IMMIGRANTS' ACCESS TO PHYSICIAN AND HEALTHCARE SERVICES

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ABSTRACT

This paper offers a contribution to the ongoing research on the link between immigrants and health-care usage. It has been well documented that older immigrants are less healthy than newly arrived immigrants. There is lots of ongoing research which examines the cause of the deteriorating health of individuals. In this paper, I try to analyze the effect of being an immigrant on the probability of visiting a physician or a specialist as well as the frequencies of obtaining services from the physician or specialist.

In addition to looking at a pooled sample of all individuals, the analysis disaggregates the sample into those individuals who have a primary care physician, and those who do not so that we can see the impact of having a regular doctor on physician visits. Results obtained show that individuals with a regular doctor have a higher probability of visiting a physician and do so more frequently in comparison to those without a regular doctor. Immigrants with a regular doctor have a higher probability of visiting a physician than the Canadian born. Older immigrants, with the exception of those without regular doctors, have a lower likelihood and a lower frequency of visiting a specialist than the Canadian born. Immigrants in general have a lower probability of seeing a specialist.

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I give God the glory for all that He has done for me and for His Grace that has brought me this far.

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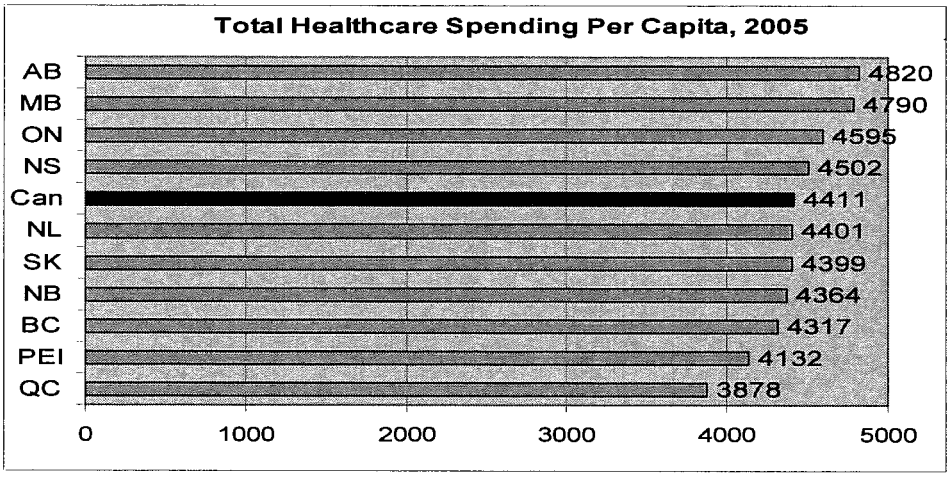
1. Introduction

"There is considerable and convincing evidence that significant economic benefits can be achieved by improving health not only in poor, but also in rich countries. Better health increases labour supply and productivity and historically, health has been a major contributor to economic growth" Martin McKee et al. (2006)

The importance of healthcare delivery to the health of a country's population cannot be over-emphasized. A healthy population makes a healthy economy. Access to health care services is a major issue of concern in both industrialized and developing countries. The need for a healthy population and the ability to provide the required care has led to the development of a variety of healthcare systems in different countries.

In Canada, a public health insurance scheme was designed by the federal government to ensure that reasonable access to medically necessary insured services be made available to all residents without direct charges. As stated in the Canada Health Act, 1984 "...the primary objective of Canadian health care policy is to protect, promote and restore the physical and mental well-being of residents of Canada and to facilitate reasonable access to health services without financial or other barriers." Each individual province administers and delivers its own healthcare services, while the federal government set standards and provides funding through the Canada Health and Social Transfers program to the provinces to deliver comparable health care to residents across the provinces. The federal government's oversight on healthcare delivery across the provinces has ensured that there is minimum variation in healthcare spending per capita among the provinces (see the chart below).



Source: The Canadian Institute of Health Information, table B.1.2 December 2005

http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=media_07dec2005_e

In spite of the noble objectives enshrined in the Canada Health Act, provincial governments are facing increasing cost pressures in maintaining reasonable healthcare delivery. Most provincial healthcare systems are overburdened, some of the symptoms of which are long waiting times for specialized services, shortages of physicians, and inadequate resources to deliver efficient and equitable care. The ability of each provincial government to provide additional funding towards healthcare delivery is partly blamed for the disparity in access to healthcare across the provinces.

In trying to circumvent the inadequate transfer from the federal government to deliver the appropriate level of care, British Columbia, Alberta and Ontario have instituted healthcare premiums on its residents in order to generate more funding to improve the delivery of healthcare in their provinces. Ontario is expected to generate $8.3[1] billion over 2007 – 2010 fiscal years from the healthcare premium implemented in 2004, to help hire more doctors and nurses, reduce the

[1] 2007/2008 Ontario Budget. Table 12. Medium-term Revenue Outlook.

waiting times and expand primary and community-base care and the new revenue is expected to balloon Ontario's healthcare spending.

In the 2007 federal budget, $612 million was earmarked for reducing patient wait times. Each provincial government is expected to draw from this amount on per capita basis. The participating provinces will provide guarantees for reducing wait time in one treatment area of their choosing by 2010. While some have criticized the federal government initiative as inadequate, at least it is a starting point for addressing funding issues that is stifling healthcare delivery across the provinces.

While funding is a major drawback for healthcare accessibility, the physical geography of the country heightens the difficulty in accessing healthcare services in Canada. From table 1 below, we can see that Canada has the largest surface area among the listed countries, but its population density is the lowest among major industrialized countries. The vast areas of sparsely populated rural farmlands are remotely isolated from certain densely populated southern urban centers, making access to healthcare services difficult for Canadians.

Table 1

Country	Surface Area (km^2)	Population	Population Density (persons / km^2)
Canada	9,984,670	33,390,141	3.3
Germany	357,021	82,400,996	230.8
United States	9,826,630	301,139,947	30.6
United Kingdom	244,820	60,776,238	248.2
Japan	377,835	127,433,494	337.3

Source: CIA World Fact Book April 17, 2007.
https://www.cia.gov/cia/publications/factbook/index.html

A third important access problem that is linked directly to funding the healthcare system is the difficulty in obtaining a family physician. Most immigrants come to Canada with good health compared to Canadian born individuals: obviously, the immigration screening process does good job eliminating applicants with poor health. However, with time, the health of these immigrants deteriorates, catching up with their Canadian counterparts. The worsening of the health of the immigrant can partly be linked to the difficulty in obtaining a family physician. Inadequate funding has limited the number of healthcare workers hired. As a result, increasing proportion of the immigrant population has had difficulties in finding a regular family physician. As shown in table 3b, Canadians are among the highest proportion in the sample with a regular doctor (about 88%) while that of immigrant comprised only 12%; and among the immigrants with regular doctor, newly arrived immigrants were only 2% of the sample while older immigrants comprised 10% of t the sample.

1.1 Objectives of the Paper

There is a lot of literature on how the health of immigrants deteriorates when they sojourn in a new a country. One line of the literature examines the link between immigrants and their use of healthcare services (e.g., Laroche (2000)). The empirical work on this subject has examined a variety of issues, such as the effect of socio-economic (income, education, ethnicity, and marital status), demographic (age, gender), and geographical (rural or urban) factors on access and use of healthcare services. There seems to be consensus on the fact that geographical residence accounts for much of the disparities that exist in access to healthcare and use. In general, urban dwellers have more access to healthcare and use than their rural counterparts (Wu et al. (2005), Rivest el al. (1999)). The results are mixed on the effects of socio-economic factors on the disparities of access

and use of healthcare (Wu et al (2005), Newbold et al (2005), and Kirby et al (2006)). It has also been established that males generally report a better state of health than females; declining health is associated with older age; and greater income is generally associated with greater likelihood of been healthy. It is also generally perceived that newly arrived immigrant have less access to healthcare than older immigrants.

Research on *"the healthy immigrant effect"*, indicates that newly arrived immigrants are healthier than the native born but with time, the health status of immigrants declines and converges to that of the native born Canadians (e.g., Deri, 2004). Thus newly arrived immigrants have a health advantage over immigrants who have resided in Canada over a long period of time (Perez, 2002). Different empirical work has been done to ascertain the causes of the declining health of immigrants. Some of the causes were attributed to the aging of immigrants over time and unhealthy lifestyles acquired by immigrants after arrival (McDonald, 2005). Other causes are access to and use of health care, socio-economic and socio-demographic characteristics.

This paper offers a further contribution to understanding the link between access and healthcare use by examining the effect of being an immigrant on the probability of seeing a family doctor or seeing specialists and the number of family or specialist visits that are made. It uses the Canadian Community Health Survey 2005 (CCHS) data set similar to Sanmartin et al (2003), and Newbold et al (2005).

This paper improves on the existing empirical models by

- differentiating between recent and older immigrants
- using the most recent wave of the CCHS (2005) data set
- separating the sample according to whether individuals have a regular doctor

- examining both visits to a family doctor and specialists, and the frequency of visits.
- using a negative binomial model to examine the effect of the number of visits to the family physician and specialist

Although Deri (2004) established the existence of the "*healthy emigrant effect*", (that is, recent immigrants are healthier than the locally born residents but that over time this health advantage decline), the focus of this paper is on how new and older immigrants have access and use healthcare services rather the convergence theory investigated by Deri.

From the introduction, the relevant literature is reviewed in section 2. Section 3 describes the data used in this paper and gives the description of the variables to be employed. In section 4, the methodology used is described, and results are explained in section 5, followed by the conclusion in section 6.

2. Literature Review

In a competitive environment, one would expect the outcome of the delivery and consumption of healthcare services to be reasonably efficient. This in fact is far from reality. Adverse selection, moral hazard and information asymmetry have helped distort the smooth operation of the healthcare market, causing wide disparity in the delivery and consumption of healthcare services. Even if the outcome of the delivery and consumption of healthcare services satisfy the Walrasian equilibrium criteria, the government has a paternalistic tendency to intervene in the market to ensure equitable delivery and consumption of basic healthcare services. In spite of government interventions, there are lots of disparities in access to health care and its utilization among residents of a country. The disparities have prompted investigations into the causes of variations in access to health care by different researchers. According to Annie Phillips (2003), access to healthcare is the extent to which service users are able to receive the care they require regardless of personal circumstances. Most of the empirical works have focused on how personal circumstance such as socio-economic factors and physical barriers hinders service users from obtaining the required and appropriate care.

Sanmartin, Gendron, Berthelot and Murphy (2003) examined access to health care in Canada at both the national and provincial levels. They focused on access to regular family physicians, selected health care services and difficulties which where encountered in accessing care and waiting times for specialized services. Their source of data is the Health Services Access Survey (HSAS), which is a supplement to the Canadian Community Health Survey 2003 (CCHS). The HSAS contains information about access to first contact services, which includes routine care, health information, or advice and immediate care for a minor health problem, either for the

individuals or for members of their family. It also contains information on specialized services, which includes non-emergency surgery, specialist visits for a new illness, and selected diagnostic tests. It reported on the waiting time for these specialized services and the impact of the waiting time on the lives of the respondents. All of this information was gathered through telephone and personal interview by the Statistics Canada regional offices from residents in all the 10 provinces excluding the territories. Individuals who are full time members of the Canadian Forces, or residents in institutions or from some remote regions were also excluded in the survey. (Sanmartin, Gendron, Berthelot and Murphy, page 8)

In analyzing the data, Sanmartin, Gendron, Berthelot and Murphy (2003) produced a frequency distribution and a weighted distribution for access to the selected health care indicators, as well as for the difficulties reported by the respondents. They used a bootstrap technique to estimate the variance and covariance of access to the selected health care by excluding records with no responses. They found out that most Canadians (86%) reported having a regular family physician even though the results differed across provinces. Those who had the required routine care in the previous 12 months comprised a little over half of Canadians. Only a few Canadians admitted to having difficulties accessing care. Those who reported having required health information or advice in the previous 12 months were a little below average.

Some researchers have linked the disparities in access to health care to socioeconomic factors such as race/ethnicity. Wu and Schimmele (2005), investigated if disparities in access to health care exist between racial/ethnic minorities and non-minorities in Canada and whether socioeconomic or

behavioral differences account for such disparities. In their study, they compared the functional[2] and self-reported health of 12 racial/ethnic groups and how their socioeconomic status and health risk behaviors explain the disparities in access to health care. The data source for this study was the National Population Health Survey (NFHS), cycle 2, conducted by Statistics Canada in 1996 and 1997. The survey excluded residents of Indian Reserves, Canadian Forces bases, institutions and some remote regions.

Wu and Schimmele (2005) measured functional health with a generic health status index, which ranged from 0 to 1. The generic health included vision, hearing, speech, mobility, dexterity, feelings, cognition and pain. The self-reported health was measured with a numerical scale, ranging from 1 representing poor to 5 representing excellent. In determining the effect of racial/ethnicity and other selected variables such as family income and education on the functional and self-reported health, an ordinary least squared regression (OLS) was used to construct a regression model for functional health and cumulative logit regression in the analyses for self-reported health. One of the findings was that there is no relationship between socioeconomic or behavioral factors and ethnic health disparities. That is, socioeconomic and behavioral status had little impact on self-reported health status. They also found that there was no clear pattern between ethnic minority status and health.

In another study by Chan and Barer (2000), the authors reviewed the geographic variation in the supply of physicians in Canada. Communities where the supply of physicians was low or the physician expertise required is not available were described as underserviced communities. The authors developed new measures for underservicing. One measure is the number or proportion of

[2] Functional Health refers to the physical health and capacities (such as vision, hearing, dexterity and mobility) that allows the individual to enjoy quality of life

family physicians accepting new patients in a region, so that if physicians are not accepting new patients, then there is shortage of physicians. Another measure is the Ambulatory Care Sensitive Conditions (ACSC), where increased hospitalizations reflect lack of primary care. Other measures include poor health status, waiting lists to see a physician or to obtain selective procedures, access modeling[3], benchmarking[4] and solicited feedback from physician groups at the regional or specialty level on the number of physician resources needed.

The data sources used by Chan and Barer (2000) are the Canadian Institute for Health Information, the Discharge Abstract Database, and the National Physician Database. They discovered that the supply of rural physicians increased, but that of the urban areas declined slightly from 1991 to 1999. But among the provinces, the supply of physicians varied geographically; the lowest number was found in the territories. They also found that rural physicians are likely to be originally from the rural area, and they provided a more comprehensive care and had a larger number of patients than the urban physicians. A third finding was that, the more rural the area is, the more reliant the area is on general specialists such as general surgeons.

Rivest, Bossé, Nedelca and Simard (1999) in their study, reviewed the impact of household income and area of residence on access to Physician Services in Quebec. They investigated whether the health care system was designed to ensure equal access to medical care irrespective of income and region of residence. Most of the data for the study was from the Quebec Health insurance Board. They estimated a regression equation with the dependent variable being consumption of Physician

[3] Under this measure, acceptable target of access to a particular service in a region is established from historical average service per physician.
[4] Under this measure, regions with adequate supply of physician services will be used to evaluate the conditions in other regions

Services per household and the independent variables being type of household, income and region of residence.

Consumption (Unit: Household) = Constant + Effect (Household_Type) + Effect (Region) + Effect (Income) + Error .....(eq 1)

Household type classified into single individual, married couples common law couples and single parents households. The income in the equation was the self-reported income of households (the sum of the gross incomes of each individual in the household who have filed for a tax return). Their results showed that the region and type of household variables were significant but the income variable was not significant. The results also confirmed that there is an increase in the number of physician services after the intervention of the federal government to equalize access across regions, but there are still disparities in the consumption of these physician services. Consumption in urban regions was still higher than that in the remote regions.

Another Canadian study was by Newbold and Filice (2006). The authors compared the health status of older immigrants and non-immigrants who were aged 55 years and above. The source of data for their work is the 2000/2001 Canadian Community Health Survey (CCHS), which is a cross-sectional survey conducted by Statistics Canada. The survey excluded individuals who are members of Canadian Forces, residents in some remote regions and the Aboriginal reserves. Health was measured by self-assessed health status, which was dependent on the health rating of the individual such as excellent, very good, good, fair or poor. In their analyses, they grouped the health status as healthy, if the respondent reported excellent, very good or good self-assessed health, and unhealthy if the respondent reported fair, poor self-assessed health.

The Health Utilities Indexes Mark 3[5] (HUI3) (Newbold and Filice, 2006, 4) was used to measure health and a generic scale ranging from -0.36 to 1.0 was used to measure health-related quality of life with 1.0 representing perfect health, 0 representing death and the negative values representing worse heath states than death. Health utility scores were computed using the rankings of health conditions, the type and extent of individual's disabilities depended upon vision, hearing, speech, emotion, ambulation, dexterity, cognition, pain, and discomfort. The authors did the analysis in two stages, the first stage being the cross-tabulation with immigrant status, age, and gender and the second stage using multivariate method to evaluate the factors associated with the health status. A binomial logistic model was used to evaluate the self-assessed health variable (healthy/unhealthy) and the presence of chronic condition (yes/no). In the model, X is the vector of explanatory variables which takes values 0 or 1 and β is the vector of estimated parameters.

$$P_i = 1/(1+e^{\alpha+\beta X_i}) \quad \text{.....(eq 2)}$$

where P_i is the potential correlates of the two measures of health status.

To explain the HUI3, an Ordinary Least Squares (OLS) regression was estimated as follows

$$HUI3 = X\beta + \mu \text{.....(eq 3)}$$

where μ is the error term.

The explanatory variables include immigrant status, age group, income, household size and education level, years of smoking, drinking status, social support and physical activity and health care use (as a measure of life-style). Among the results obtained was the fact that neither

[5] The Health Utilities Index Mark 3 (HUI3) is a multi-dimensional, preference-based measure of health status and health-related quality of life

immigrants nor non-immigrants appeared to have a clear and consistent health advantage. Also, the difference between the two groups regarding the HUI3 scale was not statistically significant even though HUI3 scale for non-immigrants was higher (0.817) than that of the immigrants (0.803).

Another finding in Newbold and Filice (2006) was that males reported better health than female counterparts regardless of immigration status. There was also a declining health and a greater divergence associated with increasing age among the two groups. It was found that the higher the income, the greater the likelihood of being healthy, having a higher HUI3 score, and a lower likelihood of reporting a chronic condition. This was the same with social interaction, physical activity and more moderate drinking habits.

Aakvik and Holmas (2006) also analyzed the impact economic conditions and access to primary health care have on health outcomes in Norway. The health outcomes were proxied by a mortality rate which is divided into four causes of death[6], while access to primary care was proxied by the number of General Practitioners at the municipality level. They used a longitudinal data set for the 435 Norwegian municipalities from 1986 to 2001 to estimate an econometric panel data model. A fixed-effects model was employed to help account for the simultaneity problem that exists between mortality and GPs. That is, the number of GPs may affect mortality and mortality may also affect future GPs. The data were gathered from the Statistics Norway and the Norwegian Social Science Data Services. The health status of a municipality was considered as the outcome of a production process for which medical and non-medical resources used as inputs. The dependant variable - mortality per 1000 inhabitants - is used as a measure of health outcome, and the independent

[6] The four causes of death are: C - malignant neoplasm or cancer; I - diseases of the circulatory system; J - diseases of the respiratory system; O - other causes like accidents and suicide.

variables are the number of contracted GPs, employed GPs and the number of vacant GP positions. Since vacant GP positions and contracted GPs were considered to be endogenous, the authors used a GMM to estimate the following dynamic health production function;

$$M_{i,t} = \beta_0 + \gamma M_{i,t-1} + \alpha VGP_{i,t} + \beta X_{i,t} + f_i + \gamma_t + e_{i,t}$$

for $i = 1,...,N$ and $t = 1,...,T$ with i and t representing municipality and time indicators, $M_{i,t}$ and $M_{i,t-1}$ are the mortality rates in municipality i at time t and $t-1$ or the previous period respectively. $VGP_{i,t}$ is a vector of the GP explanatory variables, while $X_{i,t}$ is the vector of the controlled explanatory variables including age, education, disability, unemployment, and divorce rates. The f_i is an unobserved municipality-specific time invariant effect, the γ_t are dummy variables of period-specific intercept terms common to all the municipalities, and the $e_{i,t}$ is the error term.

With T time periods, the authors estimate the following dynamic health production function:

$$\Delta M_{i,t} = \gamma \Delta M_{i,t-1} + \alpha \Delta VGP_{i,t} + \beta \Delta X_{i,t} + \Delta e_{i,t}$$

With $\Delta M_{i,t} = M_{i,t} - M_{i,t-1}$

The difference equation eliminates the municipality specific effects. OLS and fixed effects were used to report results from the static health production function, while GMM[7] and GMM-SYS[8]

[7]Generalized method of moment (GMM) is an econometric estimation procedure that is used to estimate the parameters of generalized distributions by minimizing the errors among moments of the distributions.

were used for the dynamic health production function. Results obtained from the static model indicated that increased number of GP positions increases the mortality rate, while an increase in contract GPs decreases the mortality rate, but this variable was insignificant in the OLS model. From the dynamic models, an increase in the lag of the dependent variables increases mortality rate. Thus the GP variables differ across the models. In the GMM and GMM-SYS models, the mortality rate decreases with the number of GPs and vacant GPs, but the result were all insignificant. Another finding was that the mortality rate increases with age except for mortality J (as defined in footnote 7) but decreases with education.

Guendelman, Angulo and Oman, (2005) also did a similar study using US data by comparing access and use of health care by children from working poor families with other poor or non-poor children. They also investigated the impact of the public health insurance on access in California. The sample of children taken were under the age of 18, and these children were classified into 3 groups: working poor for children from employed families earning less than 200% of the Federal Planning Level (FPL) and without welfare, non-working poor which includes children from families with income less than 200% of the FPL, with parents not working or relying on welfare. The third group is the non-poor, which includes children from families earning at least 200% of the FPL with no welfare benefits. The data source was the 2001 California Health Interview Survey.

These authors measured access to healthcare by financial and non-financial access variables. Financial access variables include current insurance status and type of insurance. The non-financial access variables include whether children needed medical care but missed or delayed it in the past 12 months, whether children traveled outside the United States to obtain care, whether children

[8]GMM-SYS is a method of estimating a system of generalized equation by employing GMM method.

were discriminated against while receiving care, and the place children went when they needed care (e.g. community clinic, community hospital or other). The health care use variables include emergency room visits, the event of overnight admission in the previous year, the time interval since the last visit to a dentist for children over 2 years of age, any physician visits in the past 12 months and the number of physician visits. The independent variables include annual income relative to the FPL grouped as 100% and below, 100%-199%, 200%-299% and 300% and above; parental education also grouped as 12years and below, completed high school, more than high school; family structure (be it single or two-parent household); household size and then rural versus urban residence. Child characteristics include sex, age, perceived health status, citizenship and race or ethnicity.

Some of the results obtained in Guendelman, Angulo and Oman, (2005) are that children of the working poor were more likely to have a family income above the FPL. Compared to the nonworking poor, they were more likely to be Latino and less likely to be Black or Asian, more likely to be undocumented, and more likely to live with two-parent or larger households. Compared with the non-poor children, children of the working poor were more likely to live in larger single-parent households and to reside in rural areas, more likely to be Latino, immigrant, younger and to report being in fair or poor health, and less likely to be Asian or white. Children from working poor families were more likely to be insured than those from non-working poor or non-poor families but were as likely as those from non-working poor families to experience unmet medical needs and to have reported discrimination. The number of physician visits was similar for the poor children. Non-financial access between working poor and non-poor children differed greatly and non-financial access and use of health care were similar between working poor and the other poor children.

Kirby, Taliaferro and Zuvekas (2006) also reviewed the racial and ethnic disparities in access and use of health services. Factors which accounted for the racial and ethnic disparities are attitudinal differences, language and neighborhood characteristics. Some of the variables which explain the differences in health access include health insurance coverage, socio-demographic, economic, and health characteristics, language ability, attitudes about health and health insurance, neighborhood racial and ethnic composition, neighborhood socioeconomic disadvantage, and the supply of health services. The approach taken by the authors is to decompose the racial and ethnic disparities in the outcome variable using the Oaxaca-Blinder approach by estimating separate regressions for each racial and ethnic group. The equations used are

$$\bar{Y}_m = \hat{\beta}_{m0} + \sum_{j=1}^{N} \bar{X}'_{mj} \hat{\beta}_{mj}$$

$$\bar{Y}_w = \hat{\beta}_{w0} + \sum_{j=1}^{N} \bar{X}'_{wj} \hat{\beta}_{wj}$$

where m represents a specific minority group, w represents non-Hispanic white subjects, $\bar{Y}$, the mean of a particular access variable, and $\bar{X}'_j$ are the explanatory variables. The difference of the two equations which represented difference between subjects and a racial/ethnic group m in the dependent variable $\bar{Y}_m - \bar{Y}_w$ was;

$$\bar{Y}_m - \bar{Y}_w = \hat{\beta}_{m0} - \hat{\beta}_{w0} + \sum_{j=1}^{N} \bar{X}'_{wj} (\hat{\beta}_{mj} - \hat{\beta}_{wj}) + \sum_{j=1}^{N} (\bar{X}'_{mj} - \bar{X}'_{wj}) \hat{\beta}_{mj}$$

The first two terms on the RHS of the equation was interpreted as components which cannot explain differences in the means of the dependent variables, while the third term is the part that is

explained by the explanatory variables. Sources of data are 2000 and 2001 Medical Expenditure Panel Survey (MEPS), a nationally representative survey of the non-institutionalized U.S population, Health Services Resource Administration (HRSA): Census Bureau and local provider supplied data. Results obtained from the analyses are that insurance status, socioeconomic, neighborhood characteristics and demographic characteristics (such as income and education) account for a sizable proportion of racial and ethnic differences in access to health care. Attitudinal measures did not strongly explain differences between the groups. Also, non-Hispanic whites, compared to any other group, are more likely to have a usual source of care, have ambulatory care and be satisfied that their families can get care. The difference between non-hispanic whites and the whites is larger than difference between whites and blacks.

Laroche (2000) examined the health status of immigrants and their use of health services and compared it to the people born in Canada. He concluded that there are no significant differences between the health status of immigrants and their use of health services compared to the Canadian-born population. His results also showed that the health status of immigrants and their use of health services have remained unchanged over time. The sources of data used in his empirical work are the 1985 and 1991 cycles of the Statistical Canada's General Social Survey. The Probit and Tobit models were used to run regressions with dependent variables being self perceived health grouped into three categories. With regards to the use of health care, four dependant variables were used; number of visits to general practitioners, specialists, nurses, and the time spent in the hospital. Common explanatory variables used in all the regressions are marital status, household income, age, gender, province of residence, occupation, labor force status, mother tongue and number of children. In his paper, he established that there is an association between better health and higher

income or educational attainments. Also, province of residence and occupation did not have much impact on health status.

While lots of work has been done on access to healthcare, there is no clear consensus on the definition of access to healthcare in the literature. Each author has defined access to healthcare differently. For instance, Laroche (2000) defined access to healthcare as the number of visits to general practitioners, specialists, nurses and time spent at the hospital, while Chan et al (2000) measured access to healthcare variously as the number or proportion of family physicians accepting new patients or number of hospitalizations or waiting list to see a physician or to obtain selective procedures. Aakvik et al (2006) also measured access to healthcare by the number of General Practitioners at the municipality level while Guendelman et. al (2005) also measured access to healthcare by current insurance status. In this paper, access to healthcare is measured by the number of visits to the physician or specialist – similar to Laroche (2003).

None of the papers in the literature have considered the dynamics of having or not having a regular doctor. Whether or not the individual has a regular doctor can influence his or her access and use of other healthcare services. This paper helps to fill this gap by considering the impact of having a regular doctor on the probability of seeing a physician or specialist, and the frequency of such visits. Also similar to Laroche (2003), this paper pays particular attention to the impact of being an immigrant – both a new immigrant of fewer than 10 years, and an older immigrant of more than 10 years – on visits and frequency of physician visits.

3. Data Description

The data for this study were drawn from the 2005 Canadian Community Health Survey (CCHS Cycle 3.1), collected between January and December 2005.The CCHS is a key component of the Population Health Survey Program of Statistics Canada. The CCHS is a cross-sectional survey that collects information related to health status, health determinants and health care utilization for the Canadian population. The CCHS also include data on economic, social, demographic, occupational and environmental variables that may correlate with health.

The CCHS Cycle 3.1 questionnaire was administered through telephone interviews by random digit dialing and self-administered questionnaires. With a randomly chosen household member, the phone interviews were conducted using computer assisted telephone interviewing (CATI), whereas interviews conducted in person were done using computer assisted personal interviewing (CAPI). In the survey, each province is divided into health regions, and each territory represented a health region. A total of 125 health regions were considered from all the provinces and territories, with 122 health regions coming from the 10 provinces and 3 health regions from the 3 territories. (CCHS 3.1, 2005, Public Use Microdata File User Guide, page 15).

Responses collected by the CCHS are from individuals aged 12 or above living in private dwellings in all the provinces and territories. The survey excludes individuals living on Indian Reserves and on Crown Lands, institutional residents, full-time members of the Canadian Forces, and residents of certain remote regions. The CCHS covers approximately 98% of the Canadian population who fall within the age limit.

In this study, variables are defined using the CCHS Cycle 3.1 sub-sample 3 file. The data are weighted using the weights provided in the survey. This file was chosen because the sub-sample 3 file deals with three issues: access to health care services, which is the topic of interest in this study, waiting times, and patient's satisfaction.

3.1 Variable Definitions

In the sub-sample 3 file, a total number of 35,949 respondents were considered, with immigrants forming about 12% of this sub-sample. We define the physician visit variable as visits to a family doctor or general practitioner. Table 2 defines all of the dependent and independent variables used in this study. Table 3 gives the summary statistics of all the variables used in the regression analysis. The whole sample is provided in table 3a, which is then separated according to whether individuals have a regular doctor or have no regular doctor (in table 3b).

The first two dependent variables in table 1 are binary in nature, since they capture whether a respondent visited a general practitioner (physician) or specialist within the past 12 months. The last two dependent variables are not binary, as they capture the number of visits made to the physician or specialist. The explanatory variables include gender, marital status, age, education, occupation, income, self perceived health, province of residence and other variables such as regular doctor, immigrant status, Canadian-born. The immigrant variable was further sub-divided according to the length of time an individual has lived in Canada. Immigrant_09 (newly arrived immigrants) captures immigrants who have spent 9 years or less in Canada, and immigrant_10 captures immigrants who have spent 10 years or more in Canada (older immigrants). Age is classified into 5 different groups, and dummy variables were constructed for each group accordingly: 15 – 24 years, 25 – 44 years, 45 – 64 years, 65 – 79 years and 80 years or older.

Income is also classified into 5 groups: less than $15,000, $15,000 - $29,000, $30,000 - $49,000, $50,000 -$79,000 and $80,000 or above. Self perceived health is also grouped into 4 groups according how a respondent rated his/her health (excellent, very good, good, fair and poor). The last of the two ratings (fair and poor) were grouped as poor health. The education variable is also categorized into 4 groups: those who attained some secondary school education, those who actually graduated from secondary school, those who attained some post secondary education and those who actually graduated from the post secondary education.

The summary statistics in table 3 reveal some interesting point. On average, 45% of the whole sample is male while 55% is female; of the sample with a regular doctor, the number of females still dominates with approximately 57% having regular doctor, while about 43% of males have a regular doctor. 58% of the sample without a regular doctor is males while 42% are females. This is a clear indication that females seek more health attention than men do.

Table 2 reveals that those within the $50,000 – $70,000 income group constituted 24%, the highest proportion in the total sample. The lowest income group- those who earned less than $15,000 – constituted 11% of the total sample. Out of the sample with regular doctor, those within the $50,000 - $79,000 income group still have the highest proportion (24%).The lowest income group constituted only10% of the sample with regular doctor. Within the sample without regular doctor, those within the $30 – $49 and $50-$79 income groups had the same proportion, 23%. Also, about 24% of the sample with and without regular doctor earn $80,000 or above, but this group forms about 23% of the full sample. It would seem that higher income group individuals have a higher probability of having a regular doctor.

Those aged 45 to 64 years comprise 32% of the sample with regular doctor, the highest within that group, while individuals aged 25 to 44 years old constitute the highest proportion (about 44%) of individuals without a regular doctor. This suggests that individuals aged 45years seek health attention than the younger ones, since deteriorating health comes with aging.

Among the provinces, Ontario makes up the highest proportion within the sample with regular doctor, (about 14%) but makes up only 7 % within the sample without regular doctor. Quebec makes up 12% within the sample with regular doctor and 19% within the sample without regular doctor. The territories make up the lowest within the sample with regular doctor (about 4%) and the highest within thesample without regular doctor (22%) This suggests that location matters in access to healthcare. Communities in the territories are sparsely populated and located away from the closest urban centers, making it difficult for the population in these communities to get accessible care.

Considering the self perceived health variable, individuals with very good self reported health constitute the highest proportion of the sample with and without a regular doctor. They make about 37% of the sample with a regular doctor and 38% of the sample without a regular doctor. Canadians comprise the highest proportion of the sample with a regular doctor (about 88%) while that of immigrant is only about 12%; and among the immigrants with regular doctor, newly arrived immigrants comprise the lowest proportion at about 2% with older immigrants comprising about10%.

4. Econometric Model

In this study, we try to analyze access to and use of health care system by estimating the probability of visiting a general practitioner (GP) or specialist and the number of times individuals visit a GP or specialist. I am particularly interested in whether immigrants behave differently from Canadian born individuals. Two types of regressions models were employed. In the first model a probit regression is used to analyze the odds that an individual visits a physician or specialist. The second model, a negative binomial regression, is used to analyze the number of visits to a physician or a specialists. The number of specialist and physician visits is captured by the number of consultations an individual made within the past 12 months. The number of consultations was the times an individual saw or spoke on the telephone to the general practitioner (GP) or specialist doctor about physical, emotional or mental health. Thus, the values for the number of physician (GP) and specialist visits are non-negative.

The maximum likelihood estimation technique is used to estimate the probit model, which is non-linear with a dichotomous dependant variable, to ascertain the marginal effect of the explanatory variables on the probability outcome of the dependent variable (physician/specialist visits). Regressions for individuals with and without regular doctor were estimated and other regressions based on whether individuals have a regular doctor or do not have a regular doctor were also run. We can express the probit model as follows:

$$\Pr ob(Y \neq 0 \mid X) = \Phi(X\beta + \varepsilon)$$

where the dependent variable, Y is the physician (GP) or specialist visit variable; X, the vector of explanatory variables; β, the vector of estimated coefficients which reflects the impact of changes in the explanatory variables on the probability of visits; Φ, is the standard normal

distribution, and ε the error term, which is assumed to be normally distributed. The marginal effect in the probit model, which measures the change in the probability of an event occurring as a result of a unit change in the value of the regressor, was computed.

The negative binomial model was used to investigate the effect of the explanatory variables on the number of specialist or physician visits. The negative binomial model allows for cross-sectional heterogeneity by introducing an unobserved individual effect in the conditional mean function. The equation for the negative binomial model is:

$$F(Y) = \phi[X\lambda + \varepsilon]$$

where Y is the number of physician or specialist visits, X is the vector of exogenous covariates affecting the frequency of visits, and λ is the vector of estimated coefficients with ε the error term and the function ϕ is a cumulative normal distribution.

The explanatory variables used in both the probit and negative binomial regressions are the same - gender, age, marital status, income, educational status, self-perceived health, immigrants/ newly arrived immigrants and older immigrants, and province. All these regressions were estimated with specific values of the explanatory variables. Marginal effects were computed and interpreted with respect to a reference group, which was defined as: female, single, aged from 15 to 24 years, excellent health status, income less than $15,000, some secondary school education, unemployed, Canadians and Ontario variables. Notice that the reference group is important when interpreting the marginal effects, as it is with respect to this group that the probability changes are calculated (e.g., see Kennedy, 2003). The statistical package used for the analysis of the data is STATA version 9.

5. Results and Analysis

Tables 3 and 4 report the marginal effects of the explanatory variables based on the whole sample and then separating the observations according to those who have a regular doctor and those without regular doctor. The marginal effects were computed at specific values of the explanatory variables. Immigrants were separated into 2 groups depending on the length of time in Canada in tables 3a and 3c, whereas in tables 3b and 3d, they are treated as one variable. Table 5 provides a summary of the estimated effects from the immigrant variables only extracted from tables 3 and 4.

5.1 Physician Visits

From table 3a, I find that the predicted probability of the reference group going to see a doctor is 0.6826 or about 68.3% for the whole sample, about 74.6% for the individuals with regular doctor, and about 20.9% for those without regular doctor. Clearly, individuals with a regular doctor have a much higher probability of seeing a doctor than those without a regular doctor. The coefficients on the male variable are negative for the samples. For instance, for the whole sample, the probability of seeing a doctor declines by 11.1% if the individual is a male relative to his female counterpart. For the regular doctor sample, this decline is 9.5%, while for the sample without a regular doctor, there is a 16.1% difference between males and females, *ceteris paribus*.

Males without a regular doctor have a 4.8% lower probability of seeing a physician than males with a regular doctor. Indeed, all individuals with a regular doctor are more likely to visit the physician than those without a regular doctor, although males have less likelihood to visit a physician than females. This could be due to the fact that males report better health than do females, or as indicated in table 2, females seek health attention more than males. This result

accords with the finding of Laroche (2000). If an individual is married, the probability of seeing a physician will increase by 3.0%. This may be due to how married persons rank their self-perceived health. This corresponds to the findings of Newbold et al (2005) who compared the health status of older immigrants with their Canadian counterparts and found that married persons were less likely to rank their health so highly. However, married people with a regular physician are no different than married people without a regular physician when it comes to the likelihood of seeing a doctor.

Individuals in the 45 to 64 age group (of working age) have a 5.4% higher probability of seeing a doctor than those aged 15 to 24 years. This is similar to the finding of Laroche (2000) that as individuals age, they consult health professionals more frequently. This observation holds for the full sample and for the sample of those with a regular doctor. For the sample without a regular doctor, those in this middle-aged group resemble the reference group aged 15-24. The point estimate is insignificantly different from zero.

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Those who perceive their health to be very good are 8.2% more likely to see a physician than those who rank their health as excellent. This result is similar to the findings for those with regular doctor and for those without regular doctor. This indicates that the healthier an individual is, the less likely it is for that individual to see the doctor.

An individual living in a household earning between $50,000 to $79,000 is 8.5% more likely to see a physician than those in households earning less than $15,000. This result is similar to the finding of those with regular doctor. Thus, higher income earners seek more health attention than those who earn less, a result consistent with the idea that visiting a doctor (health care) is a normal good.

This could be the reason why Newbold et al (2005) found that greater income earners are more likely to be healthy

Educational attainment influences the probability of seeing a doctor. The more educated an individual is, the more health attention the individual seeks (see, for instance, Laroche, 2005). Laroche found that highly educated individuals have better self-reported health than the less educated individuals. A post graduate individual is 5.0% more likely to visit a doctor than those with some secondary school education. This result is also similar for those with and without regular doctor. The coefficients on full-time employees are all negative but statistically insignificant suggesting that those who work full time are not different from those who do not work, or from those who work only part time. This result echoes that of Laroche (2005) which finds, in general, that occupation does not have a significant impact on an individual's health. Occupation has little to do with full-time and part-time status.

In this paper, the results of the health status variable for older immigrant compared to the result for the Canadian born were found not to be significant. This finding is again similar to Laroche (2000), who did not find any significant difference between the health status of immigrants and non-immigrants. The insignificance of the results seems to suggest that the health status of immigrants do not deteriorate with respect to time once they immigrate to Canada. Notice that younger immigrants (i.e., those in Canada for fewer than 10 years) resemble the Canadian-born population – a result that is not very surprising given the stringent immigration requirements put on potential candidates.[9]

[9] Indeed, the healthy immigrant effect would predict that newer immigrants would be healthier than the Canadian born population. All immigrants are subject to a rigorous health exams before they immigrate to Canada.

Among the provinces, individuals who reside in Ontario have a higher probability of seeing a doctor than those who reside in Quebec. This holds for individuals with regular doctor. Those without regular doctor in Quebec are 8.2% more likely to see a doctor than those in Ontario. Within the whole sample, an individual in Quebec is 8.8 per cent less likely to see a physician than an individual in Ontario. All results are statistically significant at 5%. This finding is similar to the finding of Sarmantin et al (2003), who concluded that fewer Quebec residents reported having a regular doctor relative to those residing in other provinces.

The difference between the specification reported in tables 3a and 3b is how the immigrant variable is defined. In table 3a, we disaggregate immigrants into two groups: those who have been in Canada for fewer than 10 years and those who immigrated ten or more years beforehand. Most of the inferences from the results reported in table 3a are the same as those for table 3b. The predicted probability for the full sample in table 3b is 66.6%, slightly lower than that listed in table 3a. Also the predicted probabilities for those individuals with a regular doctor and without a regular doctor are higher in table 3b than those in table 3a.

Another distinction comes from the fact that the coefficient for the married person without a regular doctor is statistically significant at the 5% level whenever the immigrant variables are included (table 3a) . Also, we find that in table 3a, the coefficient for the individuals aged 45 to 64 years without a regular doctor is statistically significant at the 1% level. This is the same for the coefficient of the health variable for individuals who rank their health as very good and do not have a regular doctor.

All immigrants are 1.6% more likely to see a physician than the Canadian-born. The difference in the probabilities of the two groups could be attributed to the difference in their health status. This is different from the finding of Laroche (2005) that there is no significant difference between health status immigrants and non-immigrants. Those with regular doctor are also 0.3% more likely to see the physician while those without a regular doctor are 4.7% less likely to see the doctor. Immigrants with a regular doctor have a higher probability of seeing a doctor than those without a regular doctor but for this latter group, the effect is insignificant.

Turning now to the number of visits per year, the results reported in table 4 indicate that the predicted number of visits to a physician by the reference group is higher for those with a regular doctor (1.7688) than those without regular doctor (1.2467). Also, males use fewer physician services than females, as the negative coefficients and all being statistically significant at 1% level. For the full sample, males use 54.9% fewer services than females. Laroche(2000) also finds that women use more health services than men.

Married individuals use more services than single individuals and again, those married individuals with regular doctor use fewer physician services than singles. This result confirms the findings of Newbold et al (2005) discussed earlier on. Married individuals with a without regular doctor see a physician 19.8% more times per year than do single individuals. Individuals aged 45 to 64 years have a lower predicted number of physician visits than individuals aged 15 to 24, even though they have a higher probability of visiting a physician.

Individuals who earn $50,000 to $79,000 also use fewer physician services than those who earn less than $15,000, consistent with the findings of Laroche (2000). The coefficients for the full

sample and the sample with regular doctor are statistically significant at 5% level, while the coefficient for the sample without a regular doctor is statistically insignificant at 10% level.

The coefficients for the health variable indicate that individuals with very good self-reported health have a higher predicted number of physician visits than those with excellent health status. Post secondary graduates also uses more physician services than those with some secondary education. This could account for the finding of Laroche (2000) that highly educated individuals perceive better health status than the less educated, but the difference is with the fact that higher education is associated with less physician consultation.

As shown in table 4a, the negative coefficients for full time employees indicate that they use fewer physician services than the unemployed. The fewer usage of physician services by the full-time employees reflect the high opportunity associated with visiting the doctor Older immigrants in general and those with regular doctor use more physician services than the Canadian-born, while those without regular doctor use fewer physician services than the Canadian-born. Residents of Quebec have a lower predicted number of physician visits than those in Ontario. These results are different from those of Laroche (2000), who found that immigrants and Canadian born use health services in similar manner. Occupation and province of residence have no significant impact on an individual's health.

Overall, the findings of this paper compare well to those in the literature. However, in this paper we distinguish between those with and without a regular doctor, and we find that this matters a lot. We turn now to an examination of the determinants of visiting a specialist physician.

5.2 Specialist Visits

The results presented in table 3c indicate that the reference group with a regular doctor has a probability of 22.9% of seeing a specialist physician, as opposed to a probability of 20.9% for those without a regular physician. Once again, males have a lower probability of seeing a physician than females, and all coefficients are significant at 1% level. A married individual is 0.6% more likely to visit a specialist than a single person. The married individual with a regular doctor is 1.1% less likely to see a specialist than the single person. Also the married individual with no regular doctor is 5.2% more likely to see a specialist.

For the whole sample and the sample with regular doctor, an individual aged 45 to 64 years is 2% to 4% more likely to see a specialist. But that individual without a regular doctor has a 5.2% lower probability of seeing a specialist. The positive coefficients for individuals with very good health status indicate that they have a higher probability of seeing a specialist than those with excellent health status. All coefficients are statistically significant at 1% level, with the exception of those who do not have a regular doctor. Higher income is still associated with a higher level of healthcare usae, a similar finding by Newbold et al. (2005). An individual in the income group $50,000 to $79,000, with the exception of individuals without a regular doctor, has a higher probability of seeing a specialist than and individual with income less than $15,000, and all results are significant at the 1% level, but there is no difference between the two groups when it comes to individuals without a regular doctor.

Post secondary graduates are 7.9 per cent more likely to see a specialist than individuals with some secondary school education. This could explain why Nowbold et al (2005) found that highly educated individuals rate their health higher than the less educated. All coefficients are significant

at the 1% level, meaning that the more educated a person becomes, the more health attention the person seeks. Full-time employees still have a lower probability of seeing a specialist than the unemployed, and this is significant at the 5% level. This result is the same for those with a regular doctor and those without a regular doctor. This affirms the finding of Laroche (2000) that there is no association between occupation and health status.

In general immigrants are 3% less likely to visit specialist than the Canadian-born. Aslo those immigrants who have been in Canada for ten years or longer are 4.1% less likely to see a specialist physician relative to the Canadian-born population: a figure which rises slightly to to 4.8% if they have a regular physician. This result seems a bit counter intuitive – that having a regular doctor would reduce the likelihood of seeing a specialist. However, the difference between 4.1% and 4.8% is not very large. My result also shows that older immigrants without a regular doctor are slightly more likely (0.7%) to see a specialist than the Canadian born but this result is highly insignificant. We could interpret this finding as indicating that immigrants without a regular doctor behave about the same way as Canadian born individuals without a regular doctor. This is similar to the conclusion drawn by Laroche (2000) about immigrants and non-immigrants using health services in a similar manner.

Unlike the results obtained from physician visits, the result obtained from specialist visits indicate that individuals who reside in Quebec are more likely to see a specialist than those in Ontario. Table 3d presents results with immigrant status treated as one variable. The reference group with regular doctor has a higher predicted probability of 24.9% of seeing a specialist compared to those without a regular doctor, whose predicted probability is 18.2%. Most of the results obtained in table 3c (where the length of years for immigrants was differentiated) are the same in table 3d,

with few differences. When immigrants are treated as one group, the predicted probability for the reference group in the whole sample is 23%, and for those with regular doctor, it is 24.9% which is higher than before. However for those without regular doctor, the predicted probability of seeing a specialist is now 18.2%, which is lower than when the immigrants were differentiated according to length of years in Canada. The coefficients of the immigrant status variable are negative for all the samples. This means that immigrants are less likely to visit a specialist in comparison to the Canadian-born. This contradicts the finding of Laroche (2000). The coefficient for those without regular doctor gives a better intuition than what was obtained with older immigrants.

The results from table 4b indicate that individuals with a regular doctor use more specialist services than those without a regular doctor. Males have a lower predicted number of specialist visits than females, which is similar to the finding of Laroche (2000). Married persons use more of physician services than singles, but those with a regular doctor uses fewer services than the single individuals .The result for those without regular doctor is statistically significant, while the others are not. Unlike physician services, individuals aged 45 to 64 have a higher predicted number of specialist visits than those aged 15 to 24, except those without regular doctor, who use 5% less than the reference group. Individuals with very good health status use more specialist services than those with excellent health status. All coefficients are significant except for that of the sample without regular doctor.

Those who earn income between $50,000 - $79,000 also use more specialist services, than those in the reference group, which is different from the finding of Laroche (2000), except those without regular doctor which has an insignificant result. Older immigrants in the full sample and the sample with a regular doctor use fewer specialist services, and the results are significant, but those

without a regular doctor use more of specialist services. Full-time employees with the exception of those without a regular doctor use fewer specialist services. Ontario residents with the exception of those with regular doctor have a lower predicted number of specialist visits than Quebec residents. Post-secondary graduates also have a higher predicted number of specialist visits than those with some secondary school education. This concurs with the finding of Newbold et al (2005) that the higher the level of education of an individual, the better health reported. Laroche also reported that highly educated individuals perceive themselves to have better health than the less educated ones.

Overall, it seems clear that many of the influences that determine physician visits also determine specialist visits. This result is not very surprising when one considers the fact that family doctors play the role of gatekeeper in the health-care system – determining who should be referred to specialist physicians. Two points are particularly worthy of note. First is the importance of having a regular doctor in facilitating access to other aspects of our health care system. The probability of seeing a specialist is higher, in general, for those with a regular doctor in comparison to those without a regular doctor. Second, immigrants appear to behave differently than Canadian born individuals. We find that immigrants with a regular doctor are less likely to seek treatment from specialists compared to Canadian born individuals, while immigrants without a regular doctor behave about the same as their Canadian born counterparts. It would be interesting to explore further this situation.

6. Conclusion and Policy Implication

The goal of this paper was to analyze the effects of immigrant status and other factors on the probabilities and frequencies of specialist and physician visits using econometric models. Three samples were investigated. The data set were pooled together for all the individuals, and then latter disaggregated according to whether the individual has a regular doctor or not. Our results indicate that the presence of a regular doctor seems to matter a lot.

In general, the findings as summarized in table 5b show that immigrants with regular doctor have a significantly higher probability of visiting the physician. However, immigrants have a lower probability of visiting the specialist than the Canadian-born. Another major finding was the gender effect. Males seem to have a lower probability and frequency of visits than females. Higher income earners have higher probability of seeing a physician and a specialist and a higher predicted frequency of visiting a specialist, but a lower predicted number of visits to a physician than the lower income earners. Also the lower the health status of an individual, the more likely they are to see a physician or specialist, and the more visits they make. Ontario residents have a higher likelihood of visiting a physician and have more visits than Quebec residents, but are less likely to visit specialist and have fewer specialist visits. Higher education is also associated with higher probability of visiting both physicians and specialists.

The findings suggest that the health status of immigrants with a regular doctor deteriorate as they get older, and that makes them visit physician, more than the Canadian born. Yet they still have a lower probability of visiting the specialist, and thus have a lower number of visits to the specialist. There is a need to introduce programs to help educate newly arrived immigrants on how to

maintain their health or live healthier lives as they get older. Also, a policy instrument that can help immigrants get access to specialists may be needed to help maintain their good health status.

In order to introduce a policy instrument to address the issue of access to healthcare usage, there needs to be a clear consensus on what constitutes access to healthcare. Access to healthcare has been defined variously depending on data availability and choice of variables. A general agreement on the definition will allow researchers to narrow down the constraints and factors that affect access to healthcare and its use. More and better quality data would be very useful in furthering our understanding of the link between immigrants and healthcare access.

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Table 2

Variables Definitions

Variable	Definition
	Dependent Variables
Physician Visit	=1 if a respondent visits a physician or General Practitioner (GP), otherwise=0.
Specialist Visit	=1 if a respondent visits a specialist, otherwise=0.
Num Phy Visit	=Number of consultations made to family physician or GP in a year.
Num Spec Visit	=Number of consultations made to specialist (such as surgeon, allergist, orthopedist, gynaecologist, or psychiatrist), in a year.
	Independent Variables
Gender	
Male	=1 if male, otherwise=0.
Female	=1 if female, otherwise=0. **(R. G)**[10]
Marital Status	
Married	=1 if married or common law, otherwise=0.
Wid-Sep-Div	=1 if widowed, separated or divorced, otherwise=0.
Single	=1 if single, otherwise=0. **(R. G)**
Age	
Age 15-24	=1 if age is from 15 to 24, otherwise=0. **(R. G)**
Age 25-44	=1 if age is from 25 to 44, otherwise=0.
Age 45-64	=1 if age is from 45 to 64, otherwise=0.
Age 65-79	=1 if age is from 65 to 79, otherwise=0.
Age 80+	=1 if age is from 80 and above, otherwise=0.
Education	
Some Sec	=1 if less than secondary school graduate, otherwise=0. **(R. G)**
Sec Grad	=1 if secondary school graduate, otherwise=0.
Some Post Sec	=1 if some post secondary, otherwise=0.
Post Sec Grad	=1 if post secondary graduate, otherwise=0.
Occupation	
Student Ftime	=1 if full time student, otherwise=0.
Employed Ftime	=1 if working full time, otherwise=0. **(R. G)**
Employed Ptime	=1 if working part time, otherwise=0.
Income	
Income 15k-	=1 if household income is less than $15,000, otherwise=0 **(R. G)**
Income 15k-29k	=1 if household income is $15,000-$29,000, otherwise=0.
Income 30k-49k	=1 if household income is $30,000-$49,000, otherwise=0.
Income 50k-79k	=1 if household income is $50,000-$79,000, otherwise=0.
Income 80k+	=1 if household income is $80,000 or more, otherwise=0.
Self Perceived Health	
Health Exc	=1 if health status is excellent, otherwise=0. **(R. G)**
Health Vgood	=1 if health status is very good, otherwise=0
Health Good	=1 if health status is good, otherwise=0
Health Poor	=1 if health status is fair or poor, otherwise=0
Provinces	

[10] R.G represents Reference Group

Newfoundland	=1 if resides in Newfoundland or Labrador, otherwise=0.
Price Edward Island	=1 if resides in Price Edward Island, otherwise=0.
Nova Scotia	=1 if resides in Nova Scotia, otherwise=0.
New Brunswick	=1 if resides in New Brunswick, otherwise=0.
Quebec	=1 if resides in Quebec, otherwise=0.
Ontario	=1 if resides in Ontario, otherwise=0. **(R. G)**
Manitoba	=1 if resides in Manitoba, otherwise=0.
Saskatchewan	=1 if resides in Saskatchewan, otherwise=0.
Alberta	=1 if resides in Alberta, otherwise=0.
British Columbia	=1 if resides in British Columbia, otherwise=0.
Territories	=1 if resides in Territories (Yukon, Northwest or Nunavut), otherwise=0.
Others	
Regular Doctor	=1 if a respondent has a regular doctor, otherwise=0.
Immigrant	=1 if immigrant, otherwise=0.
Canadian	=1 if born in Canada, otherwise=0 **(R. G)**
Immigrant 09	=1 if length of time in Canada since immigration is between 0 and 9 years, otherwise=0. **(R. G)**
Immigrant 10+	=1 if length of time in Canada since immigration is 10years or more, otherwise=0.

Table 3

Descriptive Statistics

a) Full Sample

Variable	N	Mean	Stand. Dev.	Min	Max
Physician Visit	35827	.80785	.39399	0	1
Specialist Visit	35910	.26862	.44325	0	1
Num Phy Visit	35827	3.4166	4.4272	0	31
Num SpecVisit	35910	.72568	1.8569	0	12
Male	35949	.45203	.4977	0	1
Female	35949	.54797	.4977	0	1
Married	35890	.52109	.49956	0	1
Wid-Sep-Div	35890	.2007	.40053	0	1
Single	35890	.27821	.44812	0	1
Age 15-24	35949	.14952	.3566	0	1
Age 25-44	35949	.32858	.4697	0	1
Age 45-64	35949	.31044	.46268	0	1
Age 65-79	35949	.15594	.36281	0	1
Age 80+	35949	.05552	.229	0	1
Some Sec	35685	.26123	.43931	0	1
Sec Grad	35685	.15561	.36249	0	1
Some Post Sec	35685	.08295	.27581	0	1
Post Sec Grad	35685	.50021	.50001	0	1
Student Ftime	35756	.09554	.29396	0	1

Employed Ftime	35668	.48663	.49983	0	1
Employed Ptime	35668	.09639	.29513	0	1
Income 15k-	31043	.10624	.30815	0	1
Income 15k-29k	31043	.18848	.3911	0	1
Income 30k-49k	31043	.22804	.41957	0	1
Income 50k-79k	31043	.24112	.42777	0	1
Income 80k+	31043	.23612	.42471	0	1
Health Exc	35907	.1906	.39278	0	1
Health Vgood	35907	.37377	.48381	0	1
Health Good	35907	.29418	.45568	0	1
Health Poor	35907	.14145	.34849	0	1
Newfoundland	35949	.07783	.26791	0	1
Price Edward Island	35949	.05235	.22274	0	1
Nova Scotia	35949	.08443	.27803	0	1
New Brunswick	35949	.08454	.27819	0	1
Quebec	35949	.12626	.33215	0	1
Ontario	35949	.13052	.33688	0	1
Manitoba	35949	.08557	.27973	0	1
Saskatchewan	35949	.08899	.28473	0	1
Alberta	35949	.09619	.29486	0	1
British Columbia	35949	.10576	.30754	0	1
Territories	35949	.06757	.25101	0	1
Regular Doctor	35844	.84025	.36638	0	1
Immigrant	35758	.12042	.32546	0	1
Canadian	35758	.87958	.32546	0	1
Immigrant 09	35758	.02534	.15715	0	1
Immigrant 10+	35758	.09508	.29333	0	1

b) Sample with and without Regular Doctor (R. D)

Variable	**N**	**Mean**	**St. D**	**Min**	**Max**	**N**	**Mean**	**St. D**
	with regular doctor					**without regular doctor**		
Physician Visit	30014	.8611	.34585	0	1	5713	.52984	.49915
Specialist Visit	30085	.28845	.45305	0	1	5722	.16445	.37072
Num Phy Visit	30014	3.752	4.5674	0	31	5713	1.6662	3.0602
Num SpecVisit	30085	.78611	1.9214	0	12	5722	.4086	1.4345
Male	30118	.42782	.49477	0	1	5726	.57824	.49388
Female	30118	.57218	.49477	0	1	5726	.42176	.49388
Married	30073	.53905	.49848	0	1	5713	.42902	.49498
Wid-Sep-Div	30073	.21092	.40797	0	1	5713	.14651	.35365
Single	30073	.25002	.43303	0	1	5713	.42447	.49431
Age 15-24	30118	.13514	.34187	0	1	5726	.22337	.41654
Age 25-44	30118	.30679	.46117	0	1	5726	.44464	.49697

Age 45-64	30118	.32343	.46779	0	1	5726	.24432	.42972
Age 65-79	30118	.17279	.37807	0	1	5726	.06584	.24802
Age 80+	30118	.06186	.2409	0	1	5726	.02183	.14614
Some Sec	29922	.26058	.43896	0	1	5682	.26294	.44027
Sec Grad	29922	.15811	.36485	0	1	5682	.14273	.34983
Some Post Sec	29922	.08048	.27203	0	1	5682	.09662	.29547
Post Sec Grad	29922	.50084	.50001	0	1	5682	.49771	.50004
Student Ftime	29978	.08957	.28556	0	1	5695	.12625	.33216
Employed Ftime	29930	.46786	.49897	0	1	5663	.58714	.49239
Employed Ptime	29930	.09766	.29686	0	1	5663	.09006	.28629
Income 15k-	26041	.10361	.30475	0	1	4956	.11965	.32459
Income 15k-29k	26041	.18997	.39228	0	1	4956	.18059	.38472
Income 30k-49k	26041	.22756	.41927	0	1	4956	.23043	.42115
Income 50k-79k	26041	.24358	.42925	0	1	4956	.22821	.41972
Income 80k+	26041	.23528	.42418	0	1	4956	.24112	.42781
Health Exc	30080	.18358	.38715	0	1	5723	.22768	.41937
Health Vgood	30080	.37297	.4836	0	1	5723	.37935	.48527
Health Good	30080	.29295	.45512	0	1	5723	.30037	.45846
Health Poor	30080	.1505	.35757	0	1	5723	.09261	.28991
Newfoundland	30118	.08002	.27133	0	1	5726	.06706	.25015
Price Edward Island	30118	.05558	.22912	0	1	5726	.0358	.18581
Nova Scotia	30118	.09549	.2939	0	1	5726	.02724	.16281
New Brunswick	30118	.09267	.28997	0	1	5726	.04296	.20279
Quebec	30118	.11508	.31912	0	1	5726	.18564	.38885
Ontario	30118	.14134	.34838	0	1	5726	.07405	.26187
Manitoba	30118	.08457	.27824	0	1	5726	.08959	.28562
Saskatchewan	30118	.09028	.28658	0	1	5726	.08156	.27371
Alberta	30118	.09416	.29206	0	1	5726	.10566	.30743
British Columbia	30118	.11149	.31475	0	1	5726	.07317	.26045
Territories	30118	.03931	.19434	0	1	5726	.21725	.41241
Regular Doctor	30118	1.000	0.000	1	1	5726	0.000	0.000
Immigrant	29987	.12182	.32708	0	1	5687	.11183	.31519
Canadian	29987	.87818	.32708	0	1	5687	.88817	.31519
Immigrant 09	29987	.02104	.14353	0	1	5687	.04765	.21305
Immigrant 10+	29987	.10078	.30104	0	1	5687	.06418	.2451

Table 3: Estimated Marginal Effects (Probit Procedure): Dependent variable = 1 if visit physician, 0 otherwise.

a) Physician Visits by the two groups of immigrants

	(1)	(2)	(3)
Immigrants physician visits	**Probit-the whole sample**	**Probit-with regular_doc**	**Probit-no regular_doc**
Male	-0.111***	-0.095***	-0.161***
	(0.000)	(0.000)	(0.000)
Married	0.030*	-0.003	0.052**
	(0.059)	(0.856)	(0.033)
Wid-Sep-Div	0.007	-0.004	0.005
	(0.728)	(0.847)	(0.914)
Age 25-44	0.012	0.031	-0.052
	(0.602)	(0.238)	(0.148)
Age 45-64	0.054**	0.070***	-0.017
	(0.020)	(0.005)	(0.662)
Age 65-79	0.156***	0.146***	-0.060
	(0.000)	(0.000)	(0.270)
Age 80+	0.167***	0.150***	-0.096
	(0.000)	(0.000)	(0.198)
Health Vgood	0.082***	0.060***	0.016
	(0.000)	(0.000)	(0.563)
Health Good	0.107***	0.086***	0.079**
	(0.000)	(0.000)	(0.014)
Health Poor	0.169***	0.142***	0.299***
	(0.000)	(0.000)	(0.000)
Income 15k-29k	0.032	0.012	-0.016
	(0.135)	(0.613)	(0.682)
Income 30k-49k	0.041**	0.017	0.012
	(0.048)	(0.466)	(0.768)
Income 50k-79k	0.085***	0.047*	-0.000
	(0.000)	(0.064)	(0.993)
Income 80k+	0.078***	0.049**	0.025
	(0.000)	(0.043)	(0.568)
Sec Grad	0.030	0.024	0.008
	(0.122)	(0.218)	(0.844)
Some Post Sec	0.050**	0.061***	0.058
	(0.022)	(0.006)	(0.221)
Post Sec Grad	0.063***	0.064***	0.099***
	(0.000)	(0.000)	(0.000)
Employed Ftime	-0.019	-0.003	-0.043
	(0.222)	(0.868)	(0.172)
Student Ftime	-0.027	-0.021	-0.042
	(0.302)	(0.468)	(0.271)

Employed Ptime	0.029	0.023	0.059
	(0.169)	(0.289)	(0.164)
Immigrant 09	-0.021	0.059*	-0.047
	(0.450)	(0.061)	(0.263)
Immigrant 10+	0.029	0.022	0.007
	(0.101)	(0.224)	(0.851)
Newfoundland	0.069***	0.084***	0.035
	(0.000)	(0.000)	(0.455)
Price Edward Island	0.068***	0.069***	0.031
	(0.001)	(0.001)	(0.552)
Nova Scotia	0.077***	0.068***	0.043
	(0.000)	(0.000)	(0.463)
New Brunswick	0.003	0.012	-0.008
	(0.846)	(0.480)	(0.858)
Quebec	-0.088***	-0.037**	0.104***
	(0.000)	(0.016)	(0.000)
Manitoba	0.017	0.043**	0.032
	(0.356)	(0.022)	(0.471)
Saskatchewan	0.063***	0.068***	0.056
	(0.000)	(0.000)	(0.214)
Alberta	0.020	0.056***	-0.004
	(0.229)	(0.001)	(0.915)
British Columbia	0.046***	0.040**	-0.013
	(0.006)	(0.016)	(0.746)
Territories	-0.058***	0.043*	-0.039
	(0.003)	(0.066)	(0.235)
Observations	30564	25665	4867
Predicted Probabilities	.6826279	.7455723	.2087052
Robust p values in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%			

b) Physician Visits by all immigrants

	(1)	(2)	(3)
Immigrants physician visits	**Probit-the whole sample**	**Probit-with regular_doc**	**Probit-no regular_doc**
Male	-0.114***	-0.092***	-0.073***
	(0.000)	(0.000)	(0.009)
Married	0.028*	-0.001	0.026
	(0.081)	(0.928)	(0.419)
Wid-Sep-Div	0.007	-0.004	-0.002
	(0.739)	(0.850)	(0.969)
Age 25-44	0.012	0.030	-0.037

	(0.604)	(0.242)	(0.353)
Age_45_64	0.058**	0.066***	-0.159***
	(0.013)	(0.006)	(0.001)
Age 65-79	0.166***	0.139***	-0.089
	(0.000)	(0.000)	(0.182)
Age 80+	0.176***	0.143***	-0.007
	(0.000)	(0.000)	(0.948)
Health Vgood	0.083***	0.059***	0.143***
	(0.000)	(0.000)	(0.000)
Health Good	0.110***	0.084***	0.157***
	(0.000)	(0.000)	(0.000)
Health Poor	0.176***	0.137***	0.205***
	(0.000)	(0.000)	(0.000)
Income 15k-29k	0.034	0.012	0.033
	(0.127)	(0.623)	(0.492)
Income 30k-49k	0.044**	0.015	0.045
	(0.038)	(0.508)	(0.355)
Income 50k-79k	0.090***	0.044*	0.089*
	(0.000)	(0.080)	(0.075)
Income 80k+	0.084***	0.045*	0.042
	(0.000)	(0.060)	(0.424)
Sec Grad	0.031	0.023	0.077
	(0.119)	(0.221)	(0.106)
Some Post Sec	0.051**	0.060***	0.001
	(0.022)	(0.006)	(0.991)
Post Sec Grad	0.063***	0.063***	0.094**
	(0.000)	(0.000)	(0.014)
Employed Ftime	-0.019	-0.003	-0.025
	(0.235)	(0.842)	(0.490)
Student Ftime	-0.031	-0.018	-0.089*
	(0.239)	(0.514)	(0.070)
Employed Ptime	0.032	0.021	0.020
	(0.145)	(0.318)	(0.718)
Immigrant	0.016	0.031*	-0.047
	(0.326)	(0.057)	(0.215)
Newfoundland	0.071***	0.081***	0.033
	(0.000)	(0.000)	(0.519)
Price Edward Island	0.071***	0.066***	0.108*
	(0.001)	(0.001)	(0.094)
Nova Scotia	0.080***	0.066***	-0.049
	(0.000)	(0.000)	(0.458)
New Brunswick	0.004	0.011	-0.095*
	(0.810)	(0.509)	(0.096)
Quebec	-0.091***	-0.036**	-0.037
	(0.000)	(0.016)	(0.355)

Manitoba	0.018	0.042**	0.046
	(0.346)	(0.023)	(0.333)
Saskatchewan	0.065***	0.066***	0.147***
	(0.000)	(0.000)	(0.002)
Alberta	0.021	0.054***	0.002
	(0.217)	(0.001)	(0.955)
British Columbia	0.047***	0.039**	0.110**
	(0.006)	(0.017)	(0.014)
Territories	-0.059***	0.042*	0.098**
	(0.003)	(0.064)	(0.017)
Observations	30564	25665	4862
Predicted Probabilities	.6657952	.7566531	.5119003
Robust p values in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%			

c) Specialist Visits by the two groups of immigrants

	(1)	(2)	(3)
Immigrants specialist visits	**Probit-the whole sample**	**Probit-with regular_doc**	**Probit-no regular_doc**
Male	-0.100***	-0.089***	-0.161***
	(0.000)	(0.000)	(0.000)
Married	0.006	-0.011	0.052**
	(0.627)	(0.422)	(0.033)
Wid-Sep-Div	0.005	-0.004	0.005
	(0.755)	(0.820)	(0.914)
Age 25-44	0.020	0.040**	-0.052
	(0.226)	(0.046)	(0.148)
Age 45-64	0.043**	0.059**	-0.017
	(0.029)	(0.011)	(0.662)
Age 65-79	0.094***	0.116***	-0.060
	(0.000)	(0.000)	(0.270)
Age 80+	0.038	0.057*	-0.096
	(0.164)	(0.068)	(0.198)
Health Vgood	0.034***	0.037***	0.016
	(0.003)	(0.003)	(0.563)
Health Good	0.122***	0.129***	0.079**
	(0.000)	(0.000)	(0.014)
Health Poor	0.313***	0.316***	0.299***
	(0.000)	(0.000)	(0.000)
Income 15k-29k	0.014	0.014	-0.016
	(0.420)	(0.455)	(0.682)
Income 30k-49k	0.039**	0.040**	0.012

	(0.025)	(0.043)	(0.768)
Income 50k-79k	0.055***	0.059***	-0.000
	(0.001)	(0.001)	(0.993)
Income 80k+	0.053***	0.050**	0.025
	(0.007)	(0.021)	(0.568)
Sec Grad	0.033**	0.038**	0.008
	(0.029)	(0.026)	(0.844)
Some Post Sec	0.081***	0.089***	0.058
	(0.000)	(0.000)	(0.221)
Post Sec Grad	0.079***	0.081***	0.099***
	(0.000)	(0.000)	(0.000)
Employed Ftime	-0.024**	-0.020	-0.043
	(0.049)	(0.144)	(0.172)
Student Ftime	-0.007	-0.003	-0.042
	(0.729)	(0.915)	(0.271)
Employed Ptime	-0.016	-0.024	0.059
	(0.305)	(0.156)	(0.164)
Immigrant 09	0.007	0.028	-0.047
	(0.788)	(0.344)	(0.263)
Immigrant 10+	-0.041***	-0.048***	0.007
	(0.002)	(0.001)	(0.851)
Newfoundland	-0.007	-0.008	0.035
	(0.632)	(0.617)	(0.455)
Price Edward Island	-0.004	-0.004	0.031
	(0.780)	(0.812)	(0.552)
Nova Scotia	0.014	0.010	0.043
	(0.300)	(0.503)	(0.463)
New Brunswick	-0.023*	-0.025*	-0.008
	(0.078)	(0.068)	(0.858)
Quebec	0.034***	0.035***	0.104***
	(0.002)	(0.007)	(0.000)
Manitoba	-0.026*	-0.026*	0.032
	(0.057)	(0.088)	(0.471)
Saskatchewan	-0.035***	-0.040***	0.056
	(0.006)	(0.004)	(0.214)
Alberta	-0.051***	-0.050***	-0.004
	(0.000)	(0.000)	(0.915)
British Columbia	-0.020	-0.019	-0.013
	(0.102)	(0.156)	(0.746)
Territories	-0.067***	-0.033*	-0.039
	(0.000)	(0.083)	(0.235)
Observations	30602	25697	4867
Predicted Probabilities	.2158188	.2285465	.2087052
Robust p values in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%			

d) **Specialist Visits by all immigrants**

	(1)	(2)	(3)
Immigrants specialist visits	**Probit-the whole sample**	**Probit-with regular_doc**	**Probit-no regular_doc**
Male	-0.103***	-0.092***	-0.152***
	(0.000)	(0.000)	(0.000)
Married	0.008	-0.008	0.045**
	(0.509)	(0.562)	(0.044)
Wid-Sep-Div	0.006	-0.004	0.003
	(0.734)	(0.841)	(0.948)
Age 25-44	0.021	0.042**	-0.048
	(0.222)	(0.044)	(0.150)
Age 45-64	0.041**	0.057**	-0.011
	(0.042)	(0.018)	(0.764)
Age 65-79	0.091***	0.112***	-0.047
	(0.000)	(0.000)	(0.352)
Age 80+	0.035	0.053	-0.082
	(0.216)	(0.105)	(0.230)
Health Vgood	0.035***	0.039***	0.015
	(0.003)	(0.003)	(0.554)
Health Good	0.125***	0.134***	0.072**
	(0.000)	(0.000)	(0.016)
Health Poor	0.316***	0.320***	0.288***
	(0.000)	(0.000)	(0.000)
Income 15k-29k	0.014	0.014	-0.014
	(0.444)	(0.490)	(0.689)
Income 30k-49k	0.039**	0.039*	0.014
	(0.031)	(0.058)	(0.714)
Income 50k-79k	0.055***	0.058***	0.004
	(0.001)	(0.003)	(0.922)
Income 80+	0.050**	0.046**	0.029
	(0.012)	(0.044)	(0.483)
Sec Grad	0.034**	0.039**	0.009
	(0.031)	(0.028)	(0.807)
Some Post Sec	0.083***	0.092***	0.053
	(0.000)	(0.000)	(0.223)
Post Sec Grad	0.083***	0.086***	0.088***
	(0.000)	(0.000)	(0.000)
Employed Ftime	-0.025**	-0.021	-0.041
	(0.045)	(0.130)	(0.169)
Student Ftime	-0.004	0.002	-0.042
	(0.853)	(0.922)	(0.224)

Employed Ptime	-0.018	-0.027	0.057
	(0.263)	(0.123)	(0.150)
Immigrant	-0.030**	-0.032**	-0.017
	(0.019)	(0.022)	(0.573)
Newfoundland	-0.008	-0.009	0.033
	(0.599)	(0.559)	(0.454)
Price Edward Island	-0.005	-0.006	0.029
	(0.745)	(0.751)	(0.547)
Nova Scotia	0.014	0.009	0.040
	(0.325)	(0.564)	(0.457)
New Brunswick	-0.024*	-0.028*	-0.007
	(0.069)	(0.055)	(0.872)
Quebec	0.036***	0.036***	0.094***
	(0.002)	(0.008)	(0.000)
Manitoba	-0.027*	-0.028*	0.030
	(0.053)	(0.079)	(0.459)
Saskatchewan	-0.037***	-0.042***	0.052
	(0.006)	(0.004)	(0.212)
Alberta	-0.054***	-0.054***	-0.003
	(0.000)	(0.000)	(0.925)
British Columbia	-0.021*	-0.021	-0.012
	(0.094)	(0.140)	(0.751)
Territories	-0.070***	-0.034*	-0.035
	(0.000)	(0.081)	(0.241)
Observations	30602	25697	4867
Predicted Probabilities	.2298362	.2486558	.1815357

Table 4 Estimate Marginal Effects: Negative Binomial Procedure. Dependent variable: number of visits to doctor.

a) Number of Physician Visits by the two groups of immigrants

Variable	dy/dx	P-value	dy/dx	P-value	dy/dx	P-value	X
	Full sample		Regular doctor		No regular doctor		
Male	-0.549	0.000	-0.544	0.000	-0.469	0.001	1
Married	0.046	0.480	-0.049	0.554	0.198	0.089	1
Wid-Sep-Div	0.053	0.493	-0.001	0.995	0.122	0.643	0
Age 25 to 44	-0.139	0.220	-0.067	0.620	-0.572	0.052	1
Age 45 to 64	-0.160	0.110	-0.138	0.273	-0.635	0.000	0
Age 65 to 79	-.085	0.451	-0.090	0.519	-0.628	0.001	0
Age 80+	0.153	0.309	0.150	0.403	-0.379	0.167	0
Health Vgood	0.335	0.000	0.352	0.000	0.430	0.000	1
Health Good	1.142	0.000	1.227	0.000	1.317	0.000	0
Health Poor	3.338	0.000	3.596	0.000	3.097	0.014	0
Income 15k-29k	-0.157	0.040	-0.195	0.025	-0.167	0.344	0
Income 30k-49k	-0.161	0.036	-0.246	0.004	0.129	0.594	0
Income 50k-79k	-0.200	0.038	-0.293	0.011	-0.126	0.582	1
Income 80k+	-0.235	0.003	-0.315	0.000	-0.293	0.093	0
Sec Grad	0.008	0.914	0.006	0.938	0.084	0.688	0
Some Post Sec	0.046	0.587	0.094	0.339	-0.147	0.429	0
Post Sec Grad	0.1123	0.037	0.122	0.046	0.302	0.026	1
Employed Ftime	-0.148	0.018	-0.157	0.029	-0.077	0.606	1
Student Ftime	-0.326	0.000	-0.384	0.000	-0.295	0.044	0
Employed Ptime	0.003	0.972	-0.006	0.945	-0.206	0.174	0
Immigrant 09	-0.046	0.691	0.174	0.249	-0.604	0.000	0
Immigrant 10+	0.047	0.465	0.052	0.477	-0.010	0.958	1
Newfoundland	0.265	0.000	0.354	0.000	0.184	0.394	0
Price Edward Island	-0.029	0.687	-0.054	0.495	0.814	0.098	0
Nova Scotia	0.194	0.003	0.197	0.006	0.006	0.982	0
New Brunswick	-0.216	0.000	-0.243	0.000	-0.120	0.579	0
Quebec	-0.728	0.000	-0.660	0.000	-0.134	0.443	1
Manitoba	-0.046	0.485	0.010	0.901	0.202	0.335	0
Saskatchewan	0.140	0.034	0.170	0.020	0.800	0.041	0
Alberta	0.062	0.378	0.150	0.080	0.147	0.457	0
British Columbia	0.261	0.000	0.293	0.001	0.709	0.009	0
Territories	-0.141	0.026	0.215	0.036	0.380	0.074	0
Predicted no of events	1.5618		1.7688		1.2467		

Table 4
b) Number of Specialist Visits by the two groups of immigrants

Variable	dy/dx[11]	P-value	dy/dx	P-value	dy/dx	P-value	X
	Full sample		Regular doctor		No regular doctor		
Male	-0.269	0.000	-0.228	0.000	-0.747	0.017	1
Married	-0.002	0.954	-0.057	0.169	0.201	0.084	1
Wid-Sep-Div	-0.042	0.225	-0.069	0.047	0.063	0.693	0
Age 25 to 44	0.122	0.002	0.153	0.000	-0.094	0.587	1
Age 45 to 64	0.109	0.078	0.144	0.037	-0.050	0.736	0
Age 65 to 79	0.133	0.067	0.175	0.031	-0.138	0.450	0
Age 80+	0.038	0.602	0.072	0.367	-0.306	0.146	0
Health Vgood	0.098	0.002	0.103	0.002	0.072	0.519	1
Health Good	0.440	0.000	0.440	0.000	0.498	0.132	0
Health Poor	1.549	0.000	1.463	0.000	3.400	0.063	0
Income 15k-29k	-0.045	0.299	-0.019	0.667	-0.235	0.104	0
Income 30k-49k	-0.027	0.545	-0.014	0.753	-0.111	0.462	0
Income 50k-79k	0.031	0.506	0.046	0.302	-0.073	0.702	1
Income 80k+	0.033	0.546	0.050	0.370	-0.136	0.366	0
Sec Grad	0.034	0.418	0.055	0.210	-0.176	0.258	0
Some Post Sec	0.190	0.007	0.192	0.008	0.357	0.201	0
Post Sec Grad	0.160	0.000	0.158	0.000	0.284	0.009	1
Employed Ftime	-0.147	0.001	-0.140	0.002	-0.242	0.150	1
Student Ftime	-0.100	0.016	-0.099	0.027	-0.206	0.111	0
Employed Ptime	-0.062	0.077	-0.084	0.018	0.208	0.320	0
Immigrant 09	-0.017	0.800	0.044	0.589	-0.276	0.046	0
Immigrant 10+	-0.146	0.000	-0.179	0.000	0.103	0.592	1
Newfoundland	-0.088	0.003	-0.087	0.005	0.077	0.732	0
Price Edward Island	0.028	0.574	0.033	0.529	0.168	0.493	0
Nova Scotia	0.019	0.635	0.017	0.684	-0.046	0.805	0
New Brunswick	-0.062	0.073	-0.066	0.056	-0.001	0.997	0
Quebec	0.015	0.635	-0.003	0.926	0.292	0.062	1
Manitoba	-0.072	0.033	-0.067	0.054	0.210	0.432	0
Saskatchewan	-0.110	0.000	-0.108	0.001	0.135	0.531	0
Alberta	-0.119	0.000	-0.105	0.001	-0.059	0.698	0
British Columbia	-0.057	0.049	-0.049	0.104	-0.101	0.458	0
Territories	-0.204	0.000	-0.178	0.000	-0.009	0.962	0
Predicted no of events	0.4505		0.4490		.5949		

[11] [11] dy/dx columns give the marginal effects evaluated at specific values of the explanatory variables.

Table 5

a) Physician Visits: Extracts from tables 3a and 4a

	Probability of Visits			Number of Visits		
Immigrant Type	Full Sample	Regular Doctor	No Regular Doctor	Full Sample	Regular Doctor	No Regular Doctor
Immigrant 09	-0.021	0.059*	-0.047	-0.046	0.174	-0.604***
	(0.450)	(0.061)	(0.263)	(0.691)	(0.249)	(0.000)
Immigrant 10+	0.029	0.022	0.007	0.047	0.052	-0.010
	(0.101)	(0.224)	(0.851)	(0.465)	(0.477)	(0.958)
Pred. Prob/No of Events	.6826	.7456	.2087	1.5618	1.7688	1.2467

b)Physician and Specialists Visits: Extracts from tables 3b and 3d

	Physician Probability of Visits			Specialist Probability of Visits		
Variable	Full Sample	Regular Doctor	No Regular Doctor	Full Sample	Regular Doctor	No Regular Doctor
Immigrant	0.016	0.031*	-0.047	-0.030**	-0.032**	-0.017
	(0.326)	(0.057)	(0.215)	(0.019)	(0.022)	(0.573)
Predicted Probabilities	.6658	.7567	.5119	.2298	.2487	1815

c) Specialist Visits: Extracts from tables 3b and 4b

	Probability of Visits			Number of Visits		
Immigrant Type	Full Sample	Regular Doctor	No Regular Doctor	Full Sample	Regular Doctor	No Regular Doctor
Immigrant 09	0.007	0.028	-0.047	-0.017	0.044	-0.276**
	(0.788)	(0.344)	(0.263)	(0.800)	(0.589)	(0.046)
Immigrant 10+	-0.041***	-0.048***	0.007	-0.146***	-0.179***	0.103
	(0.002)	(0.001)	(0.851)	(0.000)	(0.000)	(0.592)
Pred. Prob/No of Events	.2158	.2285	.2087	.4505	.4490	.5949