. The first estimating equation models annually the probability of the transition from non-receipt to receipt status. The second equation consists of a hazard model for that probability that is derived as sequence of consecutive discrete choices that also includes a variable for the elapsed duration of non-receipt status. This particular empirical approach has been employed in a variety of applications, such as poverty dynamics.

The second two equations for the transitions analysis model (on an annual basis) the event of exiting the state of GIS receipt conditional on current receipt of benefits. The first equation will model the probability of this event, while the second equation will be estimated as a hazard model that includes a duration term. In this instance the risk set and the event are very well-defined, and so the initial conditions problem should not come into play. Again an important correlate is a change in marital status.

5. Results

5.1 Incidence Analysis – Descriptive Treatment

Before turning to the multi-variate analysis, we first investigate the descriptive statistics. These results are based on 27 cohorts that are defined by calendar year during which individual turns 65 years of age, which run from 1982 until 2008. Note that this is a much broader sample than the one that we employ for the regression analysis, because this univariate analysis involves no lagged regressors for prior periods, and therefore we can include earlier cohorts. The structure of these cohorts is presented in Appendix Table 1. One can follow each cohort as they age starting at age 65.[13] For each cohort we calculate the proportion that receives GIS benefits in each calendar year.[14] One would expect for the incidence age 65 years to be unduly low (i.e. under-estimated) due to the reporting lags that were mentioned above. To a much lesser extent, the same applies to the estimated proportion of 66 year-old individuals. One would expect for the proportion to increase monotonically as the cohort ages from 65 to 66 to 67 years of age, in large part due to the reporting lags. Once any cohort reaches the age of 67 years, however, any rise (fall) in the statistic should be attributed to a positive (negative) net inflow of beneficiaries.

[13] Note that we can only observe GIS receipt status starting in 1992. This implies that for the cohorts that turned 65 between 1982 and 1991, we can only observe their GIS receipt status for years after 1991, during which they are older than 65 years.

[14] For instance, by construction the 1999 cohort turned 65 in 1999, 66 in 2000, 67 in 2001,…..,74 in 2008. We calculate a proportion for each of these 10 cells.

Before we turn our attention to the incidence rates, we very briefly digress into a descriptive treatment of the benefit amounts. Appendix Table 2 shows the incidence rates by age as well as descriptive statistics for the distribution of the amounts received for calendar year 2008. These statistics are broken down into two cases – individuals with and without spouses. For the former category (those individuals with spouses), we calculate the joint benefit as well as the benefit per individual.[15] For the age range of 60 to 64 years old, only the spousal allowance is involved, as no one is eligible for GIS benefits. In the case of individuals, whose values are listed on the left, the benefits are paid to widows and widowers. In the case of couples, whose values are displayed on the two right-most panels, the older spouse is receiving standard GIS benefits. The incidence rate is rising with age, and over 10 % of all households that have a 64-year old member receive this allowance. Single individuals who are 64 years old receive $6,600 per year on average. In the case of couples in which one spouse receives the spousal allowance, the amount is a little less, which is presumably due to the strict clawback that is applied to the spousal allowance. By program design, the amount received by each member of a couple ($2,800) is much less than what he/she would receive if he/she were single.

As mentioned above, we pay particular attention to the subset of individuals who are 67 years old because they are eligible for GIS benefits (provided that they have met the residency requirements), and the reporting lags that affect our data no longer apply. 28 % of all such individuals receive GIS benefits, and 29.2 % of all couples characterized by having at least one 67-year-old member

[15] The per-person amount received by individuals who have a spouse is calculated by dividing the sum of the joint benefit across all couples by the total number of individuals of that particular age contained in our sample. It is not divided by the number of couples.

have at least one member who is a beneficiary. Reading across Table A2 for 67-year-old subjects, the average benefit amounts are $5,400 for a single, $5,700 jointly for a couple, and $3,300 for each member of a couple.[16] Moving down the table, it can be seen that as individuals age, the average benefit amount declines very gently for individuals, but the opposite trend applies for couples. All in all the values for average benefits that are reported in Table A2 indicate that the amounts paid in benefits are modest, and they are consistent with the amounts that are specified in the statutes of the program. The low degree of variability across these ages suggests that the composition is relatively constant.

Figure 1 displays the average values of GIS receipt as a function of the age of the subject. For each cohort starting with the 1986 cohort, the proportion of members receiving GIS at each age (up to age 81 years) relative to its original size is calculated. Given each age level, these proportions are averaged across all cohorts between the 1986 and 2007. One would expect to see this incidence rising between the ages of 65 and 67 years partly due to the reporting lags described above. Thereafter, the incidences will rise only if there are significant numbers of the cohorts who enter the state of GIS receipt upon having attained older ages. Note that since these figures are based on averages pooled over 23 cohorts, any apparent trend or pattern in incidence rates could be attributed

[16] There are two reasons for which the joint amount for a couple reported in the middle of Table A2 is not exactly equal to twice the per-person amount for a couple reported at the right. First, although the entitlement amount is based on the total income of a couple, two members of a couple might not receive the same amount. There are three different levels of entitlement applying to couples based on their spousal allowance receipt status (explained above). Furthermore, eligibility is based on the minimum residency requirement for sponsored immigrants, and for non-sponsored immigrants, the benefit amount is based on the length of residence in Canada as a proportion of a ten-year period. These criteria might not be the same for both members of a couple. Second, given the calculation of that mean (explained in the previous footnote), usually the two members of a couple are not exactly of the same age, and we do not require that both members be sampled.

partly to compositional effects if the cohorts have different inherent trends as their members age. Note further that each cohort is observed over a different time interval, and that the averages of the proportions for the various ages across cohorts are calculated from differing numbers of addends.[17] Earlier cohorts are not represented in calculations for younger ages (i.e. mid 60s), and later cohorts are not represented in calculations for older ages (i.e. late 70s).

The trend is increasing monotonically over the entire range of ages. The incidence rate is estimated to be 31.2 % among 65 year olds, increasing to 32.3 % at age 66 and to 32.6 % at age 67. It rises steeply once individuals reach their mid 70s, reaching a value of 42.3 % when they reach their early 80s. Abstracting from compositional effects, the figures contained in this graph suggest that it is a common phenomenon for individuals who entered their mid 60s without receiving GIS to qualify for benefits by the time that they each their early 70s.

The next descriptive statistic that we display is the average incidence rate by calendar year that is observed for 67-year olds across all cohorts. Figure 2 displays these values as a function of chronological time between 1992 and 2007. The earliest cohort that we can include turned 65 in 1990 and 67 in 1992. We have no *a priori* expectations for any empirical pattern or time-trend. One might expect to discern at least some counter-cyclical pattern. In years of strong economic performance, able-bodied workers in their mid to late 60s have some employment opportunities (likely part-time). The income that they receive from capital might rise as well,

[17] The earliest cohort turns 65 in 1986, but we do not include a value in the calculation until they reach 71 years of age in 1992, because that is the first year in which we observe a reliable value for GIS receipt. The latest cohort turns 65 in 2007. The latest value that we observe for them is in 2008 when they turn 66.

both of which would lower the incidence of GIS benefits. There appears to be a downward trend between the maximum value of 34 % observed in 1992 and the minimum value of 30.5 % observed in 2006, but the time pattern is at all not monotonic. The incidence rate spiked in 1996, dipped somewhat until 1998, turned up until 2000, and exhibited a gentle, steady decline until 2006. The incidence rate rose during the two-year period before (but not after) the implementation of the outreach initiative that was launched in 2002.

In order to remove the compositional effects from our incidence statistics that was shown in Figure 1, we also track a selection of cohorts individually, namely those turning 65 years of age in 1983, 1986, 1989, 1992, 1995, 1998, 2001, and 2004. The age-incidence profiles for all of these cohorts are plotted in Figure 3. Each curve shows the pattern for the incidence rate as the cohort in question ages. If the line for cohort tends to lie above (below) that of another, the former (latter) tends to exhibit a higher incidence rate for a given age. The slopes of the lines indicate the extent to which incidence rises with age. The 1983 cohort stands out as exhibiting relatively high rates, but we only observe this group at higher ages of 75 to 81 years. The next three cohorts (1986, 1989, and 1992) appear to have similar structures (both with respect to placement and gradient) over their overlapping age ranges. The age-incidence profiles for later cohorts (1995,1998,2001,2004) appear to have similar structures over their overlapping age ranges, with the exception of the 1995 cohort between the ages of 68 and 71 (which displays an anomalous downward dip). The primary finding of our tracking of the specific cohorts as they age indicates the existence of an increasing monotonic incidence rate.

The descriptive statistics for all of the variables employed in our work are listed in Tables A3 and A4. They are derived from the sample that is used for the regression analysis, which is comprised of the twelve cohorts running from 1997 to 2008. The univariate incidence rates are displayed in Table A3. For the entire sample the rate is 31 %, which serves as the point of comparison for the cross-tabulated proportions. It ranges from 24.7 % for females with partners to 47.7 % for single females. By province the range spans from 23.7 % in Ontario to 59.6 % in Newfoundland. The value for non-immigrants, which also includes immigrants who arrived more than 15 years prior to the reference year, is 30.9 % for non-immigrants, while it is more than double (71.4 %) for immigrants who arrived 11-15 years before that point. The role of population density in the subject's area of residence appears to be important.[18] The incidence rate is 27.7 % for those in regions with more than 500,000 people, but 43.6 % in regions with fewer than 1,000 inhabitants. The empirical pattern by prior income category is as expected, ranging from 2.6 % for the best-off category to 70 % for those with 0 or negative income.

The descriptive statistics for the regressors are presented in appendix table 4. For the time-invariant variables that are measured during the window when the workers were between 50-52 years old, there are 153,160 subjects. For the other regressors, there are multiple observations per subject for a total of 930,520 observations. The values shown correspond to the sample shares (summing to 100 %) corresponding to each category. In regards to marital status, 9.3 % of the sample is composed of single males, 41.7 % of males with spouses, 18.6 % of single females, and 30.4 % of females with spouses. 96 % of the observations are for

[18] This is analogous to a census metropolitan area.

individuals situated in provinces where theirs is the majority language. Almost the entire sample (99.5 %) is composed of non-immigrants by our definition.[19] The share of cases for which the individual resides in a region with fewer (more) than 30,000 inhabitants is 31.2 % (68.9 %); 43.5 % of the observations correspond to those residing in regions with more than 500,000 people. The average income level is calculated as a weighted average of the categories by taking the mid-point of each band; this amounts to approximately $ 40,000. 17.2 % of the subjects were self-employed when they were at the prime of their career, 29.2 % of them received EI, and 62.1 % were not in a union over this period. During this window of observation, 46.4 % contributed to an RRSP, while 33.4 % contributed to an RPP.

5.2 Multivariate analysis

The dependent variable for the regression model is the incidence of receipt of GIS benefits. Our primary specification is the linear probability model, and all of the regressors are binary. The constant term, therefore, has a clear interpretation as a comparative baseline proportion. The first set of regressions are based on the very broad sample (with over 11,000,000 observations) containing all 27 cohorts from 1982 to 2008. This set of equations does not include any of the regressors pertaining to income for reasons explained

[19] The very low share of immigrants results from our definition of this variable. We classify any immigrant who arrived more than 15 years before the reference year as a non-immigrant. Only those subjects for whom we observe income when they are 50-52 years of age are included in this sample. This implies that they have been in Canada for at least 15 years when they are first eligible to receive GIS, so almost all of them are by then non-immigrants. The few cases that are classified as immigrant are those who had a visa when they were working, but became landed immigrants later on. For immigrants, this regressor is time varying. Those who arrived between 0 and 5 years prior to that point in time are classified as such, but they are eventually re-classified into the 5-10 years prior and the 10-15 years prior groups.

above, but they do include most of the demographic and regional variables. Here we focus on the sharp empirical pattern of age effects that were discussed in the preceding section based on univariate analysis. It is possible that part of the increasing incidence with age is driven by certain compositional effects. Our objective is to examine the robustness of the very strong pattern that was discerned to the inclusion of cohort-specific effects and to gender and marital status effects.

The empirical strategy involves a sequence of additions of groups of exogenous variables to the simplest specification consisting of a trunk of exhaustive age-specific dummies (for which the omitted age is 65 years). These estimates are similar to the mean proportions that appear in Figure 1. In the second specification, we include cohort-specific dummies (for which the omitted cohort is 2001). We then add a binary variable for gender for the third specification (for which males are the omitted group). In the fourth specification, the gender dummy is dropped in favour of a set of categorical variables for marital status and gender groups: single females, males with spouses, females with spouses, and single males (the omitted category). We next include a set of binary indicators for 11 provinces and territories, with Ontario serving as the reference category. We retain in our sample those who do not report a province of residence, and assign them to an indicator for non-residence in Canada. There is also a set of indicators for the area size of residence are the following: greater than 500,000 (omitted), ii) 100,000-500,000, iii) 30,000-100,000, iv) 15,000-30,000, v) 1,000-15,000, and vi) below 1,000. The fifth specification also includes the indicator for language status; the categories are those who speak French outside of Quebec, English in Quebec, and those who speak the majority language (omitted).

The final specification for this regression model includes the addition of the immigrant status categories, which are native-born Canadians (omitted), those who immigrated i) 0-5 years ago, ii) 6-10 years ago, and iii) 11-15 years ago.

The full results from this set of specifications are presented in Table 1, and selected findings are summarized in Figure 4, which shows the estimated magnitudes of the age-specific effects generated by equations one, two, three, and four described in the paragraph above. The top curve shows the pure age effects derived from the trunk specification; the baseline probability is approximately 0.316.

The set of estimated coefficients for the cohort-specific effects are either small in magnitude or estimated imprecisely - with two exceptions (column two of Table 1). First, the estimated deviations for the recession years of 1982-1984 are positive and significant. Second, the cohorts for 2005 through 2008 exhibit negative values. The high values for the 2007 and 2008 cohorts are probably anomalies because they include only relatively young individuals who have not been eligible for very long, and the reporting lags mentioned above might be at work. It appears as though the incidence rates for the 2005 and 2006 cohorts are slightly lower, ceteris paribus, which might reflect the effect of the very low unemployment rates that prevailed over that period. The inclusion of the cohort effects diminishes the magnitude of the age effects, but the upward trend still remains. In figure 4 this reflected in the second curve from the top, whose estimates reflect the age-specific effects net of the cohort-specific effects.

In column three of Table 1, only an indicator for gender (with males as the omitted category) is added. In figure 4 this is reflected in the second curve from the bottom, whose estimates reflect the age-specific effects net of the cohort-specific effects and the influence of gender. The inclusion of this variable has only a slight impact on the age-specific effects.

The fourth specification includes the indicators for gender crossed with marital status. In figure 4 these estimates are reflected in the bottom curve, which reflect the age-specific effects net of the cohort-specific effects and the influence of gender crossed with marital status. It is apparent that the inclusion of the marital status variable greatly reduces the magnitude of the age effects, reducing them by up to two-thirds. For example, the point estimates for the ages of 69, 74, and 79 years are reduced from 0.026, 0.047, and 0.089 to 0.007, 0.009, and 0.028 respectively. Whereas we still discern an incidence rate that increases with age, much of the pattern that was discerned in the univariate analysis can be attributed to the impact of marital status. The attribute of being single has an enormous positive impact of the likelihood of receiving GIS benefits.

The influence of the province of residence is also quite noticeable (column 5 of Table 1). Ontario has the lowest incidence rate among all provinces and territories. Relative to Ontario, the point estimate for Newfoundland is 0.32 compared to the baseline value of about 0.29, while the corresponding value for Quebec is approximately 0.2. Even in the case of Alberta, which is by most measures the wealthiest province, the incidence rate is 5 percentage points higher than the Ontario baseline. On the other hand, the influence for non-residents of Canada is large and negative, as it should be given the eligibility criterion.

The effects associated with the area size of residence are not surprising. Compared to the base category of cities with more than 500,000 residents, the incidence rate in the most rural areas is 17 percentage points higher. The impact of residing in small cities and towns is positive, but of lower magnitude. The statistical association between the incidence rate and the population density is strongly negative and nearly monotonic. Overall the regional pattern of GIS receipt is quite sharp.

The estimated effects of the indicators for minority language status are strong. Compared to case of those residing in provinces where their language predominates, the incidence rate for Quebec Anglophones about 12 percentage points *lower*, while the rate for francophones in the rest of Canada is about 13.5 percentage points higher.

The impact of immigration status is remarkable (Table 1, column 6). Compared to the baseline case, an immigrant who arrived 11 to 15 years ago has a value of 0.814 (0.287 + 0.527). An interpretation for this very high incidence rate is that many of these individuals arrived in Canada at fairly late stages in their life cycle (perhaps as sponsored immigrants), and were unable to establish careers with pensions. The incidence rates for those with lower values of years since immigration are highly negative, which is likely a reflection of the residency requirement for the eligibility rules for GIS receipt.

The next set of regression equations include the proxy for permanent income as well as the set of indicators for savings and labour market activity during the window when the workers were 50-52 years old. As mentioned above, the presence of lagged variables reduces the size of our sample considerably, so that only the more recent cohorts from 1997 to 2008 are included. Again all of the exogenous variables are binary in these equations. The categories for the permanent income proxy variable are as follows: 0-

10k, 10-20k, 20-30 k, 30-40 k (omitted), 40-50 k, 50-60 k, 70-80k, 80-90-k, 90-100k, 100-150k, and 150k +). The flags for labour market activity over the window during which the individual was 50-52 years old are i) self-employment status, ii) EI receipt, iii) holding a unionized job, iv) making RRSP contributions, and v) making registered retirement plan (RRP) contributions.

These regression results are presented in Table 2. All of the specifications include age-specific, cohort-specific, and their interacted effects. For expositional simplicity, none of these estimated coefficients are listed in Table 2. The first three columns list the results for the linear probability model, while the second three columns contain the logit results. In the first column, all of the income and savings variables (measured over the window of ages 50-52 years) are excluded in order to see how the robust the age-specific effects are to their exclusion. In the second column, the income variables are included, and in the third column, the savings-related variables and other indicators of labour market activity are included. This sequence of specifications is also adopted for columns four through six.

The value of the constant is approximately 0.37, which corresponds to the case of a single 65-year old man who belongs to the 2001 cohort (and the omitted categories for the remaining groups of regressors). The corrected coefficient of determination for the full specification in column 3 is 0.26.

There are no major differences in the estimated coefficients of the age variables as one moves across the columns, so they are robust to the inclusion of the income and savings variables. Compared to the results contained in column 1, which do not include any of the income-related variables, the negative effect (indicating that they are less likely to receive GIS benefits) of married females

becomes much stronger (base category is single males), but the negative effect for married males becomes much weaker.[20] Single women are now slightly *less* likely than their male counterparts to receive GIS benefits, but this effect is not large in magnitude. The group of single females has an estimated incidence rate of approximately 0.357 (0.37 - 0.023). This implies that taking into account the lower lifetime incomes that they earned, single women are slightly less likely to take-up GIS. The group of married males has an estimated incidence rate of approximately 0.33 (0.37 – 0.04). This implies that taking into account the influence of lifetime income, they are less likely to take-up GIS benefits than their single counterparts. This could be generated by couples in households being able to pool their resources, to realize economies of scale in terms of expenditures, and thus to devote more resources to saving.

For women there is a tremendous decline in the incidence rate associated with the presence of a spouse, a finding that is robust to inclusion of the income-related variables (-0.023 compared to – 0.252). When the income-related variables are excluded, the gender gap for the groups of singles is 0.074; single women are 0.074 percentage points more likely to receive GIS than single men. When we control for permanent income, the gap between them reverses sign and becomes minus 0.023, indicating that the females have slightly lower take-up rates. The gap between men and women with partners, however, grows from almost zero (-0.143 versus -0.153) to about 21 percentage points in absolute value (-0.252 versus -0.041). The partnered women are much less likely to receive GIS benefits compared to men living as a couple. A possible interpretation is the following: many women with lower levels or

[20] A negative effect in this context means that there is a reduced incidence of receiving GIS among those with a spouse compared to the base case of single males.

permanent income (associated with of higher incidence of PT work and the male-female wage gap) are in couples in which men have relatively high incomes. They are therefore less likely to qualify for GIS benefits in retirement.

The estimated effects for immigrants are not nearly as sharp when including permanent income. This empirical pattern suggests that the much higher incidence rate that is discerned among immigrants (relative to native-born) is attributable primarily (but not exclusively) to their lower permanent incomes. A similar empirical pattern is obtained for the provincial effects, which diminish in magnitude when these sets of regressors are included. Nonetheless, the pattern across provinces remains robust even after controlling for these income-related factors, with Newfoundland having by far the highest value and Ontario the lowest. Compared to the findings that appear in column 1, the area size of residence effects diminish in magnitude by a factor of approximately one-half. In contrast, the estimates for the linguistic variables are qualitatively and quantitatively (almost) robust to the inclusion of the set of income-related variables.

The estimated coefficients of all of the indicators for permanent income are statistically significant. This group of regressors has strong explanatory power, as the value of R-bar squared increases from approximately 0.09 to 0.26. The estimates for the income brackets display a strictly monotonic but non-linear pattern, ranging from plus 37.5 percentage points for those with no income to minus 26.8 percentage points for those with more than $ 150,000 in income (relative to the base category of 30-40 k). The estimated coefficient for the self-employment flag is minus 6.5 percentage points, indicating that even after controlling for the level of permanent income, the event of being self-employed militates toward a lower incidence of GIS due to certain unobservable attributes.

Those individuals who received EI benefits during the period when they were 50-52 years old are 5.6 percentage points more likely to receive GIS benefits, ceteris paribus. By contrast, previously unionized workers are 4.8 percentage points less likely. This effect is likely tied to coverage by a private pension plan because it diminishes in magnitude once we include the indicator the having contributed to an RRP scheme.

The estimates for the existence of private pension schemes are strongly negative in sign, as expected. Workers having contributed to these plans are much less likely to receive GIS benefits, ceteris paribus. All other factors held constant, those who contributed to RRSPs, which are strictly individualized accounts, have an incidence rate that is 8.2 percentage points lower.

In order to include the indicator for RRP coverage, which are company-based plans, we have to restrict the sample to only the 2001-2008 cohorts. These estimates are not shown for the sake of brevity. The incidence rate for receipt of GIS benefits is 8.5 percentage points lower. Note that the estimated magnitude for the coefficients of the RRSP coverage indicator is only slightly lower when the indicator for RRP coverage is included in the regression, suggesting that statistically these two variables are not highly correlated, and that there is not a lot of overlap between the participants of those two types of pension programs.

5.3 Descriptive Statistics of Dynamics

The scope of the empirical analysis thus far has been static. One might wonder whether it is the case that most recipients enter into the GIS regime as soon as they meet the age-eligibility criteria and receive benefits until death. On the other hand, almost 70 %

of individuals who turn 66 do not claim benefits at that point of time, probably because their incomes are too high. To what extent do individuals *enter* the state of GIS receipt at later ages – perhaps because they have out-lived their savings, stopped earning income in the labour market, or experienced a change in marital status? Alternatively, to what extent do individuals who receive GIS benefits at ages 65 or 66 years *exit* the regime for various reasons, such as re-entry into the labour market, receiving higher investment income, or experiencing a change in marital status?

We commence this part of our analysis with a descriptive treatment. Tables 3a and 3b contain the relative frequencies for the probability distribution of the following discrete variable: the number of years over a five-year window for which an individual reported receiving GIS benefits. In table 3a (3b), the underlying population is all individuals who are between 66 and 70 (71 and 75) years of age inclusive, whom we track for the entire five-year interval. The underlying variable is the count of the number of years for which he/she received GIS benefits; the possible realizations are 0,1,2,3,4, and 5. The respective frequencies are listed in the first six columns; they sum horizontally to unity.

The top line of Table 3a contains the figures for the entire sample. While we have already indicated that approximately 68 % of all of our sample does not receive GIS benefits when they are 66 years of age, only 41.4 % of this particular sample do not receive GIS benefits during *any* year during which they were older than 65 but younger than 71 years (100 % - 58.6 %). At the opposite end of the spectrum, 26.2 % of them receive it during every single year over this window of eligibility. In the middle range of the distribution, 15.2 % receive GIS benefits for only part of the window of eligibility (4.8 + 3.8 + 3.3 + 3.3). The figures reported in the

last column of Table 3a reflect the proportion of all beneficiaries that exhibit persistent use, which we define as receiving benefits for longer than 3 years over the 5-year window. The value for the overall sample of 71.3 % ((3.3 + 26.2) / (100 – 58.6)) indicates that almost three quarters of the group of users displays persistent use, but that a significant minority do not rely on GIS benefits over the entire period. We label this latter group, who received benefits for up to 3 years of the five-year window, intermittent users. For the older age group (i.e. 71-75 years old), the figure for the persistent users increases from 71.3 % to 77.8 % (Table 3b), as does the share that received benefits for all 5 years (26.2 % to 29.5 %). On the other hand, the proportion of the age-eligible population that does not claim the GIS benefit at all only increases slightly from 58.6 % to 59.1 %.

The rows below the top line of 3a display the distribution of years of receipt cross-tabulated by the attributes of cohort, gender crossed with marital status, immigration status, province, area size of residence, and minority language status. All of these attributes are measured at the age of 66 years. Starting around 1996, the share of those senior citizens who did not receive GIS benefits at all between the ages of 66 and 70 years trends down, which implies that some of the other relative frequencies (for the realizations of 1,2,3,4, and 5 years of receipt) must have risen slightly over this period. Nonetheless, this increase appears to have been fairly equally distributed across the other categories. Conditional on having benefitted for at least one year, however, the share who exhibited persistent use trends downward from almost three quarters to just over two-thirds. While the incidence rate according to this very broad measure was declining, the importance of the intermittent recipients was rising gradually.

The breakdown by gender crossed with marital status indicates that the latter attribute plays a far more important role. Consistent with the findings for the incidence rates, unattached individuals are much more dependent on the GIS regime. Conditional on having received GIS benefits at all, over 80 % of this group, whether male or female, were persistent users. Whereas 42 % of single women and 47 % of single men did not receive any benefits at all, the corresponding figures for couples are 66 % and 62 %.

Immigration status is also an important determinant of GIS receipt patterns. 59 % of the Canadian-born combined with those immigrants who landed over 15 years ago did not receive GIS benefits at all during the five-year window, but this rate drops sharply to 13.5 % for those immigrants who landed 10-15 years ago (and thus likely met the residency rule). That particular demographic group also exhibits a very high degree of dependency; 93 % of recipients took up benefits for virtually of the five-year window of eligibility. By contrast, conditional on receiving GIS benefits for at least one year, immigrants who arrived more recently were much less likely to receive benefits for all five years. Perhaps they had to wait until they reached their late 60s before they met the residency requirements.

In regards to the provincial patterns, the east-west divide is striking for both the broad measure of incidence as well as the measure of persistent take-up; they are much higher for the five eastern provinces. The case of Newfoundland and Labrador, however, is a salient outlier – only 31 % of that population does not collect benefits at all over the window of eligibility (compared to 67 % in Ontario).

The calculated proportions of individuals transiting in and out of GIS receipt status are shown in figures 5 through 8. Figure 5 displays the *entry* rate by age: the proportion of each age group that transits from the state of non-receipt in the prior year to the state of receipt in the current year. 32.4 % of those who were 64 years old in the earlier period (and thus were not eligible to receive GIS benefits) are receiving it by the time they are 66 years old.[21] Referring to the left-most bar, another 4.2 % enter the state of receipt by the time they are 67 years old. This estimated transitional probability falls to just over 3 % at age 74, and then rises monotonically up to 5.8 % by the time the eligible individuals reach the age of 90. This age profile of the conditional probability of entry exhibits a 'U-shape. Figure 6 displays the entry rate by calendar year. The estimated proportion of entries ranges from 2.3 % in 1998 to 7 % in 2002, which might reflect the outreach initiative that was mentioned above. The pattern is volatile between the years 2002-2008.

The calculated proportions of *exit* from GIS status in the current period conditional on receipt in the preceding period are displayed in figures 7 and 8. The first bar in Figure 7 shows that conditional on having received GIS benefits at age 66, 8 % of such individuals no longer receive it by age 67. Among those who do receive benefits at age 67, 6 % leave the rolls at age 68. This exit proportion tends to decline monotonically to 1.8 % by age 90. These estimated probabilities of exit appear to exhibit a pattern of negative duration dependence; the longer that an individual has been receiving GIS benefits, the lower the probability of exit. It is

[21] The event of initial entry is measured over the window between the ages of 64 and 66 years (skipping over 65) due to the reporting lags that were mentioned earlier in this paper.

clear, nonetheless, that the event of exit is not uncommon. While most recipients who receive GIS benefits age 66 will continue to benefit thereafter, a non-trivial minority will leave the rolls at least for one year.

The figures for the exit rate by calendar year (averaged over all cohorts) are shown in Figure 8. These values range from 2.5 to 4 %; the lowest values occurred in 1994 and 2001, while the highest value occurred in 2008. There is no visibly obvious trend. The exit rate was quite stable between 2003 and 2007 at about 3.5 %.

5.4 Multi-variate Analysis of Dynamics

The last two sets of regression models deal with transitional probabilities. The first set of regressions consist of straightforward transition models that do not include any duration terms. There are a total of nine specifications that pertain to three distinct events observed and modeled for three different samples: i) men and women pooled, ii) men, and iii) women. The first endogenous variable is the probability of transiting to GIS receipt at the stage of initial eligibility: i.e. when the subject turns 65. For the prior period, the individual is 64 years old, while for the subsequent period, he/she is 66 years old. Note that for all observations, the individual previously was not receiving benefits (and thus the dependent variable assumes a value of 0), while for the later period, he/she might be receiving GIS benefits. The second endogenous variable is the probability of entering the state of GIS receipt after age 66 conditional on not having received it in the preceding period. For an individual who is 67 years old, this can be interpreted as the hazard probability of entry given that he/she did not receive benefits when he/she first met the age eligibility criterion. We track this

individual on an annual basis for every subsequent year for which he/she did not receive benefits. For each of these consecutive observations, we model the hazard probability of entry given that he/she did not receive benefits in the preceding period. For most of our subjects, therefore, there are multiple observations that are treated as independent. The third endogenous variable is the probability of exiting the state of GIS receipt after age 66 conditional on having received it in the preceding period. For an individual who is 67 years old, this can be interpreted as the hazard probability of exit given that he/she did receive benefits when he/she first met the age eligibility criterion. As in the case of entries, we track this individual on an annual basis for every subsequent year for which he/she did receive benefits. For each of these consecutive observations, we model the hazard probability of exit given that he/she did receive benefits in the preceding period.

The set of exogenous variables includes the full sets of age and cohort dummies (but excluding the interactions between them) and indicators for *changes* in marital status, current province of residence, current area size of residence, current linguistic status, and current immigration status. We do not include any of the variables related to labour market activity over the window when the individual was 50-52 years old in the interests of obtaining a larger sample (with cohorts going back to 1982).

Our primary regression model is the linear probability model. The equations are estimated via the least-squares technique; the estimated standard errors are adjusted for clustering around the individual. The results are listed in table 4. The first three columns are for the pooled sample, the second three columns are for men, and the final three columns are for women. Within each sample, the

left-most column contains the results for the entry at the initial age of eligibility, the middle column contains the results for the annual entries after age 66, and the final contains the results for the annual exits after age 66.

Given the very strong empirical pattern for current marital status that was discerned in the incidence analysis presented above, we focus on the estimated impact of *changes* in marital status. Some of the other estimated coefficients are worth a mention, however. The estimates for the probability of entry between the ages of 64 and 66 are listed in columns one, four, and seven of Table 4. Given that no one in the estimating sample was receiving GIS benefits during the earlier period, coupled with our previous finding that GIS receipt tends to be quite persistent given that one enters the regime at age 65, we expect for these results to be qualitatively similar to those obtained from our previous regression analysis of the incidence rate. This is indeed the case.

In the case of the equations for annual entries (columns two, five and eight of Table 4), the baseline probability is approximately 0.04. The differences across provinces are not major, ranging in magnitude from 0.003 to 0.016. The entry probabilities tend to be slightly higher in rural areas, but they are very high for immigrants who have been in Canada for between 11-15 years. Relative to the base category of 67 years old, the entry probability tends to fall between the ages of 67 to 74 years, to be fairly flat between 75 and 78 years, and increasing thereafter. The estimated cohort effects tend to be negative and flat between 1982 and 1996 (relative to the omitted category of 2001). Thereafter the estimates tend to be small in magnitude. Prior to the early 2000s, therefore, the annual entry probabilities were approximately one percentage point lower. The finding that the highest values are

discerned for the 2002 and 2003 cohorts is at least consistent the intended impact of the 'GIS outreach' initiatives that were launched at that time.

In the case of the equations for annual exits (columns three, six, and nine of Table 4), the baseline probability is approximately 0.08. Compared to the estimate for Ontario, the event of exit is less likely in all other provinces. While this probability is least likely in the five east-most provinces, the estimates for the western provinces are small in magnitude. The probability of exit falls over the ages of 67 to 76 but essentially levels off for older ages. The cohort-specific effects are lower in early 80s (relative to the omitted year of 2001), stable over the cohorts from 1987-1992, and then rising (but still negative) over the cohorts from 1993 to 1999. The highest values are estimated for the 2000 -2003 cohorts.

The estimated coefficients for the changes in the marital status variable are listed in Table 4 and summarized in Text Table 2. It should be noted that the underlying stochastic processes that generate transitions into and out of GIS receipt status and their relationship with transitions among marital status states are related to those determining GIS receipt status and its relationship with marital status, but they are not identical. For both genders, the omitted category is the case of the non-transition of staying single over the two consecutive filing years. In the first column, which lists the effects associated with transitions between the ages of 64 and 66 years, for both genders we obtain the expected results that relative to those who remain single, those who remain as couples are much less likely to start receiving GIS benefits. In the case of women, we obtain the expected result that relative to women who were always single, those who were married but then became single have a higher probability to start collecting benefits. On the other

hand, those who experienced the opposite transition of going from single to married status are also *more* likely to receive benefits, which at first glance is a surprising result. In the case of men, those who were married but then became single have a lower probability of collecting benefits, which is the opposite finding of what is discerned for women.

Turning to the annual transitional probabilities of entry (after the initial entry at age 65), we obtain the expected findings that those who have partners throughout the period are less likely to enter. We obtain the remarkable finding that for both men and women, relative to those who were always single, those who married are much *more* likely to start collecting GIS benefits. In the case of women transiting from couple to single status, the estimate is positive, as expected.

Turning to the transitional probabilities of exit, we obtain the expected findings that those who have partners throughout the period are more likely to exit. We obtain the surprising finding that for men in particular, relative to those who were always single, those who were married but became single are much *more* likely to stop collecting GIS benefits (i.e. exit) The estimate for women is also positive, but much lower in magnitude. In the case both genders, for those who make the opposite transition - from single to couple status, the estimated impact is negative (i.e exiting from the GIS regime is less likely), but the magnitude is very small.

Text Table 2

	Entry at initial age of eligibility (65 years)	Annual entry – older than 66 years	Annual exit – older than 66 years

Men			
Couple to couple	-0.155***	-0.006***	0.037***
Single to couple	0.006	0.244***	-0.004***
Couple to single	-0.066***	0.002**	0.17***
Women			
Couple to couple	-0.228****	-0.01***	0.013**
Single to couple	0.078***	0.194**	-0.003*
Couple to single	0.061***	0.082**	0.025***
Baseline prob.	0.32 men, 0.37 women	0.04**	0.08**

Some of the results listed in Text Table 2 merit further discussion, in particular the strong positive effects on entry (i.e. GIS receipt becoming more likely) that were discerned for those transiting from single to married status. For all three events listed in columns above, well under 1 % of the sample in the risk set experienced that transition; these are thus very particular samples. It is possible that certain anomalous, unobservable, and endogenous influences are at work rendering the revised marital status a choice variable in this instance. A single individual that is not receiving GIS benefits during the first period but who is planning to marry in

the second period will probably consider the repercussions as far as sharing the living expenses and GIS eligibility are concerned. If the new spouse has little or no income, the couple could conceivably qualify for GIS benefits.

With respect to the transition from couple to single status, between 1.5 and 3 % of the sample is affected depending on the GIS event. The following scenario could render it more likely for the newly single individual to *exit* from GIS status during the next period. When a spouse dies, the surviving spouse obtains part of his/her CPP benefit, which raises the survivor's income a bit. Furthermore, the ceiling that applies to income that can be received before the GIS benefit is clawed back increases on a per-person basis. This non-linear feature of the qualification threshold has the effect of loosening the eligibility criteria for couples and thus tightening it for singles.[22] Any death benefit that is paid out in form of an income will also count against GIS receipt. To the extent that these are one-time payments, the individual might fall back into GIS receipt status in subsequent years. This estimated effect is much stronger for men, which is sensible because usually they have the higher incomes.

More generally, there is quite a large cluster of individuals whose incomes are close to the qualification threshold and who are thus susceptible to falling below the threshold (and thus becoming eligible) in one year but also susceptible to falling above it (and thus losing eligibility) in a subsequent year. An in-depth quantitative analysis of the extent of this phenomenon would address

[22] The role of the income threshold over which GIS benefits are clawed back in determining eligibility is somewhat complicated, as it depends on both marital status as well as the age of the spouse. A fairly small increase (decrease) in income can occasion a loss (gain) in eligibility, which translates into a big change in the value of our dependent variable from 1.0 to 0 (0 to 10.0). This in urn has repercussions for our regression results. Generally speaking it is easiest to fall under the threshold (and qualify) if one's spouse is under age 65, as the breakeven level is more than twice as high as it is for singles. It is hardest to receive benefits if the individuals are married and both are receiving OAS benefits (for those over 65), as the threshold is then only modestly higher than it is for singles. The case of single individuals is the intermediate case.

questions such as the number of affected individuals and the frequency at which they cross the threshold. Such an investigation is beyond the scope of this paper, but is a relevant question for future research.

The second set of regressions involving the dynamics of GIS receipt consist of hazard models that resemble the transition equations but that include duration terms. The focus is on the effect of the preceding spell length on the conditional probability of a transition. The primary question for the event of entering (or exiting) GIS is the relationship between that probability and the length of the uninterrupted, preceding spell of non-receipt (or receipt). The events for the hazard model for exits are: i) the act of exiting given that the subject received GIS benefits at the point at which he/she was previously eligible (i.e. age 66 years or older, and ii) a re-exit from a subsequent spell of GIS receipt. The event for the hazard model for entries is the opposite, namely the act of entering the GIS regime given that the subject did not receive GIS benefits at the point at which he/she was initially eligible (i.e. 66 years of age). No subsequent entries into spells of GIS receipt are included in that equation. The event that we focus on in this case is a delayed entry into the GIS regime conditional on the recipient not claiming the benefit when he/she first met the age eligibility criteria. These are individuals whose financial circumstances or marital status changed such that they became eligible.

Two well-known but special cases of duration effects are positive (or negative) duration dependence, under which the probability of exiting or entering becomes monotonically more (less) likely the longer the preceding spell. For example one might be on the lookout for a pattern of negative duration dependence for those who receive GIS benefits; leaving the rolls would become less and less likely as time elapses. We impose few restrictions of the empirical pattern for duration dependence by specifying these

effects in a flexible semi-parametric form via a set of categorical variables for the length of the preceding spell. The structure of the estimated duration terms takes the form of a step function that may or may not be monotonic. These binary indicators are labeled T + 1 through T + 10, with T + 1 serving as the omitted category. To give an example, T + 2 will assume a value of unity in the exit (or entry) equation if a subject has been receiving GIS benefits for two consecutive years (or he/she has an unbroken spell of two years of non-receipt). It is the second year during which he/she was in the risk set for exiting (or entering).

The set of exogenous variables for these specifications include the full sets of age and cohort dummies (but excluding the interactions between them) as well as the indicators for changes in marital status, current province of residence, current area size of residence, current linguistic status, and immigration status. Note that the duration variables terms are highly collinear with respect to the age variables.[23] We also include the variables related to earnings, labour market activity, and saving observed over the window when the individual was 50-52 years old. Including these regressors results in a smaller sample that includes only the cohorts between 1998 and 2008. The specification is the linear probability model, which is estimated using least squares with clustering by the individuals. For both the entry and the exit models, we estimate three equations: one for men, one for women, and a pooled one.

In the interests of focus and expositional brevity, we show only the estimated coefficients of the duration terms as plots. Figure 9 reveals a strong pattern of negative duration dependence for the probability of *exiting* from a spell of GIS receipt given that it

[23] For the exit equations, the age and the duration effects are identified through the following channels. First, individuals can commence their initial spells of GIS receipt at different ages, e.g. 66, 67, 68, etc. year old. Second, for some individuals, the hazard equation also includes subsequent spells of GIS receipt.

has continued up to and including the preceding year. Two step functions are plotted: one that includes the age terms and one that excludes them. Relative to the omitted category of the first year they are at risk of exit (year T + 1), the hazard probability of exit is 0.08 lower when the age variable is included, and 0.04 lower when it is excluded.[24] Thereafter there is a strong pattern of negative duration dependence which flattens out at year T + 6. When the age terms are excluded from the equation, the structure of the hazard remains, but it declines in magnitude such that the negative duration dependence pattern is not as sharp. The regressions results for men and women are qualitatively very similar, and fairly similar quantitatively.

In the case of the event of delayed *entry* into the GIS regime conditional on the recipient not claiming the benefit when he/she became initially eligible, the hazard equation does not include any duration terms because it is not possible to identify them separately from the age terms. Because we are conditioning this equation on a specific event of non-receipt at age 66 and following all such individuals for the risk of exiting thereafter, the duration terms are perfectly collinear with the age terms. The explanatory power of this equation is very low, with a coefficient of determination of 0.02-0.03. The estimated coefficients for the age effects, which represent deviations relative to the omitted age of 67 years old (i.e. the first year they are at risk of entry) are plotted in Figure 10. While they tend to diminish as individuals grow older, they are of extremely low magnitude. The pattern suggests that as this sub-population of individuals ages, they are less and less likely to claim GIS benefits, but it is empirically unremarkable.

[24] This corresponds to the case of single males who are 66 years old, of the 2001 cohort, born in Canada, residing in Ontario, situated in the largest area size of residence who was not previously self-employed, not receiving EI, not unionized, and not contributing to an RRSP.

6. Conclusion

This paper consists of a statistical and econometric analysis of the both the incidence rate for receiving GIS benefits among age-eligible Canadians as well as the dynamic aspects. This program is a critical component of Canada's social safety net, as approximately one-third of Canada's senior citizens benefit from this highly income-tested regime. Our study is based on administrative data drawn from tax returns. The estimates are organized according to the following outline. There are two samples; a very broad estimating sample composed of 27 cohorts between 1982 and 2008, and a much narrower estimating sample composed of 12 cohorts between 1997 and 2008. The latter sample is restricted in order to include retrospective information dating back to the period when the subjects were 50-52 years old. We employ the broader sample to derive some univariate cross-tabulations as well as certain multivariate regression equations. We employ the narrower sample primarily to estimate multi-variate regression equations that generate conditional results. The simplest of these equations include the explanatory variables of age and then year-of-entry (capturing cohort effects). We subsequently include regressors to reflect demographic variables such as gender, marital status, immigration status, and minority language status. At the next stage, we include regressors to reflect regional effects such as province of residence and the area size-of-residence. The fullest specification includes indicators for permanent income and prior savings activity, all calculated based on retrospective information observed when the individual was 50-52 years old.

The raw estimates for the incidence rate over our interval range from 30.5 % in 2006 to 34 % in 1992. It did not rise after the outreach initiative that was launched in 2002. The univariate age profile rises monotonically from 31.2 % at age 65 to 32.6 % at age 67, and it tends to rise rapidly after age 70. This rising trend that we observe for the age variable still holds after separating numerous different cohorts of workers. After controlling for regional effects and the influence of marital status, the strong age patterns are still present but weaker, so some of it is attributable to compositional effects. With or without the inclusion of control variables, both men and women with partners have lower incidence rates. This result is consistent with a central theme of the poverty literature, namely that in financial terms, being single is a disadvantage. The raw incidence rates for immigrants are much higher than is the case for native-born Canadians, although some of that gap is driven by their tendency to receive lower levels of permanent income. All other factors held constant, there appears to be a slight dip in the incidence rate for the 2005 and 2006 entry cohorts (i.e. those who attain age eligibility), which coincided with a very healthy labour market characterized by the lowest unemployment rates in a generation. In regards to the regional factors, rural areas and areas with relatively low population densities have higher rates than urban areas. Furthermore Ontario has the lowest incidence rate, while Newfoundland has by far the highest. These patterns apply to both the univariate and the multivariate analysis.

The gender-based analysis yields remarkable disparities. After netting out the effects of the variables related to permanent income, single women are slightly less likely than single men to receive GIS benefits, but women with partners are much less likely

than their male counterparts to receive them. The interpretation that we offer is that women have often spent their adult lives with partners who were reasonably well off, rendering them less likely to receive GIS benefits when they are senior citizens.

The estimates for our proxy variable for permanent income are as expected: a strongly negative, non-linear, monotonic relationship. This finding indicates that the program is at least fairly well-targeted at those who had relatively low permanent incomes when they were in their prime earning years. Those who were previously self-employed are less likely to benefit even after controlling for the effect of permanent income. A similar finding was discerned for unionized workers, which is partially attributed to the effect of having a job-related pension. As expected, those individuals who contributed to RRSPs and/or RRPs are less likely to receive GIS benefits, ceteris paribus.

The analysis of the dynamics of GIS receipt patterns indicate that some beneficiaries do not receive benefits when they first reach the age of eligibility of 65 years, but then subsequently enter the regime at older ages. Some of the univariate findings are as follows. While almost three quarters of the group of users between 66 and 70 years of age display persistent use, a significant minority do not rely on GIS benefits over that entire window of eligibility. Over 81 % of the cohort of 66-year-old individuals (who recently met the age criterion) did benefit over the entire window of eligibility (i.e. when they were between 66 and 70 years old), while 15 % received benefits for fewer than 4 years. The univariate average annual *entry* rates by age among those eligible for GIS benefits display a saucer-shaped profile, falling from 4.2 % for 67-year olds to 3 % for those in their mid 70s, and then rising to 5.8 % by age 90. We discerned a spike in the entry rate in the year 2002, which corresponds with the 'GIS outreach initiative'. The

univariate average annual *exit* rates by age among those receiving GIS benefits are calculated at 8 % for 67 year-olds, and they decline monotonically thereafter. For the multi-variate transition equations, the probability of exiting conditional on receipt of GIS benefits during the preceding year declines monotonically between the ages of 67 and 76, and subsequently levels off. Relative to native-born Canadians and long-time immigrants, more recently arrived immigrants have a very high probability of entry. Women who transit from married to single status are more likely to enter the GIS regime.

The hazard model for the risk of exiting the GIS regime conditioned on the duration of the on-going spell of GIS receipt reveals a sharp pattern of negative duration dependence; leaving the GIS rolls becomes less and less likely the longer that spell lasts. The hazard model for the risk of entering the GIS regime conditioned on the particular event of not receiving the benefit when one is initially eligible (i.e. at age 66), which we label 'delayed entry', becomes less and less likely the older the individual becomes.

There is a vast agenda for future research that could be derived from this data set. For instance, there exists a significant minority of age-eligible individuals whose incomes are close to the qualification threshold and who are thus susceptible to falling below the threshold (and thus becoming eligible) in one year but also susceptible to climbing above it (and thus losing eligibility) in a subsequent year. The dynamics of GIS receipt can be very complicated for this group, and at this stage not much is known about it. The finding that changes in marital status strongly influence GIS eligibility status suggests that the income thresholds applying to GIS eligibility may merit close investigation. It is possible to extend the analysis of the determinants of persistent use to better ascertain which middle-aged individuals are at risk of receipt in the future. Among the over-65 group, one could focus more sharply on the

disincentives for working and converting savings into annuitized income. Among individuals in their mid-60s, one could examine the interface between social assistance receipt and GIS receipt, as there is a seam (between coverage of the two regimes – one federal and one provincial) as individuals turn 65 years old. Further information on the points that we have examined could be obtained by exploiting any information on the amounts of GIS benefits received.

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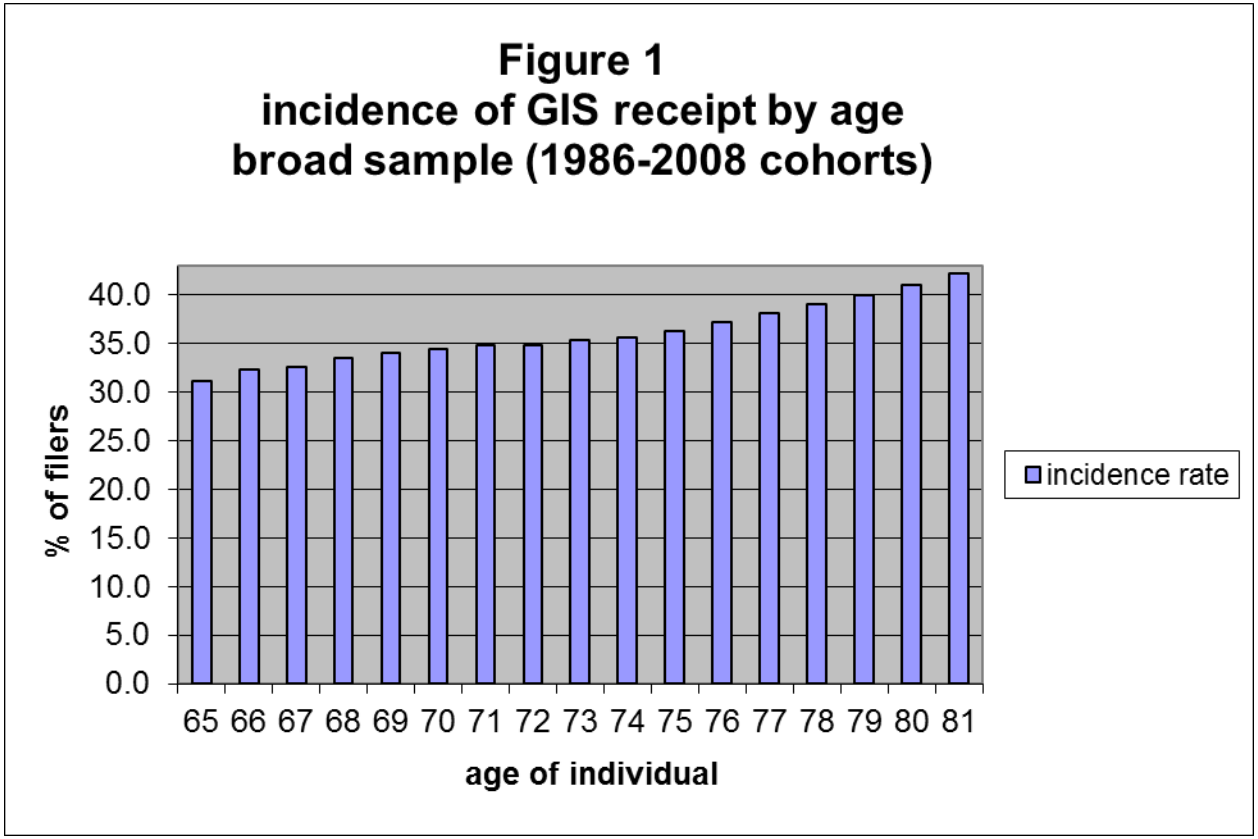


Figure 1
incidence of GIS receipt by age
broad sample (1986-2008 cohorts)
% of filers
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81
age of individual
incidence rate

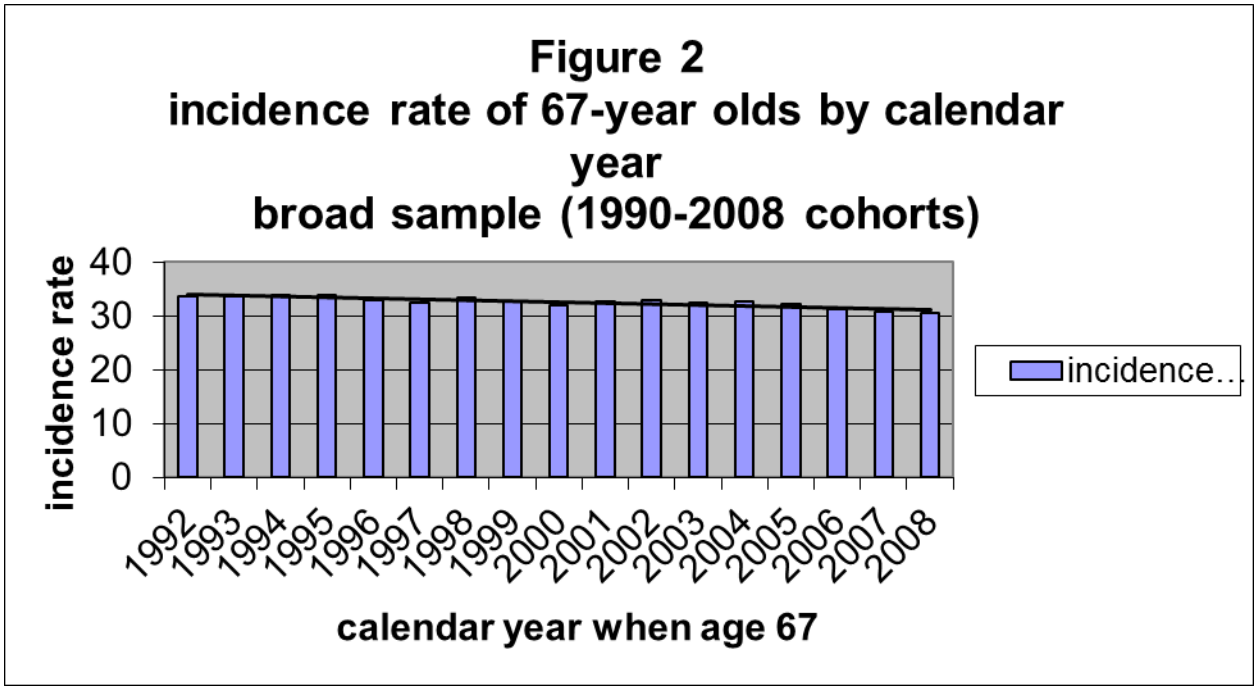
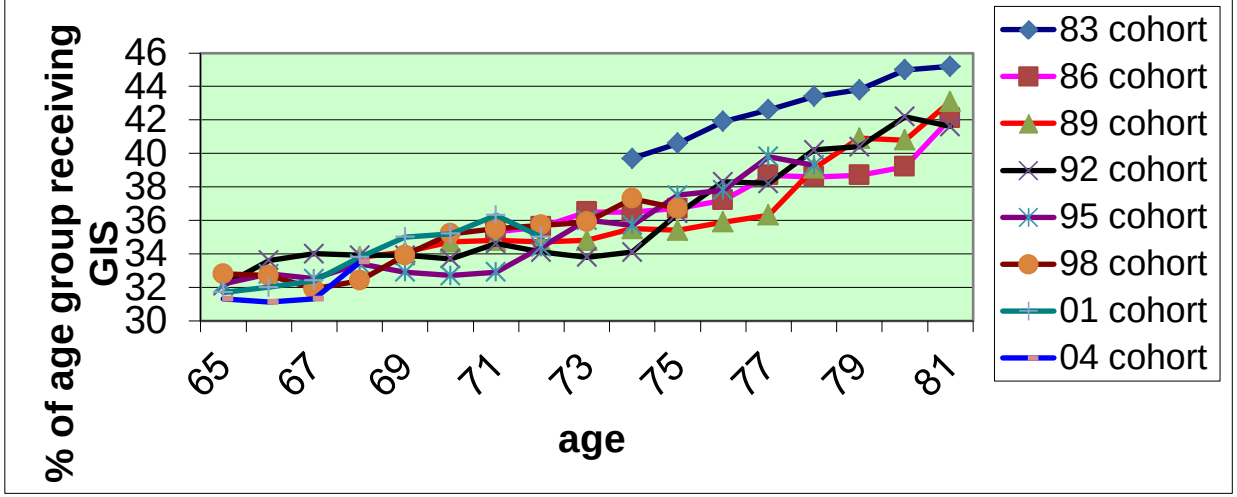


Figure 2
incidence rate of 67-year olds by calendar year
broad sample (1990-2008 cohorts)
incidence rate
40
30
20
10
0
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
calendar year when age 67
incidence...

Figure 3
Incidence profiles by age - separate cohorts



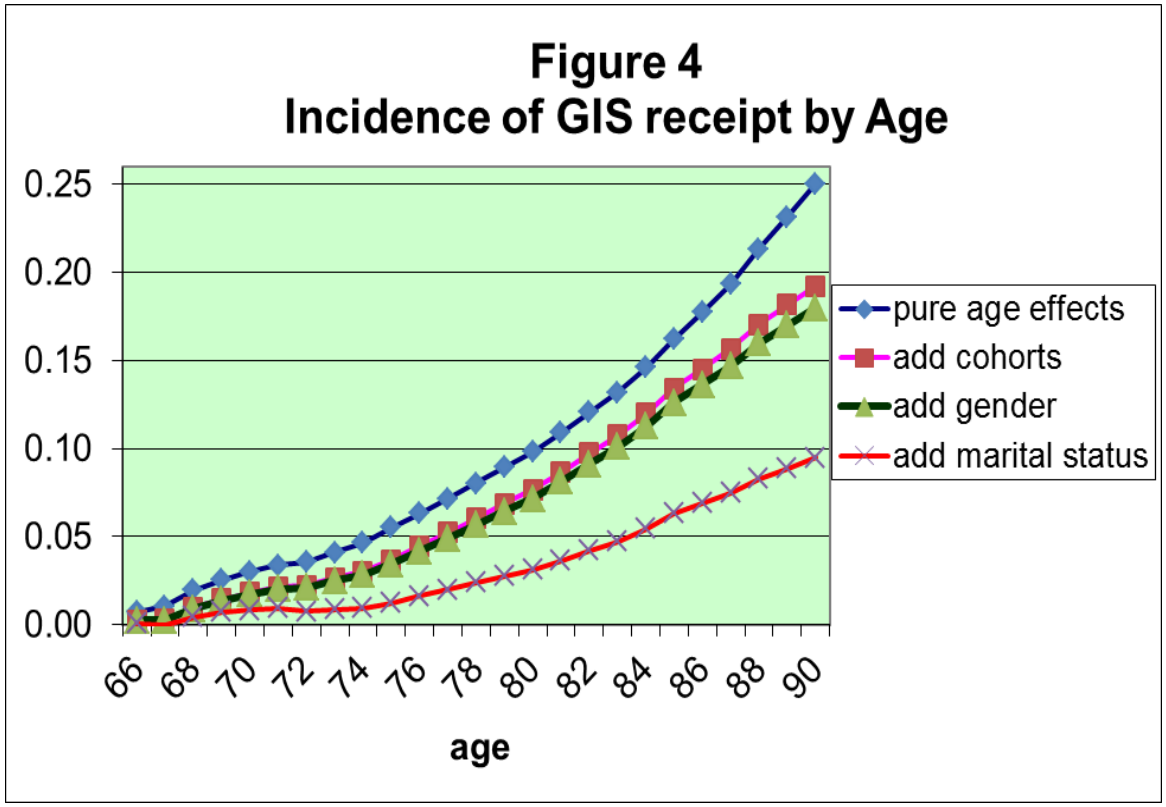


Figure 4
Incidence of GIS receipt by Age
0.25
0.20
0.15
0.10
0.05
0.00
66
68
70
72
74
76
78
80
82
84
86
88
90
age
pure age effects
add cohorts
add gender
add marital status

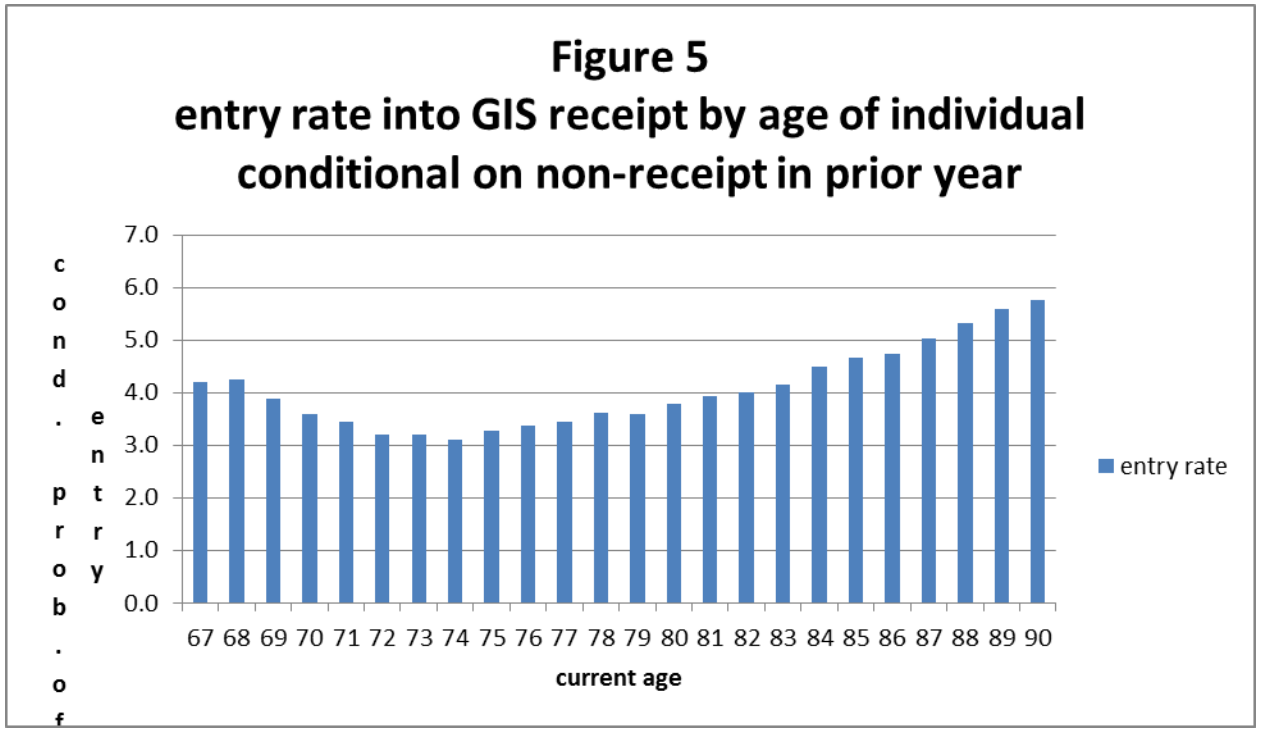


Figure 5
entry rate into GIS receipt by age of individual
conditional on non-receipt in prior year
cond. prob. of entry
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90
current age
entry rate

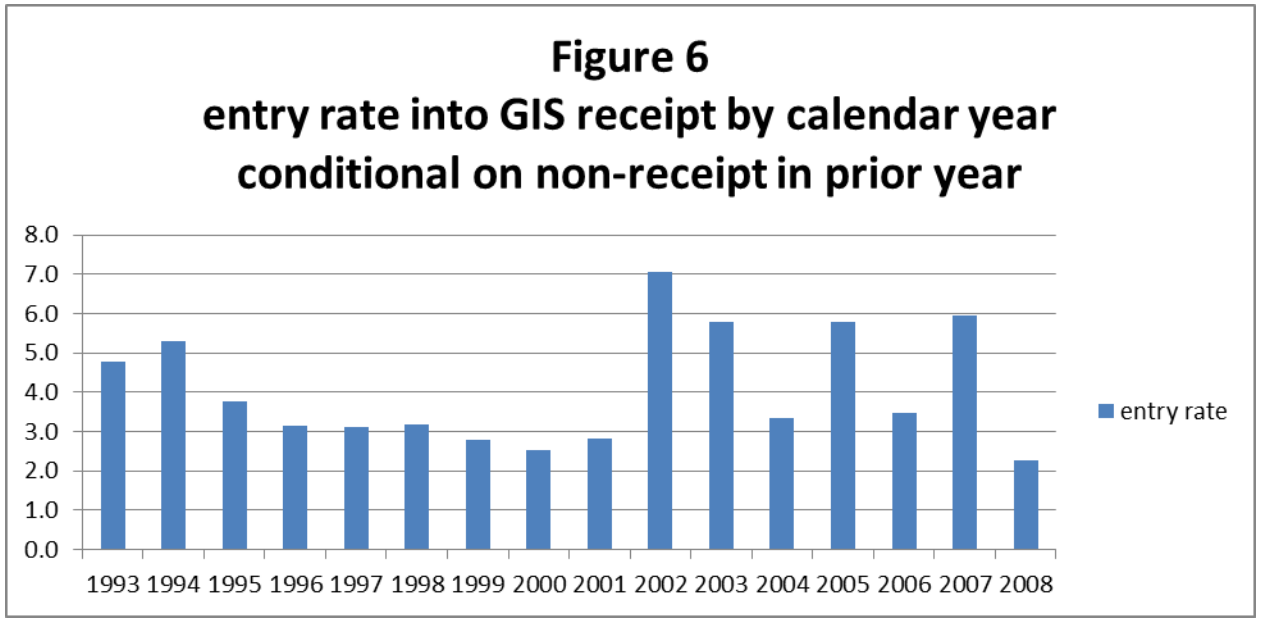
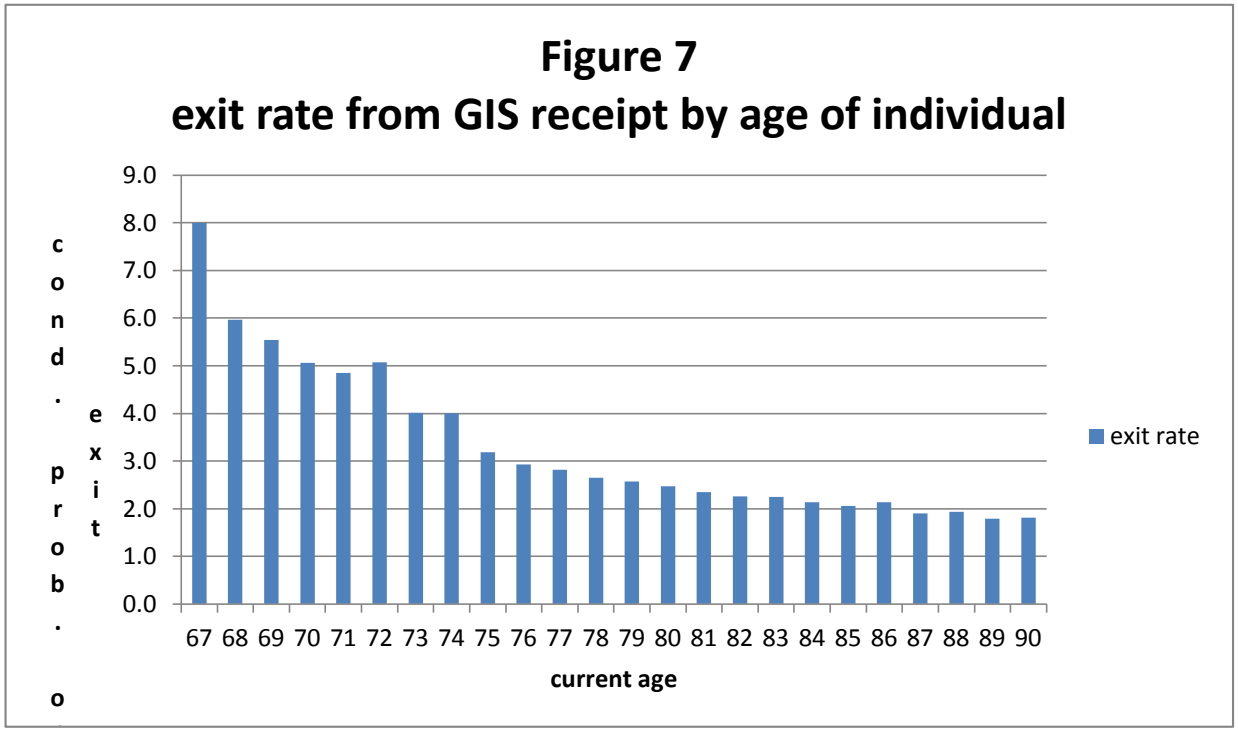


Figure 6
entry rate into GIS receipt by calendar year
conditional on non-receipt in prior year
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008
entry rate

Figure 7
exit rate from GIS receipt by age of individual



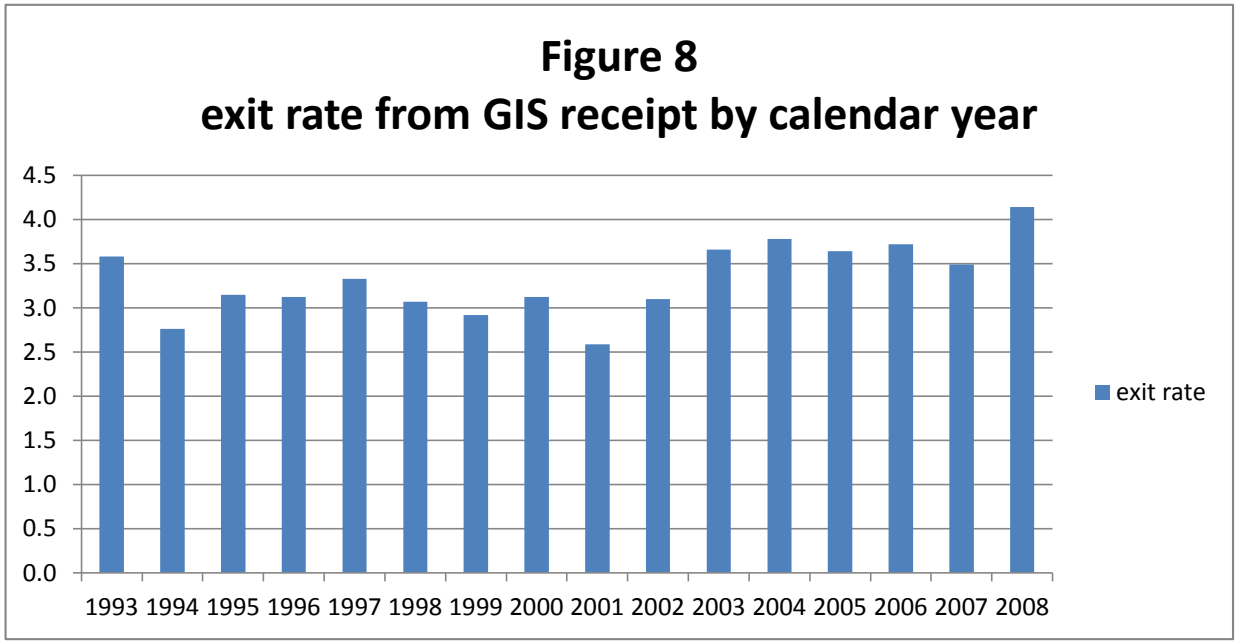


Figure 8
exit rate from GIS receipt by calendar year
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008
exit rate

Figure 9
Duration effects on the hazard probability of exit or re-exit

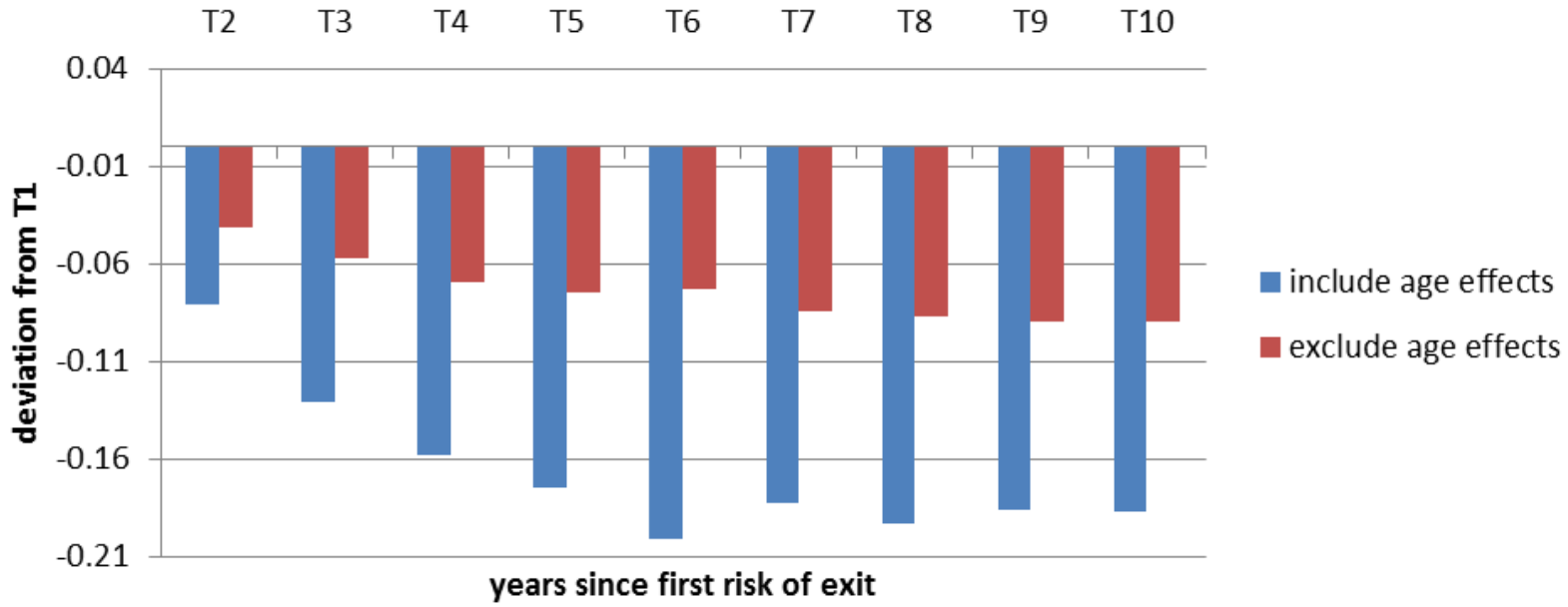


Figure 10
age effects on hazard probability of entry conditional on non-receipt at age 66

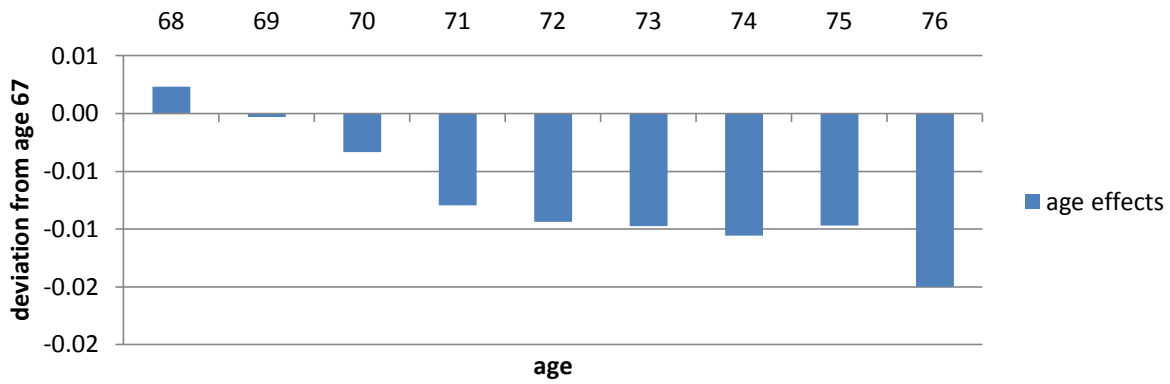


Table 1

GIS incidence based on broad sample (1982 - 2008 cohorts)

Linear Probability Model (standard errors clustered by individual in lower row)

	only age	age + cohort	add gender	add marital status	add province	add immig. status
age in current year (65 omitted)						
age66	0.007***	0.003***	0.002***	0.001**	0.001***	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
age67	0.011***	0.003***	0.003***	-0.000	0.000	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
age68	0.020***	0.010***	0.009***	0.004***	0.005***	0.003***
	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)
age69	0.026***	0.015***	0.014***	0.007***	0.008***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age70	0.030***	0.018***	0.017***	0.008***	0.010***	0.006***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age71	0.034***	0.021***	0.020***	0.009***	0.010***	0.006***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age72	0.036***	0.022***	0.021***	0.007***	0.009***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age73	0.041***	0.027***	0.025***	0.009***	0.010***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age74	0.047***	0.030***	0.028***	0.009***	0.011***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age75	0.055***	0.037***	0.034***	0.012***	0.014***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)

age76	0.063***	0.045***	0.042***	0.016***	0.019***	0.011***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age77	0.072***	0.052***	0.049***	0.020***	0.023***	0.015***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age78	0.080***	0.060***	0.057***	0.024***	0.027***	0.019***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age79	0.089***	0.069***	0.064***	0.028***	0.030***	0.023***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age80	0.098***	0.077***	0.072***	0.031***	0.034***	0.026***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age81	0.109***	0.087***	0.081***	0.036***	0.040***	0.032***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age82	0.121***	0.097***	0.091***	0.042***	0.046***	0.038***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age83	0.132***	0.108***	0.101***	0.047***	0.051***	0.043***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age84	0.146***	0.120***	0.113***	0.055***	0.058***	0.050***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age85	0.162***	0.134***	0.126***	0.063***	0.067***	0.059***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age86	0.177***	0.145***	0.136***	0.069***	0.073***	0.065***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
age87	0.193***	0.157***	0.147***	0.075***	0.079***	0.071***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
age88	0.213***	0.170***	0.160***	0.083***	0.087***	0.079***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
age89	0.231***	0.182***	0.170***	0.089***	0.094***	0.086***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)

age90	0.251***	0.192***	0.180***	0.095***	0.100***	0.092***
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
cohort effects - year turning 65 (2001 omitted)						
coh1982		0.050***	0.047***	0.035***	0.034***	0.041***
		(0.004)	(0.004)	(0.004)	(0.003)	(0.003)
coh1983		0.046***	0.043***	0.031***	0.031***	0.038***
		(0.004)	(0.004)	(0.003)	(0.003)	(0.003)
coh1984		0.023***	0.021***	0.010***	0.014***	0.021***
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1985		0.015***	0.012***	0.003	0.010***	0.016***
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1986		0.007**	0.004	-0.004	0.001	0.007**
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1987		0.002	-0.000	-0.008***	-0.003	0.003
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1988		-0.005*	-0.008**	-0.014***	-0.007**	-0.001
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1989		0.002	0.000	-0.006**	-0.001	0.003
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1990		0.004	0.002	-0.004	0.002	0.006**
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1991		0.004	0.003	-0.003	0.002	0.006**
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1992		0.003	0.003	-0.001	0.002	0.006**
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1993		0.004	0.003	-0.001	0.002	0.005*
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1994		0.001	0.000	-0.002	0.001	0.004

	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1995	-0.000	-0.000	-0.002	0.002	0.004*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1996	-0.000	-0.000	-0.002	-0.002	0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1997	0.001	0.001	0.000	0.002	0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1998	0.001	0.001	0.000	0.002	0.004
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1999	0.006**	0.006**	0.005*	0.007**	0.008***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh2000	0.003	0.003	0.002	0.003	0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh2002	-0.001	-0.001	-0.001	0.000	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh2003	-0.003	-0.003	-0.003	-0.003	-0.005*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh2004	-0.011***	-0.011***	-0.011***	-0.014***	-0.016***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh2005	-0.022***	-0.021***	-0.022***	-0.024***	-0.026***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh2006	-0.031***	-0.030***	-0.032***	-0.035***	-0.038***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh2007	-0.041***	-0.041***	-0.042***	-0.044***	-0.047***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh2008	-0.062***	-0.062***	-0.063***	-0.062***	-0.065***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
gender and marital status (single male omitted)					

female	0.081***			
	(0.001)			
female single		0.090***	0.100***	0.099***
		(0.002)	(0.002)	(0.002)
male with partner		-0.141***	-0.129***	-0.129***
		(0.002)	(0.001)	(0.001)
female with partner		-0.142***	-0.128***	-0.129***
		(0.002)	(0.002)	(0.002)
province (ON omitted)				
nfld			0.318***	0.320***
			(0.003)	(0.003)
pei			0.151***	0.152***
			(0.007)	(0.007)
ns			0.127***	0.129***
			(0.003)	(0.003)
Nb			0.163***	0.164***
			(0.003)	(0.003)
Que			0.198***	0.203***
			(0.001)	(0.001)
Man			0.065***	0.069***
			(0.002)	(0.002)
Sask			0.060***	0.062***
			(0.002)	(0.002)
Alb			0.052***	0.054***
			(0.002)	(0.002)
Bc			0.027***	0.025***
			(0.001)	(0.001)
Terr			0.121***	0.123***

	(0.013)	(0.013)
non resident of Canada	-0.268***	-0.263***
	(0.002)	(0.002)
minority language status (majority language status omitted)		
Eng in que	-0.123***	-0.124***
	(0.002)	(0.002)
Fr outside que	0.135***	0.137***
	(0.004)	(0.004)
area size of residence (over 500,000 omitted)		
100,000-500,000	-0.011***	-0.005***
	(0.001)	(0.001)
30,000-100,000	0.043***	0.050***
	(0.001)	(0.001)
15,000-30,000	0.049***	0.056***
	(0.002)	(0.002)
1,000-15,000	0.110***	0.117***
	(0.001)	(0.001)
below 1,000	0.166***	0.172***
	(0.001)	(0.001)
immigration status (native-born and early immigrants omitted)		
past 5 years		-0.235***
		(0.001)
6 to 10 years		-0.049***
		(0.002)
11-15 years		0.527***

						(0.002)
constant	0.316***	0.327***	0.285***	0.417***	0.293***	0.287***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Adjusted R^2	0.008	0.009	0.016	0.052	0.107	0.125

notes: *** p<0.01, ** p<0.05, * p<0.1; N = 11,065,782

Table 2

GIS incidence based on narrow sample (1997 - 2008 cohorts)

Linear Probability Model (standard errors clustered by individual in lower row)

	OLS linear probability model			logit model - marginal effects		
	one	**Two**	**three**	**four**	**five**	**six**
gender and family status - single male omitted						
single female	0.074	-0.034	-0.023	0.070	-0.051	-0.045
	0.003	0.002	0.001	0.003	0.002	0.003
male with partner	-0.143	-0.045	-0.041	-0.118	-0.044	-0.043
	0.002	0.002	0.001	0.001	0.002	0.003
female with partner	-0.153	-0.265	-0.252	-0.125	-0.220	-0.259
	0.002	0.002	0.001	0.002	0.001	0.001
immigration status – native-born and early immigrants omitted						
past 5 years	0.119	-0.003	-0.007	0.128	-0.014	-0.030
	0.098	0.098	0.049	0.112	0.119	0.129
6-10 years ago	0.329	0.124	0.116	0.358	0.150	0.141
	0.036	0.032	0.023	0.036	0.042	0.041
11-15 years ago	0.477	0.238	0.232	0.499	0.295	0.285
	0.007	0.007	0.005	0.006	0.010	0.009

minority language status - majority language status omitted						
English in QU	-0.061	-0.040	-0.044	-0.050	-0.043	-0.056
	0.004	0.003	0.001	0.003	0.004	0.004
French in RoC	0.102	0.072	0.070	0.105	0.091	0.097
	0.007	0.006	0.002	0.007	0.008	0.008
provinces - Ontario omitted						
nfld	0.310	0.213	0.206	0.335	0.280	0.275
	0.005	0.004	0.002	0.005	0.006	0.005
pei	0.112	0.046	0.043	0.124	0.061	0.062
	0.010	0.009	0.004	0.011	0.011	0.011
ns	0.116	0.070	0.066	0.132	0.097	0.097
	0.004	0.003	0.001	0.004	0.005	0.005
nb	0.157	0.102	0.097	0.173	0.138	0.139
	0.005	0.004	0.002	0.005	0.005	0.005
que	0.163	0.111	0.114	0.184	0.156	0.170
	0.002	0.002	0.001	0.002	0.002	0.002
man	0.070	0.033	0.038	0.081	0.049	0.061
	0.003	0.003	0.001	0.004	0.004	0.004
sask	0.055	0.022	0.027	0.065	0.030	0.041
	0.004	0.003	0.001	0.004	0.004	0.005
alb	0.036	0.021	0.023	0.043	0.031	0.036
	0.002	0.002	0.001	0.003	0.003	0.003
bc	0.018	0.015	0.019	0.022	0.022	0.030
	0.002	0.002	0.001	0.002	0.003	0.003

terr	0.072	0.034	0.024	0.079	0.038	0.024
	0.016	0.013	0.006	0.016	0.018	0.019
non-residents of Canada						
	-0.234	-0.307	-0.311	-0.280	-0.308	-0.383
	0.003	0.007	0.004	0.001	0.001	0.001
area size of residence - over 500,000 omitted						
100,000-500,000	-0.005	-0.015	-0.014	-0.006	-0.019	-0.020
	0.002	0.002	0.001	0.002	0.002	0.002
30,000-100,000	0.041	0.015	0.015	0.045	0.021	0.025
	0.002	0.002	0.001	0.002	0.003	0.003
15,000-30,000	0.040	0.013	0.013	0.045	0.018	0.021
	0.003	0.003	0.001	0.003	0.004	0.004
1,000-15,000	0.085	0.039	0.038	0.094	0.051	0.056
	0.002	0.002	0.001	0.002	0.002	0.002
below 1,000	0.143	0.072	0.071	0.156	0.089	0.096
	0.002	0.002	0.001	0.002	0.002	0.003
permanent income - ages 50-52 years - 30-40 k omitted						
negative-0 k		0.436	0.376		0.481	0.397
		0.003	0.001		0.003	0.003
0-10 k		0.286	0.227		0.341	0.261
		0.002	0.001		0.003	0.003
10-20 k		0.200	0.161		0.242	0.195

		0.002	0.001	0.003	0.003
20-30 k		0.109	0.091	0.131	0.115
		0.003	0.001	0.003	0.003
40-50 k		-0.085	-0.073	-0.094	-0.094
		0.002	0.001	0.002	0.003
50-60 k		-0.156	-0.135	-0.162	-0.171
		0.002	0.001	0.002	0.003
60-70 k		-0.208	-0.180	-0.210	-0.232
		0.002	0.001	0.002	0.002
70-80 k		-0.243	-0.212	-0.242	-0.277
		0.002	0.001	0.002	0.002
80-90 k		-0.266	-0.234	-0.264	-0.311
		0.002	0.001	0.002	0.002
90-100 k		-0.279	-0.248	-0.274	-0.327
		0.003	0.001	0.002	0.003
100-150 k		-0.288	-0.262	-0.282	-0.341
		0.002	0.001	0.001	0.002
150 k +		-0.297	-0.268	-0.291	-0.354
		0.002	0.001	0.001	0.002
labour market status when 50-52 years old					
self-employed			-0.065		-0.089
			0.001		0.002
EI receipt			0.056		0.070
			0.001		0.002
unionized			-0.048		-0.074
			0.001		0.002

contributed to RRSP			-0.082			-0.116
			0.001			0.002
constant	0.301***	0.330***	0.380***			
	(0.003)	(0.003)	(0.002)			
R-bar squared	0.087	0.253	0.262	0.070	0.226	0.236

notes: *** p<0.01, ** p<0.05, * p<0.1; standard errors reported in parentheses; N = 2,993,490

Table 3a

relative frequencies of # of years taking GIS over a 5-year period when aged 66-70

	0 years	1 years	2 years	3 years	4 years	5 years	proportion of persistent beneficiaries
Overall	58.6	4.8	3.8	3.3	3.3	26.2	71.3
Cohort							
1991	59.1	4	3.3	3.2	3.6	26.8	74.3
1992	59	3.9	3.5	3	3.7	26.9	74.6
1993	58.9	4.2	3.4	2.9	3.1	27.5	74.5
1994	60.1	4	3.3	2.6	3.1	26.8	74.9
1995	60.2	4.2	3.3	2.9	3	26.3	73.6
1996	60.3	4.2	3.1	2.7	3.1	26.5	74.6
1997	59.4	5.4	3.3	2.8	2.9	26.3	71.9
1998	58.6	5.4	4.5	2.9	3	25.5	68.8
1999	57.6	5	4.3	4.2	3.3	25.6	68.2
2000	57.1	5.4	4.2	3.9	3.6	25.7	68.3
2001	57.5	5.1	4.6	3.8	3.6	25.5	68.5
2002	56.9	5.7	4.3	4.1	3.6	25.5	67.5
2003	57.3	5.4	4.4	3.9	3.5	25.5	67.9
Gender & Marital Status at age 66							
Single Male	47.2	4	3.4	3.2	3.7	38.6	80.1
Single Female	42.3	4	3.3	3.1	3.3	44	82.0
Male with a spouse	62.1	5.5	4.2	3.9	3.9	20.5	64.4
Female with a spouse	65.9	4.6	3.7	2.9	2.6	20.3	67.2
Immigration Status at age 66							

recent immigrant - < 5 years	89.8	3	1.6	1.2	1.5	3	44.1
landed for 6-10 years	19	13.9	15.5	16.5	15.8	19.3	43.3
landed for 10-15 years	13.5	1.8	1.7	2.6	3.8	76.6	92.9
Canadian born or landed over 15 years	59.2	4.7	3.7	3.2	3.1	26.1	71.6
Province at age 66							
NF	30.5	3.4	3.1	3.1	3	56.9	86.2
PEI	46.5	4.8	3.6	3.6	4	37.5	77.6
NS	51.2	4.4	3.3	3.2	3.1	34.8	77.7
NB	45.5	4.4	3.4	3.1	3	40.5	79.8
QC	47.3	4.6	3.9	3.4	3.7	37.1	77.4
ON	66.7	4.9	3.8	3.2	3	18.3	64.0
MN	58	5	4	3.4	3.3	26.2	70.2
SK	57.1	4.6	4	3.8	3.9	26.7	71.3
AB	60.7	5	3.8	3.4	3.4	23.7	69.0
BC	64.3	5	3.9	3.4	3.3	20.1	65.5
Territories	44.8	5	5.4	4.8	4.4	35.5	72.3
Non-resident	95.8	1.5	1.6	1			0.0
Area Size of Residence at age 66							
Urban, 500,000 and more	62.6	4.7	3.7	3.2	3.2	22.6	69.0
Urban, 100,000-499,999	65	4.7	3.7	3.1	2.9	20.7	67.4
Urban, 30,000-99,999	57.9	4.9	4	3.3	3.3	26.6	71.0
Urban, 15,000-29,999	55.7	4.8	4.1	3.4	3.2	28.9	72.5
Urban, 1,000-14,999	50.3	4.7	4	3.5	3.7	33.8	75.5
Rural, below 1,000	44.3	5.3	4.1	3.8	4.1	38.3	76.1
Minority Language at age 66							
Majority	58.8	4.8	3.8	3.3	3.3	26	71.1
English in QC	57.9	4.7	3.8	3.2	3.4	26.9	72.0
French outside QC	43.2	3.8	3.4	2.9	3.2	43.6	82.4

# of years in low income status - non-elderly adult population - 1992-1996	73.6	8.1	5	3.9	3.6	5.9	36.0

Notes:

1. For Individuals who were either a tax filer or an imputed person in each year of the 5-year period.
2. All information on characteristics is based on the status of the person in the first year of the 5-year period.
3. The proportion of beneficiaries who are persistent users is calculated as the sum of those who claimed 4 of 5 years divided by the number of total beneficiaries

Table 3b

relative frequencies of # of years taking GIS over a 5-year period when aged 71-75

	0 year	1 year	2 years	3 years	4 years	5 years	proportion of persistent beneficiaries
Overall	59.1	3.6	2.9	2.5	2.3	29.5	77.8
Cohort							
1986	58.8	2.9	2.5	2.6	2.4	30.9	80.8
1987	59.7	2.8	2.5	2.2	2.4	30.4	81.4
1988	60.5	3	2.5	2.3	2.1	29.5	80.0
1989	60.4	2.8	2.5	2.2	1.9	30.1	80.8
1990	60.7	2.8	2.5	2.2	2.1	29.8	81.2
1991	61	3	2.4	2.1	2.1	29.4	80.8
1992	59.8	4.4	2.8	2	1.8	29.3	77.4
1993	59.1	4.2	3.6	2.2	1.8	29.1	75.6
1994	59.4	3.5	3.7	3.3	2	28	73.9
1995	57.8	4.6	2.8	3.4	3.2	28.2	74.4
1996	58	4	3.4	2.3	3	29.3	76.9
1997	57	4.7	2.8	3.2	2.3	30	75.1
1998	57.5	3.6	3.5	2.5	2.7	30.1	77.2
Gender & Marital Status at age 71							
Single Male	50.2	3.5	2.4	2.4	2.4	39.1	83.3
Single Female	43.3	3.2	2.5	2.3	2.3	46.4	85.9
Male with a spouse	66.2	4.1	3	2.6	2.4	21.8	71.6
Female with a spouse	65.6	3.4	3.3	2.6	2.2	22.9	73.0

Immigration Status at age 71							
recent immigrant (0-5 years)	88.5	3.2	1.7	1.1	1.2	4.3	47.8
landed for 6-10 years	17.4	12.6	14	15.9	16	24.1	48.5
landed for 10-15 years	11.4	1.3	1.3	1.5	2	82.7	95.6
Canadian born or landed over 15 years	60	3.5	2.8	2.4	2.1	29.2	78.3
Province at age 71							
NF	29	2.6	2	1.7	1.6	63.1	91.1
PEI	45.1	3.2	2.5	1.7	1.8	45.7	86.5
NS	51.1	3.3	2.6	2.4	1.8	38.8	83.0
NB	45.5	3	2.6	2.3	2.1	44.5	85.5
QC	47.2	3.5	2.9	2.5	2.4	41.5	83.1
ON	67.8	3.6	2.8	2.5	2.2	21.1	72.4
MN	59.2	3.8	2.8	2.6	2.4	29.2	77.5
SK	57.4	3.8	3.3	2.9	2.9	29.7	76.5
AB	59.9	4.1	3.1	2.7	2.5	27.6	75.1
BC	64.7	3.8	3.1	2.6	2.3	23.6	73.4
Territories	44.6	2.4	3.6	2.1	2.1	45.2	85.4
Non-resident	96.4	1.5	1.3				0.0
Area Size of Residence at age 71							
Urban, 500,000 and more	63	3.5	2.9	2.5	2.3	25.9	76.2
Urban, 100,000-499,999	66.8	3.6	2.8	2.4	1.9	22.5	73.5
Urban, 30,000-99,999	58.7	3.8	3.1	2.6	2.2	29.6	77.0
Urban, 15,000-29,999	56.4	3.7	2.7	2.6	2.3	32.4	79.6
Urban, 1,000-14,999	50.2	3.5	2.8	2.6	2.5	38.4	82.1
Rural, below 1,000	43.2	3.8	3	2.7	2.8	44.4	83.1

Minority Language at age 71							
Majority	59.3	3.6	2.9	2.5	2.3	29.4	77.9
English in QC	60.5	3.5	2.7	2.4	2.3	28.5	78.0
French outside QC	42.2	2.7	2.4	2.2	2.3	48.2	87.4

Notes:

1. For Individuals who were either a tax filer or an imputed person in each year of the 5-year period.
2. All information on characteristics is based on the status of the person in the first year of the 5-year period.
3. The proportion of beneficiaries who are persistent users is calculated as the sum of those who claimed 4 or 5 years divided by the number of total beneficiaries.

Table 4

Regression Estimates of annual Entry/Exit probabilities

linear probability model, broad sample (1982-2008 cohorts)

	initial entry	annual entry	annual exit	initial entry	annual entry	annual exit	initial entry	annual entry	annual exit
	men and women			men			women		
age of individual									
67 omitted									
68		0.001***	-0.019***		0.002***	-0.012***		0.000***	-0.025***
		(0.000)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
69		-0.002***	-0.022***		-0.003***	-0.011***		-0.001***	-0.031***
		(0.000)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
70		-0.004***	-0.026***		-0.006***	-0.015***		-0.002***	-0.035***
		(0.000)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
71		-0.004***	-0.027***		-0.007***	-0.019***		-0.002***	-0.033***
		(0.000)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
72		-0.005***	-0.023***		-0.008***	-0.015***		-0.003***	-0.029***
		(0.000)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
73		-0.004***	-0.033***		-0.008***	-0.027***		-0.001***	-0.038***
		(0.000)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
74		-0.005***	-0.032***		-0.008***	-0.027***		-0.001***	-0.035***
		(0.000)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
75		-0.002***	-0.039***		-0.006***	-0.036***		0.001***	-0.041***
		(0.000)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
76		-0.001	-0.040***		-0.005***	-0.041***		0.004***	-0.040***
		(0.000)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
77		0.000	-0.041***		-0.005***	-0.041***		0.005***	-0.041***
		(0.000)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
78		0.001**	-0.042***		-0.004***	-0.044***		0.006***	-0.042***
		(0.000)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
79		0.002***	-0.042***		-0.004***	-0.044***		0.007***	-0.041***
		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
80		0.004***	-0.041***		-0.003***	-0.045***		0.009***	-0.041***
		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
81		0.006***	-0.042***		0.000	-0.047***		0.011	-0.041***
		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
82		0.008***	-0.042***		0.002*	-0.047***		0.015*	-0.041***
		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
83		0.010***	-0.041***		0.003***	-0.047***		0.017***	-0.039***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
84		0.015***	-0.040***		0.007***	-0.045***		0.021***	-0.039***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
85		0.018***	-0.040***		0.010***	-0.044***		0.026***	-0.039***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
86		0.013***	-0.038***		0.010***	-0.042***		0.016***	-0.037***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
87		0.013***	-0.039***		0.008***	-0.043***		0.018***	-0.039***
		(0.001)	(0.001)		(0.002)	(0.002)		(0.002)	(0.001)

88		0.014***	-0.038***		0.011***	-0.040***		0.017***	-0.039***
		(0.002)	(0.001)		(0.002)	(0.003)		(0.002)	(0.001)
89		0.011***	-0.037***		0.008***	-0.045***		0.015***	-0.035***
		(0.002)	(0.001)		(0.003)	(0.003)		(0.003)	(0.002)
cohort - year turning 65									
2001 omitted									
1982		-0.014***	-0.020***		-0.018***	-0.020***		-0.011***	-0.018***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
1983		-0.015***	-0.019***		-0.019***	-0.021***		-0.012***	-0.016***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
1984		-0.016***	-0.015***		-0.019***	-0.016***		-0.014***	-0.014***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
1985		-0.017***	-0.015***		-0.020***	-0.016***		-0.014***	-0.014***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
1986		-0.017***	-0.014***		-0.020***	-0.015***		-0.014***	-0.013***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
1987		-0.016***	-0.013***		-0.018***	-0.015***		-0.014***	-0.011***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
1988		-0.016***	-0.012***		-0.018***	-0.014***		-0.014***	-0.010***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
1989		-0.014***	-0.013***		-0.017***	-0.015***		-0.012***	-0.010***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
1990		-0.013***	-0.011***		-0.015***	-0.013***		-0.011***	-0.009***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
1991		-0.012***	-0.011***		-0.014***	-0.013***		-0.010***	-0.008***
		(0.001)	(0.001)		(0.001)	(0.002)		(0.001)	(0.001)
1992	0.026***	-0.012***	-0.010***	0.025***	-0.013***	-0.014***	0.026***	-0.010***	-0.007***
	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.002)	(0.004)	(0.001)	(0.001)
1993	0.032***	-0.013***	-0.010***	0.036***	-0.015***	-0.014***	0.028***	-0.011***	-0.007***
	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.002)	(0.004)	(0.001)	(0.001)
1994	0.027***	-0.012***	-0.009***	0.025***	-0.015***	-0.013***	0.028***	-0.009***	-0.006***
	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.002)	(0.004)	(0.001)	(0.001)
1995	0.017***	-0.010***	-0.008***	0.019***	-0.011***	-0.012***	0.015***	-0.008***	-0.005***
	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.002)	(0.004)	(0.001)	(0.001)
1996	0.014***	-0.010***	-0.008***	0.013***	-0.012***	-0.010***	0.015***	-0.007***	-0.006***
	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.002)	(0.004)	(0.001)	(0.001)
1997	0.016***	-0.008***	-0.006***	0.016***	-0.009***	-0.008***	0.016***	-0.007***	-0.005***
	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.002)	(0.004)	(0.001)	(0.001)
1998	0.011***	-0.006***	-0.005***	0.016***	-0.007***	-0.010***	0.007***	-0.004***	-0.002***
	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.002)	(0.004)	(0.001)	(0.001)
1999	0.006**	-0.003***	-0.004***	0.010**	-0.005***	-0.008***	0.003**	-0.001***	-0.002***
	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.002)	(0.004)	(0.001)	(0.001)
2000	0.007**	-0.002***	-0.002	0.007	-0.002*	-0.003*	0.007	-0.003*	-0.000*
	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.002)	(0.004)	(0.001)	(0.001)
2002	-0.005	0.002**	-0.002	-0.008*	0.003**	-0.003	-0.002*	0.000**	-0.000
	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.002)	(0.004)	(0.001)	(0.002)
2003	0.001	0.002**	0.003**	-0.015***	0.005***	-0.000	0.016***	-0.001***	0.006

	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.002)	(0.004)	(0.001)	(0.002)
2004	-0.014***	-0.002*	-0.007***	-0.022***	-0.002	-0.010***	-0.007***	-0.002	-0.005***
	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.002)	(0.004)	(0.001)	(0.002)
2005	-0.016***	-0.004***	-0.002	-0.031***	0.001	-0.010***	-0.002***	-0.008	0.005***
	(0.003)	(0.001)	(0.002)	(0.004)	(0.001)	(0.003)	(0.004)	(0.001)	(0.002)
2006	-0.028***	-0.003**	-0.013***	-0.038***	0.004**	-0.016***	-0.018***	-0.010**	-0.011***
	(0.003)	(0.001)	(0.002)	(0.004)	(0.002)	(0.004)	(0.004)	(0.002)	(0.003)
2007	-0.028***			-0.043***			-0.013***		
	(0.003)			(0.004)			(0.004)		
sex-marital status									
male stay single omitted									
male stay couple	-0.155***	-0.005***	0.038***	-0.155***	-0.006***	0.037***			
	(0.002)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)			
male single to couple	0.005	0.245***	-0.003**	0.006	0.244***	-0.004***			
	(0.009)	(0.004)	(0.001)	(0.009)	(0.004)	(0.001)			
male couple to single	-0.066***	0.002*	0.168***	-0.066***	0.002**	0.169***			
	(0.008)	(0.001)	(0.003)	(0.008)	(0.001)	(0.003)			
female stay single	0.051***	0.007***	0.003***						
	(0.002)	(0.000)	(0.000)						
female stay couple	-0.176***	-0.004***	0.016***				-0.228***	-0.010***	0.013***
	(0.002)	(0.000)	(0.000)				(0.002)	(0.000)	(0.000)
female single to couple	0.130***	0.199***	-0.001				0.078	0.194***	-0.003***
	(0.010)	(0.004)	(0.001)				(0.010)	(0.004)	(0.001)
female couple to single	0.112***	0.088***	0.028***				0.061***	0.082**	0.025***
	(0.006)	(0.001)	(0.001)				(0.006)	(0.001)	(0.001)
province									
ON omitted									
nfld	0.305***	0.017***	-0.038***	0.320***	0.017***	-0.048***	0.288***	0.017***	-0.030***
	(0.004)	(0.001)	(0.001)	(0.006)	(0.002)	(0.001)	(0.006)	(0.002)	(0.001)
pei	0.116***	0.003**	-0.023***	0.126***	0.004*	-0.030***	0.107***	0.003*	-0.018***
	(0.009)	(0.002)	(0.001)	(0.012)	(0.002)	(0.002)	(0.012)	(0.002)	(0.002)
ns	0.121***	0.003***	-0.021***	0.126***	0.002**	-0.028***	0.116***	0.004**	-0.017***
	(0.003)	(0.001)	(0.001)	(0.005)	(0.001)	(0.001)	(0.005)	(0.001)	(0.001)
nb	0.168***	0.006***	-0.022***	0.181***	0.005***	-0.031***	0.156***	0.007***	-0.017***
	(0.004)	(0.001)	(0.001)	(0.006)	(0.001)	(0.001)	(0.005)	(0.001)	(0.001)
que	0.180***	0.017***	-0.023***	0.186***	0.015***	-0.028***	0.174***	0.018***	-0.019***
	(0.001)	(0.000)	(0.000)	(0.002)	(0.000)	(0.001)	(0.002)	(0.000)	(0.000)
man	0.066***	0.007***	-0.007***	0.075***	0.006***	-0.011***	0.057***	0.008***	-0.005***
	(0.003)	(0.000)	(0.001)	(0.004)	(0.001)	(0.001)	(0.004)	(0.001)	(0.001)
sask	0.051***	0.009***	-0.007***	0.057***	0.010***	-0.010***	0.045***	0.009***	-0.006***
	(0.003)	(0.001)	(0.001)	(0.005)	(0.001)	(0.001)	(0.004)	(0.001)	(0.001)
alb	0.036***	0.007***	-0.005***	0.036***	0.006***	-0.007***	0.037***	0.007***	-0.003***

	(0.002)	(0.000)	(0.001)	(0.003)	(0.000)	(0.001)	(0.003)	(0.000)	(0.001)
bc	0.011***	0.002***	-0.006***	0.009***	0.002***	-0.009***	0.014***	0.002***	-0.003***
	(0.002)	(0.000)	(0.000)	(0.002)	(0.000)	(0.001)	(0.002)	(0.000)	(0.001)
territories	0.085***	0.019***	-0.007*	0.082***	0.023***	-0.016***	0.089***	0.014***	0.002***
	(0.015)	(0.004)	(0.004)	(0.020)	(0.006)	(0.005)	(0.023)	(0.006)	(0.005)
non-resident on CN	-0.232***	-0.031***	0.677***	-0.218***	-0.029***	0.733***	-0.250***	-0.033***	0.624***
	(0.005)	(0.001)	(0.027)	(0.006)	(0.001)	(0.034)	(0.008)	(0.001)	(0.040)
linguistic status majority language omitted									
eng in que	-0.079***	-0.011***	0.010***	-0.072***	-0.010***	0.008***	-0.087***	-0.013***	0.011***
	(0.003)	(0.000)	(0.001)	(0.005)	(0.001)	(0.001)	(0.004)	(0.001)	(0.001)
french out of que	0.112***	0.007***	-0.015***	0.114***	0.007***	-0.018***	0.110***	0.008***	-0.014***
	(0.006)	(0.001)	(0.001)	(0.008)	(0.002)	(0.002)	(0.008)	(0.002)	(0.001)
area size of residence									
500 K + omitted									
100-500 k	0.005***	0.001***	0.010***	0.006***	-0.002***	0.011***	0.003***	0.003***	0.009***
	(0.002)	(0.000)	(0.000)	(0.002)	(0.000)	(0.001)	(0.002)	(0.000)	(0.000)
30-100 k	0.050***	0.007***	0.002***	0.051***	0.005***	0.004***	0.050***	0.008***	0.001***
	(0.002)	(0.000)	(0.000)	(0.003)	(0.000)	(0.001)	(0.003)	(0.000)	(0.001)
15-100 k	0.050***	0.006***	0.001**	0.049***	0.005***	0.004***	0.050***	0.006***	-0.000***
	(0.003)	(0.001)	(0.001)	(0.005)	(0.001)	(0.001)	(0.004)	(0.001)	(0.001)
1-15 k	0.100***	0.013***	-0.004***	0.099***	0.013***	-0.006***	0.100***	0.013***	-0.004***
	(0.002)	(0.000)	(0.000)	(0.002)	(0.000)	(0.001)	(0.002)	(0.000)	(0.000)
1 k and below	0.152***	0.019***	-0.009***	0.147***	0.020***	-0.012***	0.158***	0.017***	-0.007***
	(0.002)	(0.000)	(0.000)	(0.003)	(0.001)	(0.001)	(0.003)	(0.001)	(0.000)
immigration status native omitted									
imm recent arrival	-0.218***	-0.019***	0.044***	-0.189***	-0.018***	0.052***	-0.246***	-0.020***	0.041***
	(0.002)	(0.000)	(0.006)	(0.003)	(0.001)	(0.013)	(0.004)	(0.001)	(0.007)
imm arr. 6-10 years ago	-0.049***	0.121***	-0.015***	-0.052***	0.115***	-0.024***	-0.046***	0.127***	-0.009***
	(0.004)	(0.001)	(0.002)	(0.006)	(0.001)	(0.004)	(0.006)	(0.001)	(0.002)
imm arrive 11-15 years ago	0.537***	0.198***	-0.050***	0.504***	0.182***	-0.065***	0.561***	0.215***	-0.039***
	(0.004)	(0.003)	(0.000)	(0.007)	(0.004)	(0.001)	(0.005)	(0.005)	(0.000)
constant	0.322***	0.037***	0.079***	0.323***	0.043***	0.084***	0.372***	0.037***	0.080***
	(0.003)	(0.001)	(0.001)	(0.004)	(0.001)	(0.002)	(0.003)	(0.001)	(0.001)
Number of obs.	742,675	5,735,715	3,295,760	358,505	2,712,710	1,263,810	384,170	3,023,005	2,031,945

notes: *** p<0.01, ** p<0.05, * p<0.1; standard errors in ( ); OLS regression with clustering for the individual

Table 6

Regression Estimates of annual Entry/Exit probabilities, men and women, linear probability model, broad sample (1982-2008 cohorts)

	Annual Entry at Eligible Age (from age 64/65 to 66)					Annual Entry After Eligible Age (age 66 to 67 and forward)						Annual Exit					
	add cohorts	add sex	add marital	add prov	add imm	age only	add cohorts	add sex	add marital	add prov	add imm	age only	add cohorts	add sex	add marital	add prov	add imm
age68						0.001	0.001***	0.001**	0.001***	0.001***	0.001***	-0.018***	-0.019***	-0.019***	-0.019***	-0.019***	-0.019***
						(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age69						-0.003***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.022***	-0.023***	-0.023***	-0.022***	-0.022***	-0.022***
						(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age70						-0.006***	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***	-0.027***	-0.027***	-0.027***	-0.026***	-0.027***	-0.026***
						(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age71						-0.008***	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***	-0.029***	-0.028***	-0.028***	-0.027***	-0.027***	-0.027***
						(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age72						-0.010***	-0.006***	-0.006***	-0.006***	-0.006***	-0.005***	-0.027***	-0.025***	-0.024***	-0.024***	-0.024***	-0.023***
						(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age73						-0.010***	-0.005***	-0.005***	-0.005***	-0.005***	-0.004***	-0.038***	-0.035***	-0.034***	-0.033***	-0.034***	-0.033***
						(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age74						-0.011***	-0.005***	-0.005***	-0.005***	-0.005***	-0.005***	-0.038***	-0.034***	-0.033***	-0.032***	-0.032***	-0.032***
						(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age75						-0.009***	-0.002***	-0.002***	-0.003***	-0.003***	-0.002***	-0.046***	-0.041***	-0.040***	-0.039***	-0.039***	-0.039***
						(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age76						-0.008***	-0.001	-0.001	-0.001***	-0.001**	-0.001	-0.048***	-0.043***	-0.042***	-0.040***	-0.041***	-0.040***
						(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age77						-0.008***	0.000	0.000	-0.001	-0.000	0.000	-0.050***	-0.044***	-0.043***	-0.041***	-0.041***	-0.041***
						(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age78						-0.007***	0.001***	0.001**	0.000	0.001	0.001**	-0.051***	-0.045***	-0.044***	-0.042***	-0.042***	-0.042***
						(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age79						-0.007***	0.002***	0.002***	0.001**	0.001**	0.002***	-0.052***	-0.046***	-0.044***	-0.042***	-0.042***	-0.042***
						(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age80						-0.005***	0.004***	0.004***	0.003***	0.003***	0.004***	-0.052***	-0.046***	-0.044***	-0.041***	-0.042***	-0.041***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age81						-0.003***	0.006***	0.006***	0.005***	0.005***	0.006***	-0.054***	-0.047***	-0.045***	-0.042***	-0.043***	-0.042***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age82						-0.001	0.009***	0.009***	0.007***	0.007***	0.008***	-0.054***	-0.047***	-0.044***	-0.042***	-0.043***	-0.042***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age83						0.001	0.011***	0.011***	0.009***	0.009***	0.010***	-0.053***	-0.045***	-0.043***	-0.040***	-0.041***	-0.041***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age84						0.005***	0.016***	0.015***	0.013***	0.014***	0.015***	-0.054***	-0.045***	-0.043***	-0.040***	-0.041***	-0.040***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age85						0.009***	0.019***	0.019***	0.017***	0.017***	0.018***	-0.054***	-0.045***	-0.042***	-0.039***	-0.040***	-0.040***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age86						0.003***	0.014***	0.014***	0.011***	0.012***	0.013***	-0.052***	-0.043***	-0.040***	-0.037***	-0.038***	-0.038***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age87						0.004***	0.015***	0.014***	0.011***	0.012***	0.013***	-0.055***	-0.045***	-0.042***	-0.038***	-0.040***	-0.039***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age88						0.006***	0.016***	0.015***	0.012***	0.013***	0.014***	-0.055***	-0.044***	-0.041***	-0.037***	-0.038***	-0.038***
						(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age89						0.003*	0.013***	0.013***	0.009***	0.010***	0.011***	-0.055***	-0.043***	-0.040***	-0.035***	-0.037***	-0.037***
						(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1982							-0.014***	-0.014***	-0.015***	-0.015***	-0.014***		-0.020***	-0.019***	-0.019***	-0.019***	-0.020***
							(0.001)	(0.001)	(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)

coh1983						-0.015***	-0.015***	-0.016***	-0.016***	-0.015***	-0.019***	-0.018***	-0.018***	-0.018***	-0.019***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1984						-0.017***	-0.017***	-0.018***	-0.017***	-0.016***	-0.016***	-0.014***	-0.015***	-0.014***	-0.015***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1985						-0.017***	-0.017***	-0.018***	-0.017***	-0.017***	-0.015***	-0.014***	-0.014***	-0.014***	-0.015***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1986						-0.017***	-0.017***	-0.018***	-0.018***	-0.017***	-0.014***	-0.013***	-0.014***	-0.013***	-0.014***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1987						-0.017***	-0.017***	-0.018***	-0.017***	-0.016***	-0.013***	-0.012***	-0.013***	-0.012***	-0.013***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1988						-0.016***	-0.016***	-0.017***	-0.016***	-0.016***	-0.012***	-0.011***	-0.011***	-0.011***	-0.012***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1989						-0.015***	-0.015***	-0.016***	-0.015***	-0.014***	-0.013***	-0.012***	-0.012***	-0.012***	-0.013***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1990						-0.014***	-0.014***	-0.014***	-0.014***	-0.013***	-0.011***	-0.010***	-0.011***	-0.011***	-0.011***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1991						-0.012***	-0.012***	-0.013***	-0.012***	-0.012***	-0.011***	-0.010***	-0.010***	-0.010***	-0.011***
						(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1992	0.023***	0.023***	0.018***	0.023***	0.026***	-0.012***	-0.012***	-0.013***	-0.012***	-0.012***	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1993	0.030***	0.030***	0.025***	0.031***	0.032***	-0.013***	-0.013***	-0.013***	-0.013***	-0.013***	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1994	0.023***	0.023***	0.019***	0.026***	0.027***	-0.012***	-0.012***	-0.012***	-0.012***	-0.012***	-0.009***	-0.009***	-0.009***	-0.009***	-0.009***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1995	0.015***	0.015***	0.012***	0.015***	0.017***	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***	-0.008***	-0.008***	-0.008***	-0.008***	-0.008***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1996	0.014***	0.014***	0.011***	0.011***	0.014***	-0.010***	-0.010***	-0.010***	-0.010***	-0.010***	-0.008***	-0.008***	-0.008***	-0.007***	-0.008***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1997	0.015***	0.015***	0.013***	0.014***	0.016***	-0.008***	-0.008***	-0.008***	-0.008***	-0.008***	-0.006***	-0.006***	-0.006***	-0.006***	-0.006***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1998	0.008***	0.009***	0.007**	0.010***	0.011***	-0.006***	-0.006***	-0.006***	-0.005***	-0.006***	-0.005***	-0.006***	-0.005***	-0.005***	-0.005***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1999	0.003	0.003	0.001	0.004	0.006**	-0.003***	-0.003***	-0.002***	-0.002***	-0.003***	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh2000	0.007**	0.007**	0.006*	0.006**	0.007**	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh2002	-0.004	-0.004	-0.005	-0.004	-0.005	0.001*	0.001*	0.001*	0.002*	0.002**	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh2003	0.005	0.005	0.004	0.004	0.001	0.002**	0.002**	0.002**	0.002**	0.002**	0.003*	0.003*	0.003**	0.003**	0.003**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh2004	-0.008**	-0.008**	-0.009***	-0.011***	-0.014***	-0.001	-0.001	-0.001	-0.002*	-0.002*	-0.009***	-0.008***	-0.008***	-0.008***	-0.007***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh2005	-0.009***	-0.009***	-0.010***	-0.013***	-0.016***	-0.004***	-0.004***	-0.004***	-0.004***	-0.004***	-0.003	-0.003	-0.002	-0.002	-0.002
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
coh2006	-0.020***	-0.020***	-0.022***	-0.025***	-0.028***	-0.004***	-0.004***	-0.004***	-0.004***	-0.003**	-0.014***	-0.014***	-0.014***	-0.013***	-0.013***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
coh2007	-0.025***	-0.025***	-0.026***	-0.025***	-0.028***										
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)										
female		0.030***					0.005***					-0.020***			
		(0.001)					(0.000)					(0.000)			
male_staycouple			-0.167***	-0.155***	-0.155***			-0.005***	-0.005***	-0.005***			0.037***	0.037***	0.038***

		(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)	
male_singletocouple		-0.001	0.006	0.005	0.245***	0.245***	0.245***		-0.004**	-0.004**	-0.003**	
		(0.009)	(0.009)	(0.009)	(0.004)	(0.004)	(0.004)		(0.001)	(0.001)	(0.001)	
male_coupletosingle		-0.071***	-0.065***	-0.066***	0.002*	0.003**	0.002*		0.169***	0.168***	0.168***	
		(0.008)	(0.008)	(0.008)	(0.001)	(0.001)	(0.001)		(0.003)	(0.003)	(0.003)	
fem_staysingle		0.041***	0.053***	0.051***	0.007***	0.008***	0.007***		0.004***	0.003***	0.003***	
		(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)	
fem_staycouple		-0.188***	-0.175***	-0.176***	-0.005***	-0.005***	-0.004***		0.015***	0.015***	0.016***	
		(0.002)	(0.002)	(0.002)	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)	
fem_singletocouple		0.123***	0.128***	0.130***	0.200***	0.201***	0.199***		-0.000	-0.001	-0.001	
		(0.010)	(0.010)	(0.010)	(0.004)	(0.004)	(0.004)		(0.001)	(0.001)	(0.001)	
fem_coupletosingle		0.106***	0.113***	0.112***	0.088***	0.089***	0.088***		0.029***	0.028***	0.028***	
		(0.006)	(0.006)	(0.006)	(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)	
nfld			0.303***	0.305***		0.016***	0.017***			-0.036***	-0.038***	
			(0.004)	(0.004)		(0.001)	(0.001)			(0.001)	(0.001)	
pei			0.115***	0.116***		0.003**	0.003**			-0.022***	-0.023***	
			(0.009)	(0.009)		(0.002)	(0.002)			(0.001)	(0.001)	
ns			0.120***	0.121***		0.003***	0.003***			-0.020***	-0.021***	
			(0.003)	(0.003)		(0.001)	(0.001)			(0.001)	(0.001)	
nb			0.167***	0.168***		0.005***	0.006***			-0.021***	-0.022***	
			(0.004)	(0.004)		(0.001)	(0.001)			(0.001)	(0.001)	
que			0.176***	0.180***		0.014***	0.017***			-0.020***	-0.023***	
			(0.001)	(0.001)		(0.000)	(0.000)			(0.000)	(0.000)	
man			0.063***	0.066***		0.004***	0.007***			-0.005***	-0.007***	
			(0.003)	(0.003)		(0.000)	(0.000)			(0.001)	(0.001)	
sask			0.049***	0.051***		0.009***	0.009***			-0.006***	-0.007***	
			(0.003)	(0.003)		(0.001)	(0.001)			(0.001)	(0.001)	
alb			0.036***	0.036***		0.005***	0.007***			-0.003***	-0.005***	
			(0.002)	(0.002)		(0.000)	(0.000)			(0.001)	(0.001)	
bc			0.014***	0.011***		0.004***	0.002***			-0.006***	-0.006***	
			(0.002)	(0.002)		(0.000)	(0.000)			(0.000)	(0.000)	
terr			0.085***	0.085***		0.018***	0.019***			-0.005	-0.007*	
			(0.015)	(0.015)		(0.004)	(0.004)			(0.004)	(0.004)	
nonres			-0.232***	-0.232***		-0.034***	-0.031***			0.679***	0.677***	
			(0.004)	(0.005)		(0.000)	(0.001)			(0.027)	(0.027)	
eng_in_que			-0.078***	-0.079***		-0.011***	-0.011***			0.009***	0.010***	
			(0.003)	(0.003)		(0.000)	(0.000)			(0.001)	(0.001)	
fr_out_que			0.110***	0.112***		0.006***	0.007***			-0.015***	-0.015***	
			(0.006)	(0.006)		(0.001)	(0.001)			(0.001)	(0.001)	
asr100			-0.000	0.005***		-0.003***	0.001***			0.012***	0.010***	
			(0.002)	(0.002)		(0.000)	(0.000)			(0.000)	(0.000)	
asr30			0.045***	0.050***		0.003***	0.007***			0.005***	0.002***	
			(0.002)	(0.002)		(0.000)	(0.000)			(0.000)	(0.000)	
asr15			0.044***	0.050***		0.001***	0.006***			0.004***	0.001**	
			(0.003)	(0.003)		(0.001)	(0.001)			(0.001)	(0.001)	
asr1			0.094***	0.100***		0.009***	0.013***			-0.001***	-0.004***	
			(0.002)	(0.002)		(0.000)	(0.000)			(0.000)	(0.000)	
asrsmal1			0.147***	0.152***		0.015***	0.019***			-0.006***	-0.009***	
			(0.002)	(0.002)		(0.000)	(0.000)			(0.000)	(0.000)	
immlt5y				-0.218***			-0.019***				0.044***	
				(0.002)			(0.000)				(0.006)	

imm6y10y					-0.049***						0.121***						-0.015***
					(0.004)						(0.001)						(0.002)
imm1115y					0.537***						0.198***						-0.050***
					(0.004)						(0.003)						(0.000)
_cons	0.320***	0.304***	0.442***	0.328***	0.322***	0.042***	0.048***	0.046***	0.049***	0.042***	0.037***	0.078***	0.085***	0.096***	0.065***	0.076***	T5
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Number of obs.	742,675	742,675	742,675	742,675	742,675	5,735,715	5,735,715	5,735,715	5,735,715	5,735,715	5,735,715	3,295,760	3,295,760	3,295,760	3,295,760	3,295,760	3,295,760

notes: *** p<0.01, ** p<0.05, * p<0.1; standard errors in ( ); OLS regression with clustering for the individual

Table 7

Regression Estimates of annual Entry/Exit probabilities, men only, linear probability model, broad sample (1982-2008 cohorts)

	Annual Entry at Eligible Age (from age 64/65 to 66)				Annual Entry After Eligible Age (age 66 to 67 and forward)					Annual Exit				
	add cohorts	add marital	add prov	add imm	age only	add cohorts	add sex	add marital	add imm	age only	add cohorts	add sex	add marital	add imm
age68					0.001	0.002***	0.002***	0.002***	0.002***	-0.012***	-0.012***	-0.012***	-0.012***	-0.012***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age69					-0.006***	-0.003***	-0.003***	-0.003***	-0.003***	-0.011***	-0.012***	-0.011***	-0.011***	-0.011***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age70					-0.010***	-0.006***	-0.006***	-0.006***	-0.006***	-0.015***	-0.016***	-0.015***	-0.016***	-0.015***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age71					-0.012***	-0.007***	-0.007***	-0.007***	-0.007***	-0.020***	-0.020***	-0.019***	-0.019***	-0.019***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age72					-0.015***	-0.009***	-0.008***	-0.008***	-0.008***	-0.018***	-0.017***	-0.016***	-0.016***	-0.015***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age73					-0.016***	-0.009***	-0.008***	-0.008***	-0.008***	-0.030***	-0.029***	-0.027***	-0.028***	-0.027***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age74					-0.018***	-0.009***	-0.008***	-0.008***	-0.008***	-0.032***	-0.030***	-0.028***	-0.029***	-0.027***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age75					-0.016***	-0.007***	-0.006***	-0.006***	-0.006***	-0.042***	-0.039***	-0.037***	-0.038***	-0.036***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age76					-0.017***	-0.006***	-0.006***	-0.006***	-0.005***	-0.047***	-0.044***	-0.042***	-0.043***	-0.041***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age77					-0.017***	-0.006***	-0.005***	-0.005***	-0.005***	-0.048***	-0.044***	-0.042***	-0.043***	-0.041***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age78					-0.017***	-0.005***	-0.005***	-0.005***	-0.004***	-0.050***	-0.046***	-0.044***	-0.045***	-0.044***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age79					-0.017***	-0.005***	-0.004***	-0.004***	-0.004***	-0.051***	-0.047***	-0.045***	-0.046***	-0.044***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age80					-0.016***	-0.004***	-0.003***	-0.003***	-0.003***	-0.052***	-0.048***	-0.045***	-0.046***	-0.045***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age81					-0.013***	-0.001	-0.001	-0.000	0.000	-0.054***	-0.049***	-0.047***	-0.048***	-0.047***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age82					-0.013***	0.000	0.000	0.001	0.002*	-0.054***	-0.050***	-0.047***	-0.048***	-0.047***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age83					-0.011***	0.002*	0.002**	0.002**	0.003***	-0.054***	-0.049***	-0.047***	-0.048***	-0.047***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
age84					-0.008***	0.006***	0.006***	0.006***	0.007***	-0.052***	-0.047***	-0.044***	-0.046***	-0.045***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
age85					-0.005***	0.009***	0.009***	0.009***	0.010***	-0.051***	-0.046***	-0.043***	-0.045***	-0.044***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
age86					-0.006***	0.009***	0.008***	0.009***	0.010***	-0.049***	-0.043***	-0.041***	-0.043***	-0.042***
					(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
age87					-0.008***	0.007***	0.006***	0.007***	0.008***	-0.050***	-0.045***	-0.041***	-0.044***	-0.043***
					(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
age88					-0.004*	0.010***	0.009***	0.010***	0.011***	-0.048***	-0.041***	-0.038***	-0.040***	-0.040***
					(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
age89					-0.006**	0.007***	0.006**	0.007**	0.008***	-0.055***	-0.048***	-0.043***	-0.046***	-0.045***
					(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
coh1982						-0.018***	-0.019***	-0.018***	-0.018***		-0.018***	-0.020***	-0.019***	-0.020***
						(0.001)	(0.001)	(0.001)	(0.001)		(0.002)	(0.002)	(0.002)	(0.002)
coh1983						-0.019***	-0.020***	-0.019***	-0.019***		-0.019***	-0.021***	-0.020***	-0.021***

					(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1984					-0.020***	-0.021***	-0.020***	-0.019***	-0.013***	-0.015***	-0.015***	-0.016***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1985					-0.021***	-0.021***	-0.020***	-0.020***	-0.014***	-0.016***	-0.015***	-0.016***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1986					-0.021***	-0.021***	-0.021***	-0.020***	-0.013***	-0.015***	-0.014***	-0.015***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1987					-0.020***	-0.020***	-0.019***	-0.018***	-0.013***	-0.015***	-0.014***	-0.015***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1988					-0.018***	-0.019***	-0.018***	-0.018***	-0.013***	-0.014***	-0.013***	-0.014***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1989					-0.018***	-0.018***	-0.017***	-0.017***	-0.014***	-0.015***	-0.014***	-0.015***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1990					-0.016***	-0.016***	-0.015***	-0.015***	-0.011***	-0.013***	-0.012***	-0.013***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1991					-0.015***	-0.015***	-0.015***	-0.014***	-0.012***	-0.013***	-0.012***	-0.013***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1992	0.020***	0.019***	0.022***	0.025***	-0.014***	-0.014***	-0.014***	-0.013***	-0.013***	-0.014***	-0.014***	-0.014***
	(0.005)	(0.005)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1993	0.031***	0.030***	0.034***	0.036***	-0.015***	-0.015***	-0.015***	-0.015***	-0.013***	-0.013***	-0.013***	-0.014***
	(0.005)	(0.005)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1994	0.019***	0.018***	0.023***	0.025***	-0.015***	-0.015***	-0.015***	-0.015***	-0.012***	-0.013***	-0.012***	-0.013***
	(0.005)	(0.005)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1995	0.015***	0.015***	0.016***	0.019***	-0.012***	-0.012***	-0.011***	-0.011***	-0.012***	-0.012***	-0.011***	-0.012***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1996	0.010**	0.010**	0.009**	0.013***	-0.013***	-0.013***	-0.012***	-0.012***	-0.010***	-0.010***	-0.009***	-0.010***
	(0.005)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1997	0.013***	0.013***	0.014***	0.016***	-0.009***	-0.009***	-0.009***	-0.009***	-0.008***	-0.008***	-0.007***	-0.008***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1998	0.012***	0.012***	0.014***	0.016***	-0.008***	-0.007***	-0.007***	-0.007***	-0.010***	-0.010***	-0.009***	-0.010***
	(0.005)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh1999	0.006	0.005	0.007*	0.010**	-0.004***	-0.004***	-0.004***	-0.005***	-0.008***	-0.008***	-0.008***	-0.008***
	(0.005)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh2000	0.006	0.006	0.006	0.007	-0.002*	-0.002*	-0.002*	-0.002*	-0.004*	-0.004*	-0.003*	-0.003*
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh2002	-0.005	-0.006	-0.007*	-0.008*	0.003**	0.003**	0.003**	0.003**	-0.004*	-0.003	-0.003	-0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh2003	-0.009**	-0.011**	-0.013***	-0.015***	0.004***	0.004***	0.004***	0.005***	-0.001	-0.001	-0.000	-0.000
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh2004	-0.015***	-0.017***	-0.020***	-0.022***	-0.001	-0.001	-0.002	-0.002	-0.013***	-0.011***	-0.011***	-0.010***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh2005	-0.021***	-0.023***	-0.028***	-0.031***	0.001	0.001	0.000	0.001	-0.012***	-0.011***	-0.011***	-0.010***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.003)	(0.003)
coh2006	-0.028***	-0.031***	-0.036***	-0.038***	0.004*	0.004**	0.004**	0.004**	-0.018***	-0.017***	-0.016***	-0.016***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.004)	(0.004)
coh2007	-0.037***	-0.039***	-0.041***	-0.043***								
	(0.004)	(0.004)	(0.004)	(0.004)								
staycouple		-0.167***	-0.155***	-0.155***		-0.006***	-0.005***	-0.006***		0.036***	0.036***	0.037***
		(0.002)	(0.002)	(0.002)		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
singletocouple		-0.001	0.007	0.006		0.244***	0.244***	0.244***		-0.004***	-0.004***	-0.004***
		(0.009)	(0.009)	(0.009)		(0.004)	(0.004)	(0.004)		(0.001)	(0.001)	(0.001)

coupletosingle		-0.071***	-0.065***	-0.066***		0.002**	0.003***	0.002**			0.169***	0.168***	0.169***	
		(0.008)	(0.008)	(0.008)		(0.001)	(0.001)	(0.001)			(0.003)	(0.003)	(0.003)	
nfld			0.319***	0.320***			0.016***	0.017***				-0.046***	-0.048***	
			(0.006)	(0.006)			(0.002)	(0.002)				(0.001)	(0.001)	
pei			0.126***	0.126***			0.004	0.004*				-0.029***	-0.030***	
			(0.012)	(0.012)			(0.002)	(0.002)				(0.002)	(0.002)	
ns			0.126***	0.126***			0.001*	0.002**				-0.027***	-0.028***	
			(0.005)	(0.005)			(0.001)	(0.001)				(0.001)	(0.001)	
nb			0.180***	0.181***			0.004***	0.005***				-0.029***	-0.031***	
			(0.006)	(0.006)			(0.001)	(0.001)				(0.001)	(0.001)	
que			0.184***	0.186***			0.012***	0.015***				-0.025***	-0.028***	
			(0.002)	(0.002)			(0.000)	(0.000)				(0.001)	(0.001)	
man			0.074***	0.075***			0.003***	0.006***				-0.008***	-0.011***	
			(0.004)	(0.004)			(0.001)	(0.001)				(0.001)	(0.001)	
sask			0.056***	0.057***			0.009***	0.010***				-0.009***	-0.010***	
			(0.005)	(0.005)			(0.001)	(0.001)				(0.001)	(0.001)	
alb			0.036***	0.036***			0.005***	0.006***				-0.006***	-0.007***	
			(0.003)	(0.003)			(0.000)	(0.000)				(0.001)	(0.001)	
bc			0.011***	0.009***			0.004***	0.002***				-0.010***	-0.009***	
			(0.002)	(0.002)			(0.000)	(0.000)				(0.001)	(0.001)	
terr			0.082***	0.082***			0.022***	0.023***				-0.014***	-0.016***	
			(0.020)	(0.020)			(0.006)	(0.006)				(0.005)	(0.005)	
nonres			-0.219***	-0.218***			-0.032***	-0.029***				0.735***	0.733***	
			(0.005)	(0.006)			(0.001)	(0.001)				(0.034)	(0.034)	
eng_in_que			-0.069***	-0.072***			-0.009***	-0.010***				0.008***	0.008***	
			(0.005)	(0.005)			(0.001)	(0.001)				(0.001)	(0.001)	
fr_out_que			0.113***	0.114***			0.006***	0.007***				-0.017***	-0.018***	
			(0.008)	(0.008)			(0.002)	(0.002)				(0.002)	(0.002)	
asr100			0.003	0.006***			-0.006***	-0.002***				0.015***	0.011***	
			(0.002)	(0.002)			(0.000)	(0.000)				(0.001)	(0.001)	
asr30			0.046***	0.051***			0.001***	0.005***				0.008***	0.004***	
			(0.003)	(0.003)			(0.000)	(0.000)				(0.001)	(0.001)	
asr15			0.045***	0.049***			0.001	0.005***				0.008***	0.004***	
			(0.005)	(0.005)			(0.001)	(0.001)				(0.001)	(0.001)	
asr1			0.095***	0.099***			0.010***	0.013***				-0.001**	-0.006***	
			(0.002)	(0.002)			(0.000)	(0.000)				(0.001)	(0.001)	
asrsmal1			0.144***	0.147***			0.017***	0.020***				-0.008***	-0.012***	
			(0.003)	(0.003)			(0.001)	(0.001)				(0.001)	(0.001)	
immlt5y				-0.189***				-0.018***					0.052***	
				(0.003)				(0.001)					(0.013)	
imm6y10y				-0.052***				0.115***					-0.024***	
				(0.006)				(0.001)					(0.004)	
imm1115y				0.504***				0.182***					-0.065***	
				(0.007)				(0.004)					(0.001)	
_cons	0.308***	0.445***	0.329***	0.323***	0.046***	0.051***	0.054***	0.048***	0.043***	0.085***	0.095***	0.065***	0.078***	0.084***
	(0.003)	(0.004)	(0.004)	(0.004)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Number of obs.	358,505	358,505	358,505	358,505	2,712,710	2,712,710	2,712,710	2,712,710	2,712,710	1,263,810	1,263,810	1,263,810	1,263,810	1,263,810

notes: *** p<0.01, ** p<0.05, * p<0.1; standard errors in ( ); OLS regression with clustering for the individual

Table 8

Regression Estimates of annual Entry/Exit probabilities, women only, linear probability model, broad sample (1982-2008 cohorts)

	Annual Entry at Eligible Age (from age 64/65 to 66)				Annual Entry After Eligible Age (age 66 to 67 and forward)					Annual Exit				
	add cohorts	add marital	add prov	add imm	age only	add cohorts	add sex	add marital	add imm	age only	add cohorts	add sex	add marital	add imm
age68					0.001	0.000***	0.000***	0.000***	0.000***	-0.024***	-0.025***	-0.025***	-0.025***	-0.025***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age69					-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.032***	-0.032***	-0.031***	-0.031***	-0.031***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age70					-0.003***	-0.002***	-0.002***	-0.002***	-0.002***	-0.036***	-0.036***	-0.035***	-0.035***	-0.035***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age71					-0.004***	-0.002***	-0.002***	-0.002***	-0.002***	-0.035***	-0.034***	-0.033***	-0.034***	-0.033***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age72					-0.005***	-0.003***	-0.003***	-0.003***	-0.003***	-0.032***	-0.030***	-0.029***	-0.029***	-0.029***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age73					-0.004***	-0.001***	-0.001***	-0.001***	-0.001***	-0.042***	-0.039***	-0.038***	-0.038***	-0.038***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age74					-0.005***	-0.001***	-0.002***	-0.002***	-0.001***	-0.040***	-0.036***	-0.035***	-0.035***	-0.035***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age75					-0.003***	0.002***	0.001***	0.001***	0.001***	-0.047***	-0.042***	-0.041***	-0.041***	-0.041***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age76					-0.001***	0.005***	0.003***	0.003***	0.004***	-0.047***	-0.042***	-0.040***	-0.041***	-0.040***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age77					-0.000***	0.006***	0.004***	0.004***	0.005***	-0.049***	-0.043***	-0.041***	-0.042***	-0.041***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age78					0.001***	0.007***	0.005***	0.006***	0.006***	-0.050***	-0.043***	-0.041***	-0.042***	-0.042***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age79					0.002***	0.008***	0.006***	0.007***	0.007***	-0.050***	-0.043***	-0.041***	-0.041***	-0.041***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age80					0.004***	0.010***	0.008***	0.008***	0.009***	-0.050***	-0.043***	-0.040***	-0.041***	-0.041***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age81					0.006***	0.012	0.010	0.010	0.011	-0.051***	-0.044***	-0.041***	-0.041***	-0.041***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age82					0.009***	0.016	0.013	0.014	0.015*	-0.051***	-0.043***	-0.041***	-0.041***	-0.041***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age83					0.011***	0.019*	0.015**	0.016**	0.017***	-0.050***	-0.041***	-0.038***	-0.039***	-0.039***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age84					0.016***	0.023***	0.020***	0.020***	0.021***	-0.051***	-0.042***	-0.039***	-0.040***	-0.039***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age85					0.020***	0.027***	0.024***	0.024***	0.026***	-0.051***	-0.042***	-0.038***	-0.039***	-0.039***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age86					0.011***	0.018***	0.014***	0.015***	0.016***	-0.050***	-0.040***	-0.037***	-0.037***	-0.037***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age87					0.014***	0.021***	0.016***	0.016***	0.018***	-0.053***	-0.042***	-0.038***	-0.039***	-0.039***
					(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age88					0.013*	0.020***	0.015***	0.015***	0.017***	-0.053***	-0.042***	-0.038***	-0.039***	-0.039***
					(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
age89					0.011**	0.017***	0.012**	0.013**	0.015***	-0.051***	-0.038***	-0.034***	-0.035***	-0.035***
					(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
coh1982						-0.011***	-0.013***	-0.012***	-0.011***		-0.019***	-0.018***	-0.017***	-0.018***
						(0.001)	(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)	(0.001)
coh1983						-0.011***	-0.013***	-0.013***	-0.012***		-0.017***	-0.016***	-0.016***	-0.016***
						(0.001)	(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)	(0.001)
coh1984						-0.014***	-0.016***	-0.015***	-0.014***		-0.014***	-0.014***	-0.013***	-0.014***

					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1985					-0.014***	-0.016***	-0.015***	-0.014***	-0.013***	-0.013***	-0.013***	-0.014***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1986					-0.014***	-0.016***	-0.015***	-0.014***	-0.013***	-0.012***	-0.012***	-0.013***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1987					-0.014***	-0.016***	-0.015***	-0.014***	-0.011***	-0.011***	-0.011***	-0.011***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1988					-0.015***	-0.016***	-0.015***	-0.014***	-0.010***	-0.009***	-0.009***	-0.010***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1989					-0.012***	-0.014***	-0.013***	-0.012***	-0.010***	-0.010***	-0.009***	-0.010***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1990					-0.012***	-0.012***	-0.012***	-0.011***	-0.009***	-0.008***	-0.008***	-0.009***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1991					-0.010***	-0.011***	-0.010***	-0.010***	-0.008***	-0.008***	-0.008***	-0.008***
					(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1992	0.026***	0.018***	0.024***	0.026***	-0.011***	-0.011***	-0.011***	-0.010***	-0.007***	-0.007***	-0.006***	-0.007***
	(0.005)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1993	0.029***	0.021***	0.027***	0.028***	-0.011***	-0.012***	-0.011***	-0.011***	-0.008***	-0.007***	-0.007***	-0.007***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1994	0.027***	0.020***	0.028***	0.028***	-0.009***	-0.010***	-0.009***	-0.009***	-0.006***	-0.006***	-0.006***	-0.006***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1995	0.015***	0.010***	0.013***	0.015***	-0.008***	-0.009***	-0.008***	-0.008***	-0.005***	-0.005***	-0.005***	-0.005***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1996	0.018**	0.012**	0.013**	0.015***	-0.007***	-0.007***	-0.007***	-0.007***	-0.006***	-0.006***	-0.005***	-0.006***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1997	0.017***	0.012***	0.014***	0.016***	-0.008***	-0.008***	-0.007***	-0.007***	-0.005***	-0.005***	-0.005***	-0.005***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1998	0.005***	0.003***	0.005***	0.007***	-0.004***	-0.004***	-0.004***	-0.004***	-0.002***	-0.002***	-0.002***	-0.002***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh1999	-0.000	-0.003	0.002*	0.003**	-0.001***	-0.001***	-0.001***	-0.001***	-0.002***	-0.001***	-0.002***	-0.002***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh2000	0.008	0.005	0.006	0.007	-0.003*	-0.003*	-0.003*	-0.003*	-0.000*	-0.000*	-0.001*	-0.000*
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
coh2002	-0.003	-0.003	-0.001*	-0.002*	0.000**	0.000**	0.001**	0.000**	-0.000*	-0.000	-0.001	-0.000
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh2003	0.018**	0.018**	0.019***	0.016***	-0.001***	-0.001***	-0.001***	-0.001***	0.006	0.006	0.006	0.006
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh2004	-0.001***	-0.002***	-0.003***	-0.007***	-0.001	-0.001	-0.002	-0.002	-0.005***	-0.005***	-0.005***	-0.005***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh2005	0.002***	0.002***	0.002***	-0.002***	-0.008	-0.008	-0.008	-0.008	0.005***	0.005***	0.005***	0.005***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
coh2006	-0.013***	-0.014***	-0.015***	-0.018***	-0.011*	-0.011**	-0.011**	-0.010**	-0.011***	-0.011***	-0.011***	-0.011***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
coh2007	-0.014***	-0.013***	-0.011***	-0.013***								
	(0.004)	(0.004)	(0.004)	(0.004)								
staycouple		-0.229***	-0.229***	-0.228***		-0.011***	-0.012***	-0.010***		0.012***	0.013***	0.013***
		(0.002)	(0.002)	(0.002)		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
singletocouple		0.082	0.075	0.078		0.194***	0.194***	0.194***		-0.004***	-0.003***	-0.003***
		(0.010)	(0.010)	(0.010)		(0.004)	(0.004)	(0.004)		(0.001)	(0.001)	(0.001)
coupletosingle		0.066***	0.060***	0.061***		0.081**	0.081***	0.082**		0.025***	0.025***	0.025***
		(0.006)	(0.006)	(0.006)		(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)
nfld			0.286***	0.288***			0.015***	0.017***			-0.029***	-0.030***
			(0.006)	(0.006)			(0.002)	(0.002)			(0.001)	(0.001)

pei			0.105***	0.107***				0.003	0.003*				-0.017***	-0.018***
			(0.012)	(0.012)				(0.002)	(0.002)				(0.002)	(0.002)
ns			0.114***	0.116***				0.003*	0.004**				-0.016***	-0.017***
			(0.005)	(0.005)				(0.001)	(0.001)				(0.001)	(0.001)
nb			0.154***	0.156***				0.006***	0.007***				-0.016***	-0.017***
			(0.005)	(0.005)				(0.001)	(0.001)				(0.001)	(0.001)
que			0.170***	0.174***				0.015***	0.018***				-0.017***	-0.019***
			(0.002)	(0.002)				(0.000)	(0.000)				(0.000)	(0.000)
man			0.053***	0.057***				0.005***	0.008***				-0.003***	-0.005***
			(0.004)	(0.004)				(0.001)	(0.001)				(0.001)	(0.001)
sask			0.044***	0.045***				0.008***	0.009***				-0.005***	-0.006***
			(0.004)	(0.004)				(0.001)	(0.001)				(0.001)	(0.001)
alb			0.036***	0.037***				0.005***	0.007***				-0.002***	-0.003***
			(0.003)	(0.003)				(0.000)	(0.000)				(0.001)	(0.001)
bc			0.017***	0.014***				0.003***	0.002***				-0.003***	-0.003***
			(0.002)	(0.002)				(0.000)	(0.000)				(0.001)	(0.001)
terr			0.090***	0.089***				0.014***	0.014***				0.003***	0.002***
			(0.023)	(0.023)				(0.006)	(0.006)				(0.005)	(0.005)
nonres			-0.248***	-0.250***				-0.036***	-0.033***				0.625***	0.624***
			(0.007)	(0.008)				(0.001)	(0.001)				(0.040)	(0.040)
eng_in_que			-0.085***	-0.087***				-0.012***	-0.013***				0.010***	0.011***
			(0.004)	(0.004)				(0.001)	(0.001)				(0.001)	(0.001)
fr_out_que			0.108***	0.110***				0.007***	0.008***				-0.013***	-0.014***
			(0.008)	(0.008)				(0.002)	(0.002)				(0.001)	(0.001)
asr100			-0.003	0.003***				-0.001***	0.003***				0.011***	0.009***
			(0.002)	(0.002)				(0.000)	(0.000)				(0.000)	(0.000)
asr30			0.043***	0.050***				0.004***	0.008***				0.003***	0.001***
			(0.003)	(0.003)				(0.000)	(0.000)				(0.000)	(0.001)
asr15			0.044***	0.050***				0.002	0.006***				0.002***	-0.000***
			(0.004)	(0.004)				(0.001)	(0.001)				(0.001)	(0.001)
asr1			0.094***	0.100***				0.009***	0.013***				-0.002**	-0.004***
			(0.002)	(0.002)				(0.000)	(0.000)				(0.000)	(0.000)
asrsmal1			0.152***	0.158***				0.013***	0.017***				-0.005***	-0.007***
			(0.003)	(0.003)				(0.001)	(0.001)				(0.000)	(0.000)
immlt5y				-0.246***					-0.020***					0.041***
				(0.004)					(0.001)					(0.007)
imm6y10y				-0.046***					0.127***					-0.009***
				(0.006)					(0.001)					(0.002)
imm1115y				0.561***					0.215***					-0.039***
				(0.005)					(0.005)					(0.000)
_cons	0.330***	0.480***	0.381***	0.372***	0.039***	0.045***	0.051***	0.044***	0.037***	0.072***	0.076***	0.070***	0.077***	0.080***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Number of obs.	384,170	384,170	384,170	384,170	3,023,005	3,023,005	3,023,005	3,023,005	3,023,005	2,031,945	2,031,945	2,031,945	2,031,945	2,031,945

notes: *** p<0.01, ** p<0.05, * p<0.1; standard errors in ( ); OLS regression with clustering for the individual

Appendix Table 1 - structure of cohorts for estimating sample

Cohort year (aged 65)	Age in Calendar Year																										
	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
1967	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106
1968	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
1969	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104
1970	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
1971	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102
1972	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101
1973	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
1974	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
1975	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98
1976	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97
1977	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
1978	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
1979	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94
1980	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93
1981	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92
1982	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91
1983	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
1984	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89
1985	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
1986	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87
1987	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
1988	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85
1989	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
1990	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83
1991	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82
1992	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81
1993	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
1994	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
1995	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
1996	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77
1997	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
1998	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
1999	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74
2000	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73
2001	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
2002	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
2003	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
2004	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69
2005	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
2006	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67
2007	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
2008	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65

* Area in blue and yellow: sample for the incidence analysis including everyone who is 65 or older at any point from 1992 to 2008.

** Area in blue and yellow below the line for the 1997 cohort: sample for second part of analysis (regression with income information at 50-52), restricted to those who are tax filers in all years of age 50-52.

***Area in orange: cells for which we observe income received between the ages of 50-52 years old

Table A2

GIS Incidence and Amount Distribution by age in 2008

Age	Total #	Incidence		Amount Received by Singles							Couple Amount Received by Individuals who have a Spouse							Individual Amount Received by Individuals who have a Spouse						
		Individual (%)	Individual/ and the	Conditional Mean ($)	Conditional Distribution						Conditional Mean ($)	Conditional Distribution						Conditional Mean ($)	Conditional Distribution					
					$1k or less	$1-3k	$3-5k	$5k-7k	$7k-9k	$9k up		$1k or less	$1-3k	$3-5k	$5k-7k	$7k-9k	$9k up		$1k or less	$1-3k	$3-5k	$5k-7k	$7k-9k	$9k up
60	77670	2.3	3.7	3700	17.6	29.9	22.7	14.6	9.1	6.1	5800	9.2	20.1	19.9	18.7	12.4	19.7	1400	17.3	20.9	8.2	5	2.2	1
61	79615	4	5.4	7300	4.7	11.7	15.5	18.8	16.2	33.1	6500	10.3	19.6	19	13.1	11	27	2900	9.7	19.7	15.4	8	5.4	8.7
62	73550	5.5	7.2	7200	5.6	13.7	14.8	19.9	15.4	30.6	6400	10.6	20.6	18.2	13.9	10.8	25.9	2900	10	20.3	16.4	7.7	5.7	8
63	62865	7	9.2	6700	4.8	15.5	17	19.8	15.6	27.3	6300	10.1	21.5	18.4	13.7	10.7	25.6	2800	12.3	19.2	18.2	7.6	5.5	7.4
64	61890	8.8	11.5	6600	5.4	12.4	18.6	21.4	15.7	26.5	6300	10.3	21.1	18.9	14	11.1	24.5	2800	11.5	20.8	17.3	7.5	5.1	7.7
65	59950	23.7	26.5	3900	15.2	29.3	24.7	17.3	6.7	6.7	4400	23.6	26.6	17.1	10.6	8.4	13.7	2300	24.8	29.8	16.6	6.5	3.4	3.2
66	57305	28	29.2	5400	5.7	16	20.7	27.3	22	8.2	5700	13.5	21.4	19.1	15.3	11.6	19.1	3300	15.4	33.5	21.4	10.4	7.6	4.8
67	52450	29.9	30.5	5500	5	14.2	22.9	30.4	19.9	7.7	6000	9.7	21.4	19.6	17.5	12	19.8	3500	14.2	34.8	23	11.3	8.1	5.2
68	50720	31.2	31.9	5400	4.7	15.7	24.2	29.3	17.3	8.8	6200	9.2	20.3	20.1	17	12.1	21.3	3500	13.7	34.5	23.8	10.1	7.5	6.7
69	47720	33	33.7	5400	5.2	14.7	26.1	28.1	17	8.9	6200	9.1	20.2	20.2	17.8	11.9	20.7	3500	14.3	35.7	22.5	10	7.3	6.7
70	46340	33.9	34.6	5200	5.7	16.2	26.3	27.3	16.2	8.3	6200	9.5	20.3	21	17.4	11.7	20.1	3400	15.5	35.9	22.6	8.8	6.9	6.8
71	43310	34.4	35.1	5300	6	17	25.5	26.3	15.2	10	6200	9.6	21.3	20.2	17.8	10.7	20.5	3400	16.4	36.6	21.5	8	6.4	7.6
72	42200	34.3	35	5200	6.5	18	24.8	25.6	15	10.1	6300	9	20.9	20.7	17.6	11.1	20.6	3400	15.4	36.9	21.7	7.2	6.7	8.2
73	40645	34.9	35.7	5300	6.8	18	25.2	23.7	15.1	11.2	6400	8.9	20.5	21.1	17.8	10.6	21	3400	16.1	36.5	20.6	7.1	6.3	9.2
74	39455	35.8	36.5	5200	6.7	18.1	27.1	23.2	14.8	10.2	6400	8.9	19.7	22.2	17.2	10.5	21.5	3400	16.1	36.8	21	7.1	6	8.9
75	37235	35.9	36.7	5200	6.5	18.8	25.4	24.9	13.6	10.8	6400	8.7	20.6	20.5	18.6	10.1	21.5	3400	15.7	37.3	21.1	6.6	5.7	9.2
76	37675	36.7	37.5	5200	5.8	19.7	27.2	22.8	13.8	10.7	6400	8.5	20.9	21.2	18.3	10.7	20.4	3400	15.8	37.7	21.3	6.3	5.4	9.3
77	35355	37.2	38	5000	7.2	19.6	27.9	22.3	12.9	10	6100	9.1	22.6	21.1	18.3	9.6	19.4	3200	17.2	38.1	20.3	5.7	5.3	8.5
78	34945	38.3	39.3	5100	7.6	20.4	26	22.3	11.9	11.8	6500	8.1	22.3	21	17.7	9.9	21	3400	16.1	37.8	18.9	5.5	5.7	10.6
79	31320	39.1	40	5100	7.2	20.5	27.2	21.3	12.7	11.2	6300	8.8	21.3	22.6	17.6	9.6	20.2	3300	16.6	38.2	19.6	5	5.6	10
80	30185	39.8	40.6	5100	6.7	20	27.8	21.5	12.5	11.4	6400	8.6	21.4	22.5	17	9.6	20.8	3300	16.8	38.7	18.6	5.4	5.4	10.4
81	27835	40.8	41.6	5100	7	20.4	27.1	21.9	11.9	11.7	6300	8.6	21.2	21.3	18.7	9.7	20.5	3300	16.4	38.3	18.8	5.8	5.8	9.8
82	25850	42	42.8	5000	7.1	21.1	27.5	21.2	12.2	10.8	6200	9.3	21.9	21	18.6	9.6	19.7	3300	16.9	38.3	19.7	5.4	4.9	9.6
83	23935	42.3	43.4	5000	6.9	22.7	27	21.9	10.7	10.8	6300	7.9	21.6	21.1	19	10.9	19.5	3300	16.4	36	20.5	5.2	5.7	9.2
84	21900	43.5	44.4	4900	7.8	22.1	27.3	21.7	11.2	10	6500	8	21.7	20.9	17.8	10	21.6	3300	15.8	36.4	20.3	6.5	4.7	10.4
85	19350	43.8	44.7	4900	7.2	22.4	27	23	11.3	9	6200	7.6	21.3	22.5	18.5	10.9	19.2	3200	15.2	38.8	19	6.2	5.2	8.7
86	17515	45.3	46.2	4900	7.1	21.2	28.2	23.4	11.6	8.4	6500	8.4	21.1	21.1	16.7	11	21.7	3300	15.8	35.9	19.3	6	5.5	10.2
87	15340	47	47.7	4900	7.5	21.4	27.4	24.1	11.4	8.3	6500	7.3	20.5	21.1	18	11.7	21.4	3400	15.2	36.1	19.4	7.6	5.5	10.1
88	13335	49	49.8	4900	7.4	20.5	26.5	25.7	11.9	8.1	6600	7.3	20	20.1	18.4	13.5	20.6	3400	14.8	34.5	21.3	7.2	4.9	9.9
89	9870	51.4	52.2	4900	6.3	19.9	27.3	27.2	11.8	7.4	6500	6.4	19.9	19.8	21.7	12.6	19.5	3300	13.1	37.1	20.7	7.6	5.5	8.2
90	8325	54.5	55.2	4900	6	20.1	26.6	27.6	12.5	7.1	6600	7.9	15.2	20.4	20.3	13.9	22.3	3400	13.4	32.2	25.8	7.7	5.2	8.8

Note: Include all filers and imputed persons.

Appendix Table 3

Raw Incidence of GIS receipt by explanatory variables, Cohorts with Available Information at Age 50-52

Exogenous Variable	Category	incidence rate (%)	# of observations
Sex and Marital Status	full sample	31.1	930520
	Single Male	41.2	115220
	Single Female	47.7	264820
	Male with Spouse	26.1	325440
	Female with Spouse	24.7	225040
Province	full sample	31.1	930520
	Newfoundland and Labrador	59.6	32220
	PEI	40.2	5730
	Nova Scotia	38.8	38390
	New Brunswick	45.2	34495
	Quebec	40.8	310290
	Ontario	23.7	269070
	Manitoba	32.5	36140
	Saskatchewan	32.3	31690
	Alberta	28.1	71145
	British Columbia	25.7	99485
	Territories	38.7	1750
	Non Residents	0.5	15
	Unknown	51.1	100
Immigrant Status	full sample	31.1	930520
	Non Immigrants	30.9	921200

	Immigrants landed within 5 years	39.9	45
	Immigrants landed 6-10 years	58.3	235
	Immigrants landed 11-15 years	71.4	5680
	Unknown	51.6	3365
Minority Language Status	full sample	31.1	930520
	Majority Language	30.8	883185
	English in QC	33.3	33185
	French outside of QC	46.1	14055
	Unknown	51.1	100
Area Size of Residence	full sample	31.1	930520
	500,000+	27.7	360085
	100,000-499,999	25.4	125055
	30,000-99,999	31.4	84275
	15,000-29,999	32.7	34760
	1,000-14,999	36.9	162365
	Less than 1,000	43.6	154240
	Unknown	30.5	9740
Market Income at Age 50-52	full sample	29.1	153160
	Zero or Negative	70	21665
	0-10k	53.9	45200
	10k-20k	43.2	30250
	20k-30k	33.5	20055

	30k-40k	24	14245
	40k-50k	17.5	9265
	50k-60k	13	5890
	60-70k	8.7	3190
	70k-80k	6	1645
	80k-90k	3.9	740
	90-100k	3.1	370
	100k-150k	2.6	495
	above 150k	1.6	150
Self Employed at Age 50-52	full sample	29.1	153160
	Never Self Employed	29.4	128140
	Ever Self Employed	27.6	25020
EI Status at Age 50-52	full sample	29.1	153160
	Never had EI	27.1	100795
	Ever had EI	34	52370
Union Status at Age 50-52	full sample	29.1	153160
	Never in a Union	36	117535
	Ever in a Union	17.9	35625
RRSP Contribution Status at Age 50-52	full sample	29.1	153160
	Never Contributed	41.1	115845
	Ever Contributed	15.3	37315
RPP Contribution Status at Age	full sample	28.4	105015
	Never Contributed	36.4	89685

	Ever Contributed	12.4	15330

- Income and other information at age 50-52 are only available for cohorts 1997-2008.
- RPP contribution status at age 50-52 is only available for cohorts 2001-2008.
- Unit of analysis is individual for breakdowns of information at age 50-52.
- Unit of analysis is person-year for other variables.

Appendix Table 4
Descriptive Statistics for Explanatory Variables, Cohorts with Available Information at Age 50-52
Sample shares for each type

Exogenous Variable	Category	share (%)	# of observations
Sex and Marital Status	Single Male	9.3	279,345
	Single Female	18.6	555,550
	Male with Spouse	41.7	1,248,900
	Female with Spouse	30.4	911,070
Province	Newfoundland and Labrador	1.8	54,065
	PEI	0.5	14,240
	Nova Scotia	3.3	98,985
	New Brunswick	2.5	76,355
	Quebec	25.4	759,665
	Ontario	37.9	1,134,495
	Manitoba	3.7	111,145
	Saskatchewan	3.3	97,980
	Alberta	8.5	253,110
	British Columbia	12.9	386,455
	Territories	0.2	4,520
	Non Residents	0.1	3,650
	Unknown	0	195
Immigrant Status	Non Immigrants	99.5	2,979,885

	Immigrants landed within 5 years	0	105
	Immigrants landed 6-10 years	0	405
	Immigrants landed 11-15 years	0.3	7,950
	Unknown	0.2	6,520
Minority Language Status	Majority Language	95.6	2,864,560
	English in QC	3.3	99,640
	French outside of QC	1	30,465
	Unknown	0	195
Area Size of Residence	500,000+	43.5	1,301,710
	100,000-499,999	16.4	492,415
	30,000-99,999	9	268,815
	15,000-29,999	3.6	106,365
	1,000-14,999	14.7	439,740
	Less than 1,000	11.8	353,910
	Unknown	1.1	31,910
Market Income at Age 50-52	Zero or Negative	5.9	30,970
	0-10k	16	83,915
	10k-20k	13.3	69,980
	20k-30k	11.4	59,925

	30k-40k	11.3	59,460
	40k-50k	10.1	52,880
	50k-60k	8.6	45,325
	60-70k	7	36,605
	70k-80k	5.2	27,600
	80k-90k	3.6	19,005
	90-100k	2.2	11,795
	100k-150k	3.7	19,280
	above 150k	1.7	9,170
Self Employed at Age 50-52	Never Self Employed	82.8	435,375
	Ever Self Employed	17.2	90,540
EI Status at Age 50-52	Never had EI	70.8	372,115
	Ever had EI	29.2	153,795
Union Status at Age 50-52	Never in a Union	62.1	326,650
	Ever in a Union	37.9	199,265
RRSP Contribution Status at Age 50-52	Never Contributed	53.6	281,955
	Ever Contributed	46.4	243,960
RPP Contribution Status at Age	Never Contributed	66.6	246,510
	Ever Contributed	33.4	123,785

- Income and other information at age 50-52 are only available for cohorts 1997-2008.
- RPP contribution status at age 50-52 is only available for cohorts 2001-2008.

- Unit of analysis is individual for breakdowns of information at age 50-52.
- Unit of analysis is person-year for other variables.