An Empirical Investigation of Unmet Health Care, Health Care Utilization and Health Outcomes

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Abstract

This thesis is comprised of three chapters that empirically examine two important areas in health economics: access to health care and health outcomes.

The first chapter explores the impact of health care utilization on unmet health care needs (UHC) using four biennial confidential master files (2001-2010) of the Canadian Community Health Survey and applying an instrumental variables (IV) approach to deal with the endogeneity of health care utilization. The presence of drug insurance and the number of physicians in each health region are used to identify the causal effect. I find a clear and robustly negative relationship between health care use and unmet health care needs; individuals who are more likely to report unmet health care needs are those who use the health care system less frequently. One more visit to a family doctor, specialist or a medical doctor on average, decreases the probability of having unmet health care needs by 7.1, 4.6 and 2.8 percentage points, respectively. Further analysis by sub groups reveals that the impact of health care utilization on UHC is larger for females in comparison to males, rural residents in comparison to urban dwellers and those with low household income rather than high.

The second chapter of this thesis examines whether the presence of the unmet health-care (UHC) needs has an adverse effect on health outcomes using the National Population Health Survey, a nationally representative longitudinal data set spanning 18 years. I pay close attention to the potential endogeneity of this problem. Five direct and indirect measures of health-related outcomes are examined. I find clear and robust evidence that the presence of UHC either two-years previously or anytime in the past,

affects negatively the current health of the individual – controlling for a host of other influences. For instance, reporting UHC in the previous cycle reduces the probability of being in excellent or very good health and in good mental health, respectively by 8.1 and 1.2 percentage points; it reduces the HUI3 score by 2.9 percentage points and increases the expected number of medications used by 11%. Further analysis by looking at the effect of UHC in when it was due to accessibility reasons, reveal that the effect of UHC because of accessibility reasons on health outcomes is larger than the one of the overall UHC, but the difference is small in general.

Finally, the third chapter of this thesis examines the link between social networks and access to health care utilization, focusing particularly on the probability of having a regular family doctor. Unlike previous work that uses cross sectional data, I use panel data from the National Population Health survey to control for unobserved heterogeneity. Access to a regular family doctor is modeled using the dynamic random effects probit model, which makes it possible to explore the dynamics of access to a regular family doctor– for instance, the role played by past access status to a family doctor in predicting current access. In particular, I use the dynamic random effects probit model that controls for both unobserved heterogeneity and for initial conditions effects. I find robust evidence of a highly statistically significant relationship between social capital and the probability of having a regular family doctor. Although the marginal effects are modest, the results from all model specifications show that there is clear evidence that individuals with high levels of tangible, affection, emotional, social interaction, who live with spouse only or with spouse and children are more likely to

have a regular family doctor, whereas those living alone are less likely to have a regular family doctor. The results also reveal that past access to a family doctor is an important determinant for both current and future access. The predicted probability of having a regular family doctor is about 18 percentage points (or 20%) higher for individuals who had a family doctor in the previous period, relative to those who did not. In addition, I find that unobserved heterogeneity accounts for about 25% of the variation in accessing a regular family doctor and is significantly correlated with the access to a family doctor over my long panel.

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Introduction

This dissertation consists of three independent chapters that empirically examine issues related to access to health care and health outcomes. While the first chapter focusses on the determinants of unmet health care needs in Canada, and particularly on the impact of health care utilization on unmet health care needs (UHC), the second chapter addresses whether the presence of UHC matters for health outcomes. The third chapter explores how access to a regular family doctor is affected by individual social capital over time.

Unmet health care (UHC) needs arise if the individual is unable to obtain health care services that can be expected to improve his or her health. An individual who is not receiving treatment for a medical condition for which there is no effective therapy does not have unmet health care needs; however, a grandmother who is in constant pain while waiting for a hip replacement does. UHC is appropriately understood as "… the absence of any, or of sufficient, or of appropriate care and services" (Carr and Wolfe, 1976, p.418). Somewhat surprisingly, the data reveal that individuals reporting UHC are also high users of health care services as compared to those with no UHC. This has led a number of researchers to view health care utilization as a determinant of UHC; they find that people who pay more frequent visits to general physicians or specialists have increased odds of reporting UHC, even after adjusting for health status and socio-demographic factors (Chen and Hou, 2002; Kasman and Badley, 2004; Nelson and Park 2006).

The existing literature does not, however, deal with potential sources of endogeneity in the relationship between UHC and health care utilization. In particular, UHC and health care utilization may both be correlated with unobserved individual characteristics, like health complexity, hypochondria, preferences and health shocks which are hard to capture with existing survey questions. One way to solve this problem and obtain consistent estimates is by using an instrumental variable (IV) approach with instruments that are highly correlated with health care utilization, but not correlated with the error term in the UHC equation (Wooldridge, 2002). In chapter one, I use two instruments - the availability of drug insurance and the number of physicians per 100,000 in the respondent's health region of residence - to deal more appropriately with endogeneity due to omitted variables, and get better insight into the causal impact of health care utilization on UHC.

To carry out my analysis, I use data from the 2001, 2003, 2005 and 2010 cycles of the Canadian Community Health Survey. Unfortunately, information about the individual's drug insurance coverage (one of the two instruments used to identify the impact of health care utilization on UHC) is available only for the 2003 CCHS sample and for residents of Ontario in 2005. To overcome this problem, I construct a proxy variable for drug insurance coverage and undertake several tests to see how well this proxy compares to the actual measure, and conclude that it compares well.

While most studies find a positive association between health care utilization and the likelihood of having unmet health care, I find a robust negative effect of health care utilization on UHC once endogeneity is taken into account: individuals who are

low users of health care services are more likely to have UHC. My results show that one more visit to a medical doctor leads to a 2.8 percentage points decease in the likelihood of reporting UHC. I find that the impact of health care utilization on UHC is larger for those who have a high risk of UHC such as females, rural residents and those with low household income.

Understanding that UHC could reflect a lack of access to health care, chapter two further explores the importance of reducing UHC by asking whether it leads to poorer health. The empirical literature examining the effect of UHC on health status is limited; moreover, there is little consensus regarding how, or even if, UHC affects health outcomes. This is perhaps due to differences in the study populations, to different measures of health outcomes or to ignoring the endogeneity between health status and UHC. This chapter investigates the causal effect of UHC on direct and indirect measures of health including self-assessed health status, mental health, HUI and medication utilization, using a longitudinal Canadian data set, the National Population Health Survey, which spans 18 years from 1994 to 2010.

Regardless of how I measure health outcomes, or of the empirical approach taken, I find clear and robust evidence that individuals reporting UHC are more likely to experience a decline in their health status than otherwise similar individuals who do not report UHC. An individual reporting UHC in the previous cycle is 8.1 percentage points less likely to be in excellent or very good health than an individual who did not report UHC in the previous cycle. The negative impact of UHC persists and remains high even, particularly when attention is restricted to UHC due to accessibility reasons

such as long waiting, cost and unavailable services in the area. This negative impact of UHC attributable to accessibility reasons is found to be higher among those living in rural areas and those who have low household income.

Finally, the third chapter of this thesis examines the relationship between different measures of social capital and the probability of having a regular family doctor. This chapter makes a number of contributions to the literature: first, unlike the previous work that relies on cross-sectional data, this chapter uses a large scale longitudinal data set (the National Population Health Survey). In addition to an individual's observed characteristics, such as health status, the panel data set allows for an econometric specification that introduces controls for individual time-invariant unobserved effects which will influence the likelihood that a particular individual will have a family doctor, such as personal preferences, and preferences and attitudes towards health care. In this chapter, access to a family doctor is modeled using a dynamic random effects probit model to examine possible dynamic effects in accessing a regular family doctor.

I find robust evidence of highly statistical significant link between social capital and the likelihood of having a regular family doctor. Although the marginal effects are relatively small, results from all model specifications show that there is a positive link between having a high level of social capital and the likelihood of having a regular family doctor. The results also show that the predicted probability of having a regular family doctor is higher for individuals who had a family doctor in the previous period, relative to those who did not, and that unobserved heterogeneity accounts for about

25% of the variation in the likelihood of having a regular family doctor. Unobserved heterogeneity is significantly correlated with initial access to family doctor. Controlling for heterogeneity and initial conditions is thus very important when trying to examine true stability in health care use.

After parsing the data into subgroups, the results reveal stronger effect of social capital and living arrangements for males as compared to females, and for younger adults as compared to older adults. Moreover, the effects are larger for those who lacked access to a family doctor in the previous period as compared to those who had access to a doctor. This suggests that the mechanism by which social capital influences the likelihood of having a regular family doctor is by making it easier to find a doctor when one is needed. However, once an individual has been accepted into a family doctor's practice, social capital does not have a strong impact on the likelihood of continuing to have access to a family doctor.

Chapter one

The effect of health care utilization on unmet health care needs among Canadians: Evidence from 2001 to 2010

1.1 Introduction[1]

Reported self-perceived unmet health care needs (UHC) is commonly used by researchers as an indicator of a range of difficulties that people face in accessing health care services (OECD, 2010). While it may represent a failure by the health care system to properly meet a person's health care needs, some amount of unmet health care should be observed in a publicly-funded health care system when resources are efficiently distributed. An efficient and fair allocation should result in no correlation between UHC and socioeconomic status, including income and place of residence.

There is, nonetheless, a widely-shared public perception that the current level of unmet health care need in Canada is 'high' and that the distribution of unmet needs is socioeconomically skewed. In addition, there appears to have been a notable increase in the prevalence of UHC due to system-related reasons such as waiting time, unavailable services and cost. For example, although there is little decrease in overall UHC over the ten years: from 14% in 2001 to 12% in 2010 among individuals of age

[1] The analysis presented in this chapter was conducted at the COOL RDC which is part of the Canadian Research Data Centre Network (CRDCN). The services and activities provided by the COOL RDC are made possible by the financial or in-kind support of the SSHRC, the CIHR, the CFI, Statistics Canada, Carleton University, the University of Ottawa and the Université du Québec en Outaouais. The views expressed herein do not necessarily represent the CRDCN's or that of its partners'.

18 and above, statistics from Canadian Community Health Survey (CCHS) show that of those with UHC, system reasons remained the most frequent ones for having their health needs unmet, while its prevalence is also increased from 64.6% in 2001 to 70% in 2010 among those individuals with UHC. There are some population groups that identified with an increased likelihood of reporting an unmet health care needs, these groups include females, people with lower income, people reporting less than excellent or very good health status, and those with chronic conditions (Chen and Hou, 2002; Law et al., 2005; Wu et al., 2005; Bryant et al., 2009; Guend and Tesseron, 2009; Sibley and Glazier, 2009).

Somewhat surprisingly, the data reveal that individuals reporting high UHC are also high users of the health care system. Much of the literature views high health care utilization as a determinant of UHC, and finds that people who have more frequent visits with a GP, specialist or physiotherapist have an increased odds of reporting unmet health care needs, even after adjusting for health status and demographics (Chen and Hou, 2002; Kasman and Badley, 2004; Nelson and Park 2006). However, others have treated UHC as a determinant of health care utilization – and have found a positive correlation between UHC and health care use (HCU) (Allin et al., 2008; Allin et al., 2010).

In this chapter, I am interested in examining the causal effect of health care utilization on UHC as one way to broaden the scope our understanding of how important is accessibility and regular use of health care system in meeting the health needs of individuals. Although past studies showed that there is a positive correlation

between health care utilization and UHC, these associations may not be causal because health care utilization and UHC may both be correlated with unobserved individual characteristics, like health complexity, hypochondria, preferences, and health shocks which are hard to capture with existing survey questions. Consequently, health care utilization is an endogenous variable in UHC related equations.

In this chapter, I focus on examining the causal effect of health care utilization on these unmet needs. The main contribution of this chapter lies in its careful examination of the link between health care utilization and UHC while accounting for endogeneity. This problem is addressed by instrumenting health care system use (HCU) in the unmet health care needs regressions, using two instruments: whether or not the individual has prescription drug insurance and the number of physicians per 100,000 inhabitants in the respondent's area of residence. In order to reduce problems associated with omitted variables, I include a much richer set of determinants than is typically found in the literature, like several lifestyle indicators, different types of chronic conditions and whether individuals have a health problem that affects their lives most of the time.

This chapter also pays close attention to the causal effect of different indicators for health care utilizations on the stated reasons for unmet health care needs, using a large national representative data set spanning over a decade. I distinguish between system problems, including difficulties accessing health care services, and individual-specific problems, like scheduling or personality conflicts. System problems are more amenable to policy prescriptions than individual-specific "personal" ones; it is useful

to examine if the reasons behind the unmet needs affect the link between utilization and UHC.

In addition to examining the effect of health care utilization on UHC for the general population, this study also looks at this effect among different groups as well. Since there are socioeconomic differences between individuals with UHC and those with no UHC, this may confound the relationship between health care utilization and UHC. For instance, female, urban dwellers with lower income were found in the literature to be more likely to have UHC; I expect heterogeneity in the relationship between their health care utilization and UHC across different groups.

Using the confidential master files of four Canadian Community Health Survey (CCHS), augmented by data from the Canadian Institute for Health Information,[2] this study finds a negative, not positive, relationship between health care utilization and the probability of having unmet health care needs once account is taken of endogeneity. Once one controls for a host of potential influences, it is those individuals who are low-users of the system who are more likely to have unmet health care needs, relative to their high-user counterparts. For instance, one extra visit to a family doctor, specialist or any medical doctor decreases the probability of reporting UHC by 7.1, 4.6 and 2.8 percentage points, respectively. Further analysis by sub groups reveals that the impact of health care utilization on UHC is larger for females in comparison to males, rural residents in comparison to urban dwellers and those with low household income rather than high.

[2] Data about the number of doctors in each health region in Canada used latter as instrument for health care utilization.

The rest of the chapter is organized as follows. The next section defines unmet health care (UHC), followed by a review of the relevant literature, then a discussion of the methodology employed. Section 5 describes the data and variables used in the analysis. The results are then presented along with a discussion of what they mean, and the final section concludes.

1.2 Unmet need and health care utilization

Need is defined as a measure of the care required to improve health conditioned on the availability of such care – ineffective health care cannot be needed (Culyer and Wagstaff, 1993; Allin et al., 2010). Unmet health care (UHC) arises if the individual is unable to obtain available and effective health care that could improve his or her health. It has also been referred to as "… the absence of any, or of sufficient, or of appropriate care and services" (Carr and Wolfe, 1976, p.418). UHC may reflect access barriers, individual satisfaction about the care he received, or high expectations. The concern here is how UHC is related to the actual use of health care and socioeconomic characteristics. Examining the effect of health care utilization on UHC and especially on the system reasons of UHC will cast the light on the extent to which UHC reflects access barriers to health care.

Allin et al., (2010) groups individuals with UHC into four categories in order to help illuminate why there may be a positive association between UHC and use of health care services. The first is individuals who perceive a need for health care but cannot receive it because of access barriers related both to system reasons such as unavailable services, long waiting and cost, or personal reasons like, attitudes toward doctors and

unwilling to seek medical care. The second category is comprised of those who accessed the care but its quality was poor. For example, individuals without a regular family doctor may receive ineffective treatments from walk in clinics or emergency room visit. It is not easy to judge quality of care received, but individuals in this group may display high utilization and UHC as well. Those in category three are hypochondriacs and individuals who perceive that they have not received effective treatment. This group may also be characterized as high users of health care services and high UHC as well. The fourth category is a catch-all one for everyone else with UHC who are not captured in the other groups.

1.3 Review of the literature

As the goal of publicly-provided health care systems is to provide "equal access for equal need", questions about UHC are included in various national and international health interview surveys, including the European Union Statistics on Income and Living Conditions (EU-SILC) and the international health policy work of the Commonwealth Fund (OECD, 2011). Across Europe there is a wide variation in the proportion of people reporting UHC needs or related forgone care.[3] The percentage of the population with UHC needs ranges from 1.3% in Denmark to 13% in Sweden (Koolman, 2007; Allin et al., 2008). Similarly, the population rate reporting forgone care ranges from 2.6% in the Netherland to 16% in Israel (Koolman, 2007; Allin et al.,

[3] The questions on forgone care were related to either cost or unavailability of care. The questions are: "During the last twelve months, did you forgo any types of care because of the costs you would have to pay?" and "During the last twelve months, did you forgo any types of care because they were not available or not easily accessible?" (Survey on Health, Ageing and Retirement in Europe (SHARE).

2008). In addition, inequalities in self-reported UHC need have been demonstrated between European and non-European countries (OECD, 2011). The highest level of health care inequality is noted in the United States (Figure 1.1) where more than one-third of the adult population with below-average incomes in 2010 reported having some type of UHC need primarily due to financial problems (OECD, 2011).

In Canada, the increasing prevalence of UHC needs has been noted since 1990 (Sanmartin et al., 2002). The highest increase was between 1994-2001 when the percentage of adults reporting UHC increased from 4% to 12% (Sanmartin et al., 2002). Despite national and provincial health care policies and funding initiatives to reduce waiting times and increase access to family doctors, UHC rates remain relatively high in most provinces (i.e. between 13-15%) and are as high as 18% in some areas of Quebec (Levesque et al., 2008). Below I review the existing literature on UHC, focusing on work undertaken in Canada. The literature is separated into two categories: those studies, which look at the characteristics of people with UHC needs but which do not take into account health care utilization; and those studies which jointly examine UHC and HCU along with socioeconomic and other health status variables.

1.3.1 Measures and determinants of UHC

Some of the previous research on UHC has employed a needs-adjusted approach to measuring UHC controlling for objective health status. These studies measure a 'gap' or disparity in this need-adjusted health care utilization which is compared across different groups of people. This approach is 'objective' in nature (Mechanic and McAlpine, 2010; Asada and Kephart, 2011) but has been criticized for three reasons:

definitional; ignores 'subjective' perceptions; and ignores quality and patient satisfaction.

The first criticism refers to whether needs-adjusted UHC is an accurate measure of unmet health care needs. People with poor health are generally defined as those whom health professionals have deemed as requiring additional professional health care. Some people may try to deal with their health care problems (e.g. obesity, mental problems) in other ways, such as changing behaviour (e.g. diet and exercise) or turning to social support (Nelson and Park, 2006; Asada and Kephart, 2011; Colman et al., 2012). Such people might report no UHC as they have explicitly chosen not to seek available professional health care services as they self-supply what they perceive to be beneficial treatments outside the health care system. Conversely, people with positive mental health are generally assumed to have no unmet needs of a professional health care nature. Such persons may, in some cases, judge that they would benefit from preventative health care services so as to avoid further problems and therefore perceive an UHC need.

The second criticism suggests that the need-adjusted UHC measure may be inadequate as an indicator of 'excess demand' for health care professional services as it relies on clinical assessments and ignores perceived UHC need (Allin et al., 2010). Thirdly, the need-adjusted UHC measure does not take into account the quality of care or degree of patient satisfaction with the health care services that are actually received. As such, the assumption that "supply" fully meets "demand" by virtue of its provision

and consumption is questionable. Not all professional health care received is fully or even partially helpful in resolving underlying health care needs (Colman et al., 2012).

Given the limitations of an 'objective' UHC indicator, some researchers have turned to 'subjective' indicators of UHC (Allin et al., 2010) where respondents are asked directly whether they perceive needs that are unmet. Early studies, inspired by Anderson's model of the determinants of access to care (Anderson, 1995), focused primarily on characterizing individuals who report higher UHC needs. According to the Health Care Utilization (HCU) model, the demand for health services (including physicians, dentists and inpatient services) can be determined by three groups of factors: predisposing factors like age, gender, race; need factors like health status, psychological health; and enabling factors like health insurance, family and community social support. Taking these various HCU determinants into account, studies of UHC investigate how 'predisposing', 'need' and 'enabling' factors related to personal health status and utilization are associated with the likelihood of reporting UHC needs (Anderson, 1995).

Studies building on this conceptual framework have been carried out across different countries. For example, in the United States, where the health care system is not primarily publicly funded, a strong correlation was found between UHC needs and being poor, uninsured, or living in a community with a high rate of uninsured persons (Hendryx et al., 2002; Diamant et al., 2004; Pagan and Pauly, 2006). The analysis of UHC needs in Europe has revealed an association between a person's low income, poor health and the higher probability of a self-reported UHC need (Koolman, 2007). In

Sweden, Westin et al. (2004) show that UHC is higher for women, those with non-Swedish origins and persons with a lower level of educational attainment in relation to a benchmark group of native-born males with higher educational attainment. The Swedish rate of UHC is higher for unemployed persons, even after controlling for socio-demographic variables, social support status, long term sickness and personal/family finances (Ahs and Westerling, 2006).

There is a small body of literature on the determinants of UHC needs in Canada. Bryant et al. (2009) analyze data from a sample of 2,536 urban residents in British Columbia and examine the relationship between UHC needs and socioeconomic factors such as income, gender, housing tenure, as well as community factors such as social networks and social support, traditional lifestyle or behavioural risk factors. They found that female, divorced or widowed persons with lower income are more likely to report higher UHC needs, while this likelihood is lower for individuals in middle-age (18 - 54) and for individuals with some community engagement and support.

Evidence on the difference between rural and urban Canadians and UHC is mixed. In a comprehensive study across age groups and provinces, Sibley and Glazier (2009) found that rural residents are less likely to report 'overall' UHC needs or to report them because of health care availability or accessibility reasons when compared to urban residents. But McDonald and Conde (2010), highlighting the role of geography and age, did not find any difference between urban and rural residents for Canadians aged 55 and above. They employ multivariate logistic regressions for different variables of health care utilization and one binary variable for the presence of

UHC while controlling for demographic characteristics, socioeconomic status, private health insurance and health status. They found that people living in rural areas make less use of the health care system than do their peers living in urban areas; they found no significant difference in hospital nights - as specific type of HCU- or UHC need between urban and rural Canadians. So, rural/urban differences in HCU (use) are not reflected in UHC need. Moreover, differences in reported UHC needs between urban and rural populations, along with differences in many socioeconomic factors such as gender, education, immigrant status, were not significantly related with UHC needs that arose from availability or accessibility reasons of unmet health care needs, when indicators for health service utilization (HCU) were included in the model (Chen and Hou, 2002).

1.3.2 Linking health care services and UHC

A number of studies shows a strong positive association between health care utilization such as visits to general practice physicians, specialists and physiotherapists, and self-reported UHC even after controlling for health status and other factors (Chen and Hou, 2002; Kasman and Badley, 2004; Nelson and Park, 2006).

To help understand better this correlation, Chen and Hou (2002) disaggregate the reasons for UHC needs into three categories related to health care service: availability, acceptability, and accessibility.[4] They use the 1998/99 cross-sectional component of the Canadian National Population Health Survey (NPHS) and include a

[4] In their study reasons of UHC are classified into three categories: availability reasons refer to waiting times and services availability; accessibility refers to cost and transportation; acceptability refers to attitudes toward health care and personal/family responsibilities.

self-care score, the person's attitude toward physicians, and other variables that are found to be related to health care utilization. They find that people who report overall UHC need as a result of availability or acceptability problems were more likely to use general practitioners or specialist services, while this association was not significant for those who report UHC due to accessibility problems.

Kasman and Badley (2004) corroborate Chen and Hou (2002) using the Canadian Community Health Survey (CCHS) (2000/2001), concluding that overall UHC was higher among persons with three or more visits to general practitioners and specialists and at least one visit to a physiotherapist. Similarly, previous mental health service users were more likely to report unmet mental health care needs as a result of acceptability or accessibility problems (Nelson and Park, 2006). Several other studies include UHC as a determinant of health care utilization and show that UHC is associated with higher utilization than expected based on health status and personal characteristics **(**Zuckerman and Shen, 2004; Allin et al., 2008; Allin and Masseria, 2009; Allin et al., 2010; Mojtabai and Crum, 2013).

In the United States, Zuckerman and Shen (2004) studied the association between self-reported UHC needs and the utilization of emergency services based on the National Survey of America's Families (NSAF). After controlling for socioeconomic status, health status and insurance coverage they found that people with UHC need were more frequent users of hospital emergency services. Another study using National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) found that individuals with UHC need were more likely to be higher users of alcohol

and drug treatment services (Mojtabai and Crum, 2013). A European study (Allin and Masseria, 2009) found evidence of a positive association between forgone health care and the use of health care services (i.e., *ex post* higher HCU). No relation between forgone health care and the number of physician's visits was found in a Swedish descriptive analysis (Elofsson et al., 1998).

In Canada, current UHC needs were used as a predictor of health care utilization by Allin et al. (2010) to assess whether subjective UHC is a signal of socioeconomic inequality in health care access and utilization. They calculate predicted individual health care need based on age, health status and other observable factors. They then test the relation between types of UHC needs, non-need factors such as education and marital status, and the residual unexplained utilization which is the difference between the actual and the predicted health care utilization. Their results indicate that people who report UHC due to availability problems more likely to use health care services and have an even higher rate of HCU than predicted. However, there was no consistent pattern of health care utilization among people who report UHC due to personal choices (acceptability) or accessibility problems. Similar results were obtained by Allin et al. (2008) when they linked data from the Ontario component of the CCHS 2001 to the actual use of health services from the Ontario Ministry of Health and Long-Term Care and measured health care utilization in terms of the dollar value of services received.

Overall, the general conclusion in the literature is one of a positive association between HCU and UHC. I turn now to what happens when endogeneity is taken into account.

1.4 Methodology

To analyze the relationship between health care utilization and UHC the following equation is estimated:

$$\boldsymbol{UHC_i = \alpha_0 + \alpha_1 HCU_i + \alpha_2 X_i + \varepsilon_i} \qquad (\mathbf{1})$$

where $\boldsymbol{UHC_i}$ is a dichotomous indicator equal to 1 if individual i reports UHC needs and equal to 0 otherwise; $\boldsymbol{HCU_i}$ is an indicator for the health care utilization over the past 12 months which is likely to be correlated with the standard error, $\boldsymbol{\varepsilon_i}$, and hence endogenously determined; $\boldsymbol{X_i}$ is a vector of demographic, socioeconomic, health status, chronic conditions and lifestyle indicators or factors; and $\boldsymbol{\varepsilon_i}$ is the error term.

There are several ways that equation (1) can be estimated. Normally, a probit approach makes sense for a dichotomous dependent variable. However, because of the potential presence of endogeneity between unmet health care (***UHC***) and the use of the health care system (***HCU***), the estimated coefficients and resulting marginal effects arising from this approach may be inconsistent. For instance, ***UHC*** and ***HCU*** may both correlated with unobserved individual characteristics, like health complexity, hypochondria, preferences, and health shocks, which are hard to capture with existing survey questions. One way to solve this problem and obtain consistent estimates is by using an instrumental variable (IV) approach with instruments that are highly correlated with the ***HCU***, but not correlated with the error term in the equation (Wooldridge, 2002).

These considerations favour the adoption of an IV probit model, but ascertaining the acceptability of instruments in such a model is difficult. A common

practice is to estimate a linear probability model (LPM) and verify that it yields estimates comparable with those arising from the probit. In this case, one can then rely on the IV LPM estimates. Furthermore, the use of the two-stage (IVLPM) procedure allows us to test the appropriateness of the instruments used. The IV approach is modeled as two stages:

$$\boldsymbol{HCU_i = \beta_0 + \beta_1 Z_i + \beta_2 X_i + \mu_i} \qquad (\mathbf{2})$$

$$\boldsymbol{UHC_i = \alpha_0 + \alpha_1 \widehat{HCU}_i + \alpha_2 X_i + \varepsilon_i} \qquad (\mathbf{3})$$

Equation (2) is estimated in the first stage. Z_i is a vector of exogenous instruments and $\boldsymbol{\widehat{HCU}_i}$ represents the fitted values of $\boldsymbol{HCU_i}$ which are then used in the second stage (3). Two instruments are employed: the availability of drug insurance and the number of physicians per 100,000 in each health region. Identification relies on these instruments being highly correlated with health care utilization but not correlated with the error term in the ***UHC*** equation (Wooldridge, 2002). It is hard to test directly this latter exclusion restriction, but evidence available elsewhere argues that prescription drug insurance and physician density affects health care utilization (and UHC therefrom, as discussed below). I test for the orthogonality between the instruments and the second stage using the Hansen *J* test for over-identification. Conditional on the validity of the instruments used, we reject the hypothesis of no correlation between health care utilization and the error term, and conclude that there is an endogeneity problem.

To get a better understanding of the relation between health care utilization and UHC needs, this study uses three different indicators of health care use in the last 12

months as dependent variables: the number of visits in the last 12 months to a family doctor, the number of visits to a specialist and visits to any medical doctor. The model is also estimated for several subgroups: females and males; urban residents and rural residents; individuals with a household income below $40,000 and those with greater than $40,000.

Since the outcome variable is dichotomous, using the linear IV method may not produce consistent estimates (Wooldridge, 2010). Thus, as a robustness test I also employ a Two-Stage Residuals Inclusion approach (Terza et al., 2008) (2SRI) and compare the results to those obtained from the conventional two-stage (IVLPM). The 2SRI entails estimating equation (2) by ordinary least squares and obtaining the estimated residuals $\hat{\mu}_i$ and then including them as an additional regressor in the probit model of equation (1) (as in equation (4)).

$$\boldsymbol{UHC_i = \alpha_0 + \alpha_1 HCU_i + \alpha_2 X_i + \alpha_3 \hat{\mu}_i + \varepsilon_i} \qquad (\mathbf{4})$$

This chapter divides the reasons for UHC needs into two categories: those due to system problems and those arising from personal choice (based on the categorizations developed by Chen and Hou (2002); Allin et al. (2008)). This disentangling of the reasons is undertaken to separate "systematic" reasons, such as; health care accessibility barriers, from "personal" reasons that are related to circumstances and choices that are unrelated to the health care system.

1.4.1 About the instruments

The relationship between the availability of drug insurance and health care utilization has been examined in numerous studies where the focus was on regimes with

predominantly private health insurance (Christensen et al., 1987; Finkelstein, 2004), little public insurance (Buchmueller et al., 2004; Höfter et al., 2006), and fully-public primary health insurance (Stabile 2001; Sarma et al., 2007; Allin and Hurley, 2009; Devlin et al., 2011). In a fully-public primary health care regime with zero out-of-pocket expenses for a visit with a doctor but where drug costs may be significant, drug insurance coverage may lower the total cost of implementing the physician's treatment plan and represents a potential cost barrier that affects how regularly a person interacts with a family physician or other specialist. Evidence for Canada on how physician visits are affected by drug insurance coverage shows a range of responses depending on the type of individual. For example, Devlin et al. (2011) found that the presence of drug insurance increased the likelihood of consulting a physician, and that this effect was more pronounced for individuals who were less heavy users of the health care system. The presence of drug insurance coverage is expected to affect UHC need only through health care utilization.

In Canada, there are three types of drug insurance: employer-sponsored (group) insurance; government insurance (for targeted groups); and individual-initiated (private or group) insurance. Employer-sponsored drug insurance is typically part of the overall compensation package between an individual and his or her employer. It may be entirely financed by employer contribution payments, by employee contribution payment or by a mixture of the two. Government drug insurance is funded (and often delivered to social assistance recipients and seniors age 65 and above) by a provincial government. Individually-initiated (private or group) plans may have a sponsor in terms

of an association like for alumni of a university, and are distinguished from the above two types as the individual privately purchases them.

The three types of drug insurance may differ in the extent of their coverage and copayment nature and the characteristics of the people they cover. For instance, employer-sponsored drug insurance usually covers all full-time employees and represents the highest percentage of drug insurance coverage in the Canadian (CCHS) dataset. Government drug insurance targets specific groups such as seniors (65 years and above) and social assistance recipients. Daw and Amorgan (2012) provide a comprehensive overview of the extent to which the publicly funded drug coverage differs between all provinces.

Drug insurance may be endogenous (Stabile, 2001) and the usual concern is adverse selection; those with unobserved risks are more likely to buy drug insurance.[5] Universal health care coverage exists in Canada for a basket of services which includes physician visits and hospital stays. Because of this coverage, adverse selection may be less of a problem in Canada when compared to the United States (Devlin et al., 2011). Also, seniors and social assistance recipients are covered by government insurance regardless of their health status. And as suggested by Allin and Hurley (2009) and in order to reduce further the possibility of adverse selection, I control for health status and the presence of different chronic conditions that may affect individual choices about drug insurance and reduce any unobserved component in the residuals (Allin and

[5] Stabile (2001) found that the estimated impact of drug insurance on GP visits is larger when using the instrument variable (IV) approach than from the uncorrected ordinary linear least squares approach (0.026 versus 0.020).

Hurley, 2009). I use the availability of drug insurance as an exogenous instrument that is expected to be correlated with health care utilization and not directly with UHC.[6] Depending on the type of individual, having drug insurance will lower the costs associated with use of the health care system and affects UHC only through health care utilization.

In addition to using the availability of drug insurance as an instrument, I also included information on the number of physicians per 100,000 residents in a health region, as representing "physician access" for individuals.[7] The lack of adequate and timely access to physician services in some health regions has captured the attention of the public, researchers and policy makers (Pong and Pitblado, 2001). In Canada, the concentration of physicians per 100,000 residents in health regions was found to be positively associated with the number of family visits by individuals (McDonald and Conde, 2010). The number of physicians in a geographic health region may influence UHC through the rate of health care utilization as it captures the mismatch between the spatial distribution of physicians across health regions and the spatial distribution of potential patients who may require their services.

[6] It was a challenge finding exogenous instruments for health care utilization that are not correlated with the error term in the UHC equation. I tried other instruments for health care utilization like expenditure on health care, on drugs, and on education. These expenditures are highly correlated with provincial dummy variables and hence could not be used if provincial dummy variables were included.

[7] In 2001, Alberta, Saskatchewan and British Colombia had no information about the number of GPs at the health region level; I used provincial-wide information for that year. After 2001, all provinces in Canada have health regions except for Prince Edward Island (PEI) and the three territories. This study excludes the territories; for PEI I use the number of physicians per 100,000 in the province.

1.5 Data, variables and descriptive statistics

Four confidential master files (2001; 2003; 2005 and 2010) of the Canadian Community Health Survey (CCHS) conducted by Statistics Canada are employed.[8] Each cycle has nationally collected information on health and health determinants for individuals aged 12 years and over. First introduced in 2000/2001, the CCHS is usually conducted every two years on a representative sample of Canadian residents living in private dwellings in all provinces and territories, excluding people living on Crown lands, Canadian force bases, Indian reserves and institutions and some remote regions. A full description of CCHS survey design and other methodological issues is provided by Statistics Canada (2009).

In many ways, the CCHS is an ideal survey with which to study access to health care because it includes information about the number of visits to many health care services and the reasons behind perceived unmet health care needs. It also includes many of the variables capturing health status, chronic conditions and socioeconomic information (predisposing, enabling and need) that have been defined by Anderson (1995) as factors affecting utilization to health care.

Information about perceived unmet health care is provided in all four cycles (2001, 2003, 2005 and 2010) and is measured by the response to the following question: ‘‘during the past 12 months, was there ever a time when you felt you needed health care but you did not receive it?’’. The respondents provide different reasons for not receiving the care, which can be grouped into those related to the system such as, unavailable

[8] Information about perceived unmet health care is not provided in the 2007 cycle of the CCHS.

services and waiting time, and those that are personal, like the dislike of the doctor (Chen and Hou, 2002; Allin et al., 2008).

Pooling all four cycles of the CCHS together yields 453,891 observations; but several sample restrictions are necessary. I coded the missing information on socioeconomic variables like education and income by dummy variables to reduce their effect on the sample size. Because I am interested in UHC, I eliminate all individuals under the age of 18, reducing the sample by 44,068 observations. Once the sample excludes persons with missing information on UHC and health care utilization (reducing the sample by 2,370 observations) as well missing information on the instruments (a further reduction of 14,122 observations), and missing information on other control variables (loosing 11,120) on the usable sample for my analysis becomes 382,211.

The availability of drug insurance is one of two instruments used to identify the impact of health care utilization on unmet health care. Unfortunately, information on the presence of drug insurance is not available for all cycles of the CCHS. It is included in the 2003 cycle of the CCHS for the whole sample, and for residents of Ontario in 2005. In order to use the entire CCHS dataset for all cycles, I construct a proxy variable for the presence of drug insurance made up of seniors (who receive government drug insurance upon reaching a specified age), recipients of social assistance (who are covered (Daw and Amorgan, 2012)), [9] and those who are employed full time. To

[9] Social assistance recipients are eligible for the public drug insurance across all provinces in Canada; however, there are minor differences in the eligibility for this coverage for seniors. In four provinces, seniors are eligible for coverage only if they belong to low income groups (Daw and Amorgan, 2012). Therefore, for this study I first estimate the model for only the provinces that offer seniors public coverage and compare it to the results when I use the data for ten provinces. The results are very

examine how closely my proxy for drug insurance describes the actual drug insurance holders, table 1.1 presents the characteristics from the sample and subsamples of individuals from the CCHS 2003 and 2005 (Ontario): the second and third columns describe the characteristics of the average respondents we know to have drug insurance (n=111,073) and not having drug insurance (n=32,906), and those from the sample arising from my proxy insurance variable.

Note that the proxy variable is picking up 7% fewer observations when compared to the actual sample of individuals with insurance. The average characteristics of the actual holders of insurance and the proxy variable are very similar, with few expectations. For instance, fewer females have insurance in the proxy group (47% versus 51%) and fewer married individuals in the proxy group (56% versus 59%). It is also essential to ensure that the proxy indicator of drug insurance performs similarly to the actual data. To ascertain this, I use data from the 2003 and 2005 (Ontario) CCHS cycles, and estimate the models (IVLPM and 2SRI) using the survey information about the presence of drug insurance and the physician access measure, as instruments for health care use, then using my proxy measure for drug insurance plus the same physician access variable. Tables 1.2a includes the results from the second stage when medical doctor visits are the measure of health care utilization and the corresponding first stage results are reported in table 1.2b. Notice while the access and actual drug insurance have positive effects on the number of visits to any medical

similar for both models. Thus, I include all the data for the ten provinces and control for province as one way to take into account the differences between provinces.

doctor, the proxy drug insurance has a negative effect, and this could be related to the fact that the proxy drug insurance variable over-samples those who are employed; employed individuals are found to use the health care services less frequently (Allin and Hurley, 2009). However, as shown in table 1.2a the estimated coefficients for medical doctor visits are very similar whether the IV model uses the actual data on drug insurance (-0.032) or the proxy one (-0.037). The same conclusion holds when the model is re-estimated using 2SRI as shown in columns (3) and (4).

Consistent with the empirical literature on UHC, I explain UHC using health care utilization indictors, socio-demographic characteristics, health status, and chronic conditions. To reduce the problem of omitted variable bias I control for lifestyle's indicators and whether the individual has a health problem that is affecting his life most of the time as an indicator for health problem complexity; I also include provincial and year fixed effects to capture geographic variations and changes in UHC over the 10 years. All the variables are defined in table 1.3.

Socio-demographic characteristics include age and its square to take into account any nonlinear relations between age and UHC. Gender is captured by a dummy variable (female=1, male=0). For self-employment, I use a dummy variable=1 if self-employed and 0 otherwise. Marital status is represented by dummy variables (married=1, 0 otherwise; common=1, 0 otherwise) with (single, widow, separate and divorced as a reference category. Immigration status of the respondent is captured by dummy variables (immigrant < 10 years=1, 0 otherwise; immigrant >10 =1, 0 otherwise), leaving Canadian born as the reference group. Education status is captured

by four dummy variables for those who have less than secondary education, completed secondary education, some post-secondary and leaving those with post-secondary as the reference category. Student status is represented by dummy variable (=1 if student, 0 otherwise). Household annual income is captured by four dummy variables ($20,000-$39,999; $40,000- $59,999; $60,000-$79,999 and $80,000 and above) leaving less than $20,000 as reference category. Household size is captured by a continuous variable. Self-reported health status of the respondent is captured by dummy variables for excellent, very good, good and leaving fair or poor health status as the reference category. Chronic conditions are captured by five dummy variables for cancer, arthritis, diabetes, stroke and heart. Injury is captured by a dummy variable (Injury=1, 0 otherwise). Obesity is captured by a categorical dummy variable.[10] Having a health problem that has an impact on an individual's life for most of the time is also measured by a dummy variable. Life style indicators are included (three dummy variables for smoking: smoking daily, smoking occasionally, leaving never smoking as the reference category; three dummy variables for alcohol consumption, drink regularly, drink occasionally, leaving never drink alcohol as the reference category). Provincial differences are captured by series of provincial dummy variables with Ontario as the reference category; heterogeneity over time is captured by a series year dummy variables.

[10] Obesity is constructed from self-reported weights and heights. The question on weight and height is asked for individuals aged 18-64 and excludes pregnant women; to keep my sample size as large as possible, I coded those individuals who were not asked this question with a dummy variable (NA-obesity) which is one if not asked, zero otherwise.

One issue associated with pooling together cross-sectional samples concerns appropriate weights of observations from different years. Depending upon the question under consideration, it may be important to ensure that each year is accorded the same overall weight in the regression, as was the case for the study by Brochu et al. (2012). I follow their approach and use normalized CCHS weights, where the sum of the weights in each cycle is unity. As a robustness check, I also re-estimate all the regressions using the Statistics Canada master weights for each cycle as well.

Table 1.4 presents the percentage of people who report unmet health care and the percentage of this group who report accessibility and personal reasons by sample year. Over the 10-year period (2001-2010) about 69% of individuals with UHC reported system reasons attributable to factors such as service availability or waiting times. Only 31% of individuals reported unmet health care needs for reasons related to personal characteristics and attitudes toward health care services. Not much change is seen in the percentage of individuals reporting UHC needs over the 10 years of these surveys (between 12% and 14%); system reasons seems to oscillate between about 65% to 70%+ over the four cycles; there appears to be a decrease in the percentage of individuals reporting personal reasons as the cause of their unmet health care need, from 44.83% to 21.38%. Of those who report UHC, table 1.5 shows that the largest proportion of individuals indicated experiencing UHC because of "waiting time too long" followed by "unavailable at the time required".

Table 1.6 presents some descriptive statistics for the whole sample also grouped by whether or not individuals have UHC. It shows a comparison of demographic,

socioeconomic, health status, chronic condition and lifestyle indicators between these sub-groups of Canadian aged 18 and above. The descriptive statistics reveal that females are more likely to have UHC than males. Individuals with UHC are younger on average than individuals with no UHC; married people are less likely to report UHC than not, and so too are immigrants. There is a little higher risk of UHC among lower income groups compared to higher income ones; the risk of UHC is lower among individuals with education level of secondary school or less. The increase in reporting UHC for individuals with poorer health status is noteworthy (22% vs. 11% for individuals with no UHC). Individuals with heart problems, arthritis, cancer, stroke or injury are more likely to report UHC, while individuals with diabetes are slightly less likely to have UHC. Individuals with health problems that impact their lives for most of the times are also more likely to have UHC.

The descriptive statistics in table 1.6 reveal higher health care utilization among individuals who report UHC compared to those with no UHC: they have on average more visits to their family, specialist and any medical doctors. Smoking appeared to be associated with a higher risk of UHC. And those who never drank are less likely to have UHC.

1.6 Results and discussion

Initially, I wanted to see what would happen if I did not take into account the endogeneity between unmet health care needs and health-care utilization (LPM) (equation (1)). Three regressions with the three different measures of HCU were estimated. This exercise was instructive: the estimated coefficient on HCU was always

positive and statistically significant (the first row of the top and bottom half of the table 1.7), and table 1.8, column (1)) corroborating much of the published work to date and suggesting that as health care utilization increases, so too does the likelihood of reporting unmet health care needs. Table 1.7 focusses on the estimated coefficients on HCU and for space reasons I present detailed results for one specification of this model – the one which uses the number of visits to a medical doctor over the past year as the third HCU indicator. These results are found in table 1.8, column (1).

When I control for endogeneity by employing an IV technique – again using three indicators of health care use – and parsing the sample in a number of ways (detailed later), the estimated coefficient on HCU is always negative: without exception, use of health care services leads to a reduction in the likelihood of reporting UHC, *ceteris paribus*. The results in table 1.7 (the second row of each specification) show that one extra visit to a family doctor or specialist leads to 7.1 and 4.6 percentage points decrease in the probability of experiencing UHC. Column (2) of table 1.8 contains the IVLPM for the same specification as in the first column. This is followed by the results when the data set is divided into those who specify system reasons for their UHC (column (3)), and those who cite personal reasons (column (4)). Columns (5) to (7) report the 2SRI results (again, comparable to columns (2) to (4)). Finally, the last two columns (8) and (9) of table 1.8 present the estimated coefficients when two measures of health care utilization are employed simultaneously.[11] All of these results are put together in one table in order to show clearly that, once endogeneity is taken

[11] The first stage results for the IV procedure are reported in table 1.9.

into account, the impact of health-care utilization on unmet health care needs is negative and statistically significant, without exception.

The estimated coefficient on medical doctor visits reported in column (1) of table 1.8 suggests that one more visit increases the probability of UHC by 0.3 percentage point. But once account is taken of endogeneity, column (2), the sign on this estimated coefficient becomes negative – and reveals that one more medical doctor visit reduces the likelihood of experiencing UHC by 2.8 percentage points. It is important to ensure that the instruments used to identify the effect of health care utilization are sufficiently correlated with the measure of HCU, and are orthogonal to the errors in the main equation. The results of the identification tests are reported at the bottom of tables 1.7 and 1.8 and reveal that the instruments used are valid. The first stage Cragg-Donald Wald F statistic which measures the correlation between the instruments and the measures of health care utilization is large and above the minimum benchmark (F>=10) indicating that the instruments are sufficiently correlated with the health care utilization. Finally, the null hypothesis of Hansen J test of over identification cannot be rejected the 1% level (p-value >0.05) meaning that we cannot reject the null hypothesis of over-identification and that orthogonality condition is fulfilled.

Irrespective of which measure of HCU employed, when we separate the sample into those who report "system" reasons for the UHC, and those who report "personal" ones (and these categories may not be mutually exclusive), I find a negative impact of HCU on unmet health care needs that is significant for both system group and personal

group. For instance, columns (3) and (4) of table 1.8 reveal that one extra visit to a medical doctor leads to a 2 percentage points decrease in the probability of having UHC due to system reasons and a 1.5 percentage points decrease if due to personal reasons. The fact that UHC seems to be responsive to the presence of systemic barriers to health care utilization bodes well for public policy solutions to this problem.[12] [13]

When I employ the two-stage residual inclusion (2SRI) technique rather than the IVLPM, the results are remarkably similar. Health care use has a negative impact on UHC, and one more visit to the medical doctor reduces the likelihood of reporting UHC by 2.7 percentage points and that this effect is 1.9 percentage points when UHC is due to system reasons and 1.1 percentage points when it is due to the personal ones. The final robustness check on our results employs two indicators of health care utilization in the same equation (e.g., Kasman and Badley, 2004): whether the individual undertook at least three visits to a family doctor and at least one visit to specialist in the last 12 months. Once again, taking into account endogeneity reveals a negative relationship between health care utilization and UHC.

Several other specifications of the model were estimated–and all corroborate our main findings. As far as sex is concerned, the results in table 1.10 (columns (1) and (2)) reveal that, *ceteris paribus*, one extra visit to a medical doctor leads to a 4.1 and 1.7 percentage points decrease in the probability of reporting UHC for females and

[12] Tables A1.6, A1.7, A1.8 and A1.9 also present the results when I use data from the 2003 and 2005 (Ontario) CCHS cycles, and estimate the models (IVLPM and 2SRI) using the survey information about the availability of drug insurance and the physician access measure, as instruments for health care use, then using my proxy measure for drug insurance plus the same physician access variable.

[13] The negative effect of health care utilization on both system and personal reasons could be due to the fact that these two categories of UHC are not mutually exclusive. Many of those who report having UHC due to both system and personal reasons.

males, respectively. One possible explanation is that, since women often have the responsibility for accessing primary care for themselves and for their children, women may actually see their physicians more often and may profit from consultations for their children to discuss their own health problems as well.

Earlier studies found a higher prevalence of UHC among individuals living in urban areas than in rural areas (e.g., Sibley and Glazier, 2009). I parsed the data into urban and rural residents (columns (3) and (4) of table 1.10), and found that an extra visit to a medical doctor decreases the probability of UHC by 2.6 and 4 percentage points for urban and rural residents, respectively. Finally, I separated the data into those living in households with an income of $40,000 or less, and those with an income above $40,000 (columns (5) and (6)). I find that one more extra visit to a medical doctor decreases the probability of UHC by 5.0 and 2.4 percentage points for those with household's income below $40,000 and those with an income above $40,000, respectively.

Many other variables are associated with reporting UHC. I focus on the basic specification of column (2) from table 1.8. We see that, *ceteris paribus*, females have a higher probability of reporting UHC when compared to males: being female increases the probability of UHC by 6.9 percentage points. *Ceteris paribus*, urban residents have a 1.5 percentage points higher probability of UHC than do rural residents. The link between age and having overall UHC is positive: adding ten years to individual's age would increase the probability of UHC by 1 percentage point. This effect is nonlinear with an increase in age leads to a decrease in the likelihood of UHC. The results above

are consistent with most of the studies on UHC (Kasman and Badley, 2004; Nelson and Park, 2006; Sibley and Glazier, 2009; Marshall, 2011) which found a high prevalence of UHC among females, and individuals living in urban areas. However, the findings about urban residents contrast with those of McDonald and Conde (2010).

Technically speaking, a quadratic relationship exists between age and UHC, increasing until the age of 12 and then decreasing thereafter; but given that the minimum age in our sample is 18, I only observe a very gradual negative relationship between age and UHC. This finding accords with earlier studies that showed younger individuals are more likely to have UHC (Chen and Hou, 2002; Kaman and Badley, 2004; Sibley and Glazier, 2009; Marshall, 2011). Turning to marital status, the results indicate that, compared to singles, those who are married or in common law relationships are about 0.6 and 2 percentage points more likely to report overall UHC. The findings in other studies with respect to marital status are mixed: insignificant in explaining overall UHC according to Bryant et al., (2009); Sibley and Glazier (2009); but positively linked to being married according to Nelson and Park (2002).

The level of education has a positive impact on UHC: compared to people with post–secondary education, the probability of UHC for individuals with less than secondary is lower by 5.1 percentage points, while it is lower by 3.7 percentage points for individuals with secondary education. These findings are consistent with those found elsewhere (Kasman and Badley, 2004; Sibley and Glazier, 2009; Marshall, 2011).

The results reveal that income is an important determinant for UHC. People with low income are more likely to report UHC than people in higher income groups: for instance, *ceteris paribus*, people with household income $20,000- $40,000 thousand dollars have a 2.2 percentage points lower probability of reporting UHC than people with an income of less than $20,000. By contrast, the probability of reporting UHC for people with an income of $80,000 and above is further lowered by about 4 percentage points compared to people in the lower income group. This result suggests that individuals in wealthy households have a clearly lower risk of having unmet health care needs as compared to those living in households with lower income. This relation between low income and the risk of having higher UHC is also reported in previous studies (Kasman and Badley, 2004; Sibley and Glazier, 2009; Marshall, 2011), and highlights the importance of income and education in shaping health status (Spencer et al., 2004).

There is a strong association between health status and the probability of UHC that is inversely related to health status: people with excellent health are less likely to have UHC by 24.3 percentage points than people in fair or poor health. Also, having an injury in the last 12 months increases the probability of having UHC by 9.4 percentage points relative to people who did not have any injury. Not surprisingly, having chronic conditions like heart disease; cancer; arthritis or diabetes contributes to being at high risk of having UHC, with probability increases ranging from 2.3 percentage points for people with diabetes to 8.8 percentage points for people with cancer. This strong relationship between health status and the presence of chronic

conditions are consistent with most of the studies on UHC (Kasman and Badley, 2004; Nelson and Park, 2006; Sibley and Glazier, 2009; Marshall, 2011) where they found that individuals in worse health or with chronic conditions are more likely to have UHC. Kasman and Badley (2004) suggest that people in worse health or with chronic conditions are more likely to have a higher probability of UHC due to a lack in the availability of effective treatments for most of the chronic conditions. This hypothesis is supported in my findings on the different impact of chronic conditions on the risk of having UHC: people with diabetes are at the lowest risk of UHC as compared with other chronic conditions that could be more complicated; may have many symptoms and less treatment options. The impact of health problem's complexity also can be captured to some extent by looking at the large significant positive impact from having health problems that affect individual's life for most of the times on the probability of UHC.

There is no significant relationship between being immigrant and reporting overall UHC. Immigrant status was not significant in the results reported by Chen and Hou (2002) when they studied the reasons for UHC, while the low prevalence of overall UHC among immigrants was found by Wu et al. (2005) and Marshall (2011).

The results in table 1.8 show that lifestyle indicators have an impact on having UHC: smokers are more likely to have UHC than nonsmokers. Individuals who are daily smokers have a probability of having UHC that is 2.2 percentage points higher than that of a nonsmoker, while the prevalence of UHC is lower for occasional smokers, so their probability is higher by only 1.6 percentage points for UHC. In contrast, alcohol

consumption has no significant impact on the overall UHC. The estimates also show that being self-employed or being a student is not significantly associated with the risk of UHC. Self-employed individual may have a more flexible time when scheduling for an appointment to see his doctors. And almost all universities in Canada have clinics for their students that make it easier for them to access the health care when they need. Finally, household size has a negative impact of having the risk of UHC; living attached to more household members is associated with a decrease in the likelihood of having UHC. This result highlights the importance of the availability of tangible support in reducing the barriers to health care.

1.7 Conclusions

This chapter makes three contributions to the literature on the determinants of unmet health care needs. It is the first to examine the causal effect of health care utilization on unmet health care needs by carefully dealing with the problem of endogeneity. This is accomplished by including two instruments for HCU in the unmet health care needs regressions. The second contribution arises from the fact that the chapter pays close attention to the relationship between different indicators of health care utilization and the stated reasons for unmet health care needs, differentiating between system problems which include availability of services in the individual's area, and individual-specific issues, like being too busy. Finally, this study is the first to examine how the causal effect of health care utilization on UHC varies by gender (females, males), geographic area (urban, rural) and by household income.

The results indicate a clear and robustly negative relation between health care use and the UHC which is contrary to the findings of many existing studies that do not take account of endogeneity. Individuals who are more likely to report UHC are those who do not use the system very much, *ceteris paribus*. Indeed, my results indicate that one more visit to family doctor; specialist or any medical doctor **decreases** the probability of having unmet health care needs by about 7.1, 4.6 and 2.8 percentage points, respectively. The more the individual uses the health care system, the more likely that his or her health needs are met.

I find that the reasons behind the reported presence of unmet health care needs matter. For instance, one more visit to a medical doctor reduces the probability of having unmet needs by 2.0 percentage points when we look at needs arising from system reasons, and by 1.5 percentage points when we look at needs arising from personal reasons. These results suggest that increasing access to physicians (by increasing supply or offering alternatives) would improve access to physicians and therefore help reduce the amount of UHC reported.

Although, females, urban residents and those in lower-incomed household are more likely to report UHC, the results in this study reveal that the impact of health care utilization is statistically significant in reducing their risk of experiencing unmet health care. These results again heighten the importance of the health services in meeting the health needs for the general population and explicitly for theses specific groups that have higher UHC. These results along with ones discussed above for the general population suggest that UHC is attributed more to the low use of health care services

and not to the high use that could be less satisfactorily and unable to solve their health needs.

Despite the fact that Canada has universal access to "free" primary health care, one finds significant differences in accessibility across sub-groups of the population. This may be due to the fact that coverage does not extend to all services. This public coverage does not cover for example the cost of drugs in all provinces (Marshall, 2011). Polices that increase the coverage of public drug insurance may lower the costs associated with implementing the physician's treatment plan and reduce cost barriers that could affect how regularly the individual contacts a physician, thus reducing the risk of the UHC. Increasing the availability of physicians, especially in under-served areas, and encouraging an affiliation with a family physician who can manage the health care needs of patients, can help to reduce UHC.

Clear links between low income and UHC are also found which suggests that redistribution policies may help improve the rate of unmet needs among the poorer population. Although there is a high prevalence of unmet health care needs among the least healthy individuals, the results should be interpreted with caution because causality cannot be inferred due to the use of cross sectional data. More work is needed to understand this relation. Using a longitudinal data set to identify the extent to which having unmet health care needs may contribute to the change in health status, is an obvious next step, and indeed, forms the subject of chapter 2 of this thesis. By moving beyond the static analysis provided by the cross section to a long-term study provided

by longitudinal data set, this will shed light on the optimality of the rate of unmet health care needs and will help further develop policy solutions.

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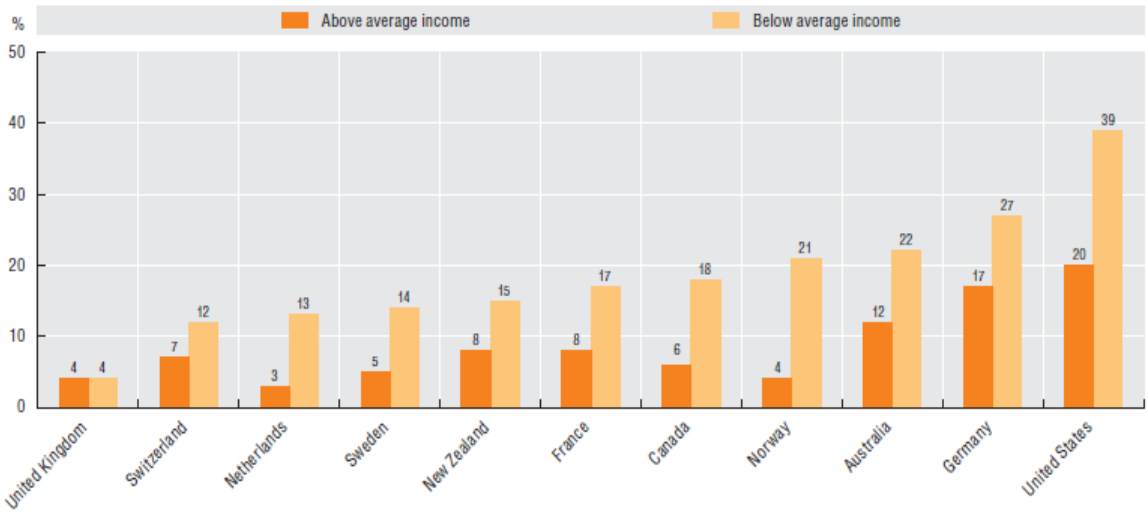
Figure 1.1: Unmet care need due to costs in eleven OECD countries, by income group, 2010



Source: Commonwealth Fund (2010, p.4).

Table 1.1: Summary statistics-for 2003 and 2005 (Ont.)

Variables	Total sample	Actual drug insurance		Proxy drug insurance	
		Actual drug insurance=1	Actual drug insurance=0	Proxy drug insurance=1	Proxy drug insurance=0
N	**143,979**	**111,073**	**32,906**	**103,123**	**40,856**
Female	0.510	0.513	0.500	0.472	0.596
Male	0.490	0.487	0.500	0.528	0.404
Age	45.45	45.81	44.19	46.89	42.16
Married	0.567	0.589	0.487	0.556	0.593
Common	0.087	0.090	0.077	0.091	0.077
Single	0.346	0.321	0.436	0.353	0.330
Canadian born	0.753	0.777	0.669	0.755	0.749
Imm<10	0.062	0.048	0.114	0.054	0.082
Imm >=10	0.185	0.175	0.217	0.191	0.169
HHI<20	0.091	0.076	0.145	0.089	0.097
HHI2040	0.180	0.156	0.264	0.173	0.197
HHI4060	0.180	0.178	0.186	0.175	0.192
HHI6080	0.153	0.164	0.112	0.157	0.143
HHI>=80	0.303	0.340	0.171	0.319	0.265
MHHI	0.096	0.086	0.122	0.087	0.106
< Sec	0.175	0.164	0.214	0.182	0.159
Sec	0.189	0.184	0.207	0.183	0.204
OtherGrad	0.082	0.082	0.083	0.072	0.104
Postsec	0.539	0.557	0.477	0.547	0.519
MEduc	0.015	0.013	0.019	0.016	0.014
HHSize	2.976	2.964	3.019	2.881	3.194
Student	0.104	0.106	0.097	0.073	0.175
SelfEmpld	0.113	0.083	0.219	0.026	0.312
HExcellent	0.223	0.223	0.223	0.217	0.236
HVgood	0.367	0.370	0.354	0.372	0.355
HGood	0.296	0.294	0.300	0.300	0.285
HFair-Poor	0.114	0.113	0.123	0.111	0.124
Heart	0.053	0.055	0.047	0.060	0.038
Cancer	0.025	0.026	0.022	0.027	0.022
Arthritis	0.185	0.187	0.177	0.189	0.175
Diabetes	0.051	0.053	0.042	0.054	0.043
Stroke	0.011	0.011	0.010	0.013	0.008
Injury	0.123	0.125	0.118	0.126	0.117
HPrblm_Impact	0.248	0.253	0.231	0.243	0.258
Obesity	0.150	0.153	0.138	0.150	0.150
DrinkNever	0.067	0.057	0.102	0.060	0.083
DrinkReg	0.643	0.660	0.582	0.656	0.613
DrinkOcc	0.290	0.283	0.316	0.284	0.304
SmkNever	0.343	0.337	0.361	0.332	0.368
SmkDaily	0.444	0.446	0.439	0.455	0.418

SmkOcc	0.213	0.217	0.200	0.213	0.214
Urban	0.828	0.835	0.802	0.837	0.807
Rural	0.172	0.165	0.198	0.163	0.193
BC	0.095	0.088	0.123	0.089	0.110
QC	0.172	0.197	0.085	0.170	0.176
ON	0.562	0.551	0.601	0.570	0.545
Atlantic	0.055	0.051	0.068	0.057	0.051
Prairies	0.116	0.113	0.123	0.114	0.118

Note: Summary statistics are weighted by the provided person weight variable. The weights are normalized in each survey to add up to one, to give equal weights to each survey when I pool the data.

Table 1.2a: The effect of health care utilization on UHC- CCHS 2003 and 2005 (Ont.) using actual drug insurance and proxy drug insurance

Variables	IVLPM		2SRI	
	UHC		UHC	
	Actual drug insurance	Proxy drug insurance	Actual drug insurance	Proxy drug insurance
MedDr visits	-0.032***	-0.037**	-0.031***	-0.035***
	(0.007)	(0.013)	(0.005)	(0.009)
Female	0.076***	0.081***	0.071***	0.076***
	(0.009)	(0.017)	(0.007)	(0.011)
Urban	0.016***	0.018**	0.015***	0.017***
	(0.005)	(0.006)	(0.004)	(0.004)
Age	-0.001	-0.001	-0.000	-0.000
	(0.001)	(0.001)	(0.000)	(0.000)
AgeSq	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
SelfEmpld	-0.001	-0.003	-0.001	-0.004
	(0.006)	(0.008)	(0.005)	(0.006)
Married	0.007	0.008	0.007**	0.008**
	(0.005)	(0.005)	(0.003)	(0.004)
Common	0.015**	0.016**	0.013**	0.013**
	(0.007)	(0.007)	(0.005)	(0.005)
< Sec	-0.050***	-0.053***	-0.047***	-0.050***
	(0.006)	(0.009)	(0.005)	(0.006)
Sec	-0.037***	-0.039***	-0.036***	-0.037***
	(0.005)	(0.007)	(0.004)	(0.005)
OtherGrad	0.001	0.001	-0.001	-0.001
	(0.007)	(0.007)	(0.005)	(0.005)
Student	-0.011	-0.012	-0.009*	-0.011**
	(0.007)	(0.008)	(0.005)	(0.006)
Imm<10	-0.001	-0.002	0.002	0.000
	(0.009)	(0.010)	(0.007)	(0.007)
Imm>=10	-0.004	-0.004	-0.004	-0.004
	(0.005)	(0.005)	(0.004)	(0.004)
HHI2040	-0.019**	-0.020**	-0.016***	-0.016***
	(0.007)	(0.007)	(0.005)	(0.005)
HHI4060	-0.027***	-0.028***	-0.021***	-0.022***
	(0.007)	(0.008)	(0.005)	(0.005)
HHI6080	-0.040***	-0.041***	-0.032***	-0.034***
	(0.007)	(0.009)	(0.005)	(0.006)
HHI>=80	-0.039***	-0.040***	-0.030***	-0.032***
	(0.007)	(0.008)	(0.005)	(0.006)
HHSize	-0.002	-0.002	-0.002	-0.002
	(0.002)	(0.002)	(0.001)	(0.001)
Hexcellent	-0.250***	-0.269***	-0.230***	-0.250***
	(0.031)	(0.055)	(0.023)	(0.038)
Hvgood	-0.210***	-0.226***	-0.186***	-0.204***
	(0.028)	(0.049)	(0.020)	(0.034)
Hgood	-0.156***	-0.169***	-0.136***	-0.150***
	(0.023)	(0.040)	(0.017)	(0.027)
Heart	0.056***	0.064**	0.064***	0.072***
	(0.015)	(0.025)	(0.010)	(0.016)
Cancer	0.096***	0.107**	0.094***	0.106***
	(0.021)	(0.036)	(0.015)	(0.024)
Arthritis	0.042***	0.046***	0.043***	0.047***
	(0.007)	(0.011)	(0.005)	(0.008)
Diabetes	0.038**	0.045**	0.038***	0.046**

	(0.014)	(0.022)	(0.010)	(0.015)
Stroke	0.053**	0.061*	0.062***	0.070***
	(0.026)	(0.032)	(0.013)	(0.018)
Injury	0.110***	0.116***	0.093***	0.099***
	(0.011)	(0.017)	(0.007)	(0.012)
HPrblm_Impact	0.192***	0.202***	0.164***	0.176***
	(0.017)	(0.031)	(0.013)	(0.021)
SmkDaily	0.030***	0.031***	0.028***	0.028***
	(0.004)	(0.005)	(0.003)	(0.004)
SMKOcc	0.019***	0.020***	0.019***	0.019***
	(0.005)	(0.005)	(0.004)	(0.004)
Obesity	0.008	0.010	0.009**	0.010**
	(0.005)	(0.007)	(0.004)	(0.004)
DrinkReg	-0.005	-0.007	-0.006	-0.008
	(0.008)	(0.010)	(0.007)	(0.008)
DrinkOcc	0.008	0.009	0.007	0.007
	(0.008)	(0.008)	(0.007)	(0.007)
Year 2003	-0.010**	-0.009*	0.010**	0.009**
	(0.005)	(0.005)	(0.004)	(0.004)
BC	0.016**	0.017**	0.017***	0.018***
	(0.006)	(0.007)	(0.005)	(0.005)
QC	-0.010	-0.014	-0.008	-0.013
	(0.009)	(0.013)	(0.007)	(0.009)
Atlantic	0.010	0.011	0.009**	0.010**
	(0.006)	(0.007)	(0.005)	(0.005)
Prairies	-0.001	-0.001	-0.001	-0.001
	(0.005)	(0.005)	(0.004)	(0.004)
MEduc	-0.023	-0.024	-0.022*	-0.023*
	(0.014)	(0.015)	(0.012)	(0.012)
MHIncome	-0.038***	-0.039***	-0.032***	-0.034***
	(0.008)	(0.009)	(0.006)	(0.006)
MStudent	0.045	0.050	0.018	0.022
	(0.034)	(0.039)	(0.046)	(0.047)
NAObesity	0.138***	0.157**	0.132***	0.153***
	(0.039)	(0.063)	(0.028)	(0.043)
NSObesity	0.001	0.000	0.000	-0.001
	(0.013)	(0.014)	(0.009)	(0.010)
Constant	0.442***	0.471***		
	(0.052)	(0.092)		
Observations	143979	143979	143979	143979
Cragg- Donald Wald F Statistic	82.468	30.618	82.468	30.618
Hansen J Statistic	0.802	1.643	0.802	1.643
(P-value)	(0.370)	(0.199)	(0.370)	0.199
Durbin-Wu-Hausman Chi2 statistic	37.429	17.593	37.429	17.593
(P-value)	(0.000)	(0.000)	(0.000)	(0.000)

Note: The regression models are weighted using the provided person weight variable. The weights are normalized in each survey to add up to one, to give equal weights to each survey when I pool the data. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 1.2b: First stage results from using the actual and proxy drug insurance (2003 and 2005 (Ont.))

Variables	MedDr visits (using proxy drug insurance)	MedDr visits (using actual drug insurance)
Female	1.240***	1.272***
	(0.062)	(0.059)
Urban	0.393***	0.365***
	(0.064)	(0.064)
Age	-0.028**	-0.026**
	(0.011)	(0.011)
AgeSq	0.000	0.000
	(0.000)	(0.000)
SelfEmpld	-0.657***	-0.323***
	(0.090)	(0.073)
Married	0.255***	0.223**
	(0.074)	(0.074)
Common	0.150	0.127
	(0.100)	(0.100)
<Sec	-0.584***	-0.556***
	(0.082)	(0.082)
Sec	-0.347***	-0.328***
	(0.076)	(0.077)
OtherGrad	-0.109	-0.093
	(0.120)	(0.119)
Student	-0.396***	-0.367**
	(0.115)	(0.112)
Imm<10	-0.331**	-0.241*
	(0.134)	(0.134)
Imm>=10	-0.118	-0.098
	(0.073)	(0.073)
HHI2040	-0.046	-0.057
	(0.113)	(0.113)
HHI4060	-0.177	-0.259**
	(0.112)	(0.112)
HHI6080	-0.321**	-0.454***
	(0.120)	(0.122)
HHI>=80	-0.244**	-0.415***
	(0.113)	(0.116)
HHSize	-0.010	0.001
	(0.025)	(0.025)
Hexcellent	-4.336***	-4.352***
	(0.155)	(0.155)
Hvgood	-3.855***	-3.879***
	(0.153)	(0.154)
Hgood	-3.111***	-3.131***
	(0.153)	(0.153)
Heart	1.769***	1.757***
	(0.193)	(0.193)
Cancer	2.634***	2.639***
	(0.233)	(0.232)
Arthritis	0.799***	0.803***
	(0.092)	(0.092)
Diabetes	1.666***	1.643***
	(0.188)	(0.188)
Stroke	1.770**	1.768**
	(0.590)	(0.590)

Injury	1.277***	1.272***
	(0.120)	(0.120)
Hprblm_Impact	2.406***	2.404***
	(0.084)	(0.084)
SmkDaily	0.212***	0.218***
	(0.062)	(0.062)
SmkOcc	0.078	0.079
	(0.077)	(0.077)
Obesity	0.359***	0.348***
	(0.085)	(0.085)
DrinkReg	-0.431***	-0.473***
	(0.119)	(0.119)
DrinkOcc	0.151	0.119
	(0.129)	(0.128)
Year2003 (Reference)		
Year2005	-0.135*	-0.123
	(0.076)	(0.077)
BC	0.152	0.168
	(0.106)	(0.105)
QC	-1.042***	-1.123***
	(0.103)	(0.103)
Atlantic	0.107	0.106
	(0.129)	(0.130)
Prairies	-0.041	-0.047
	(0.094)	(0.094)
MEdu	-0.388	-0.359
	(0.308)	(0.307)
MHHI	-0.325**	-0.368**
	(0.117)	(0.117)
Mstudent	1.234	1.307
	(0.904)	(0.905)
NAObesity	4.585***	4.568***
	(0.422)	(0.423)
NSObesity	-0.260	-0.262
	(0.190)	(0.189)
Num Physicians	0.004**	0.005**
	(0.001)	(0.001)
Drug Insurance	-0.300***	0.582***
	(0.081)	(0.067)
Cons	7.031***	6.448***
	(0.362)	(0.359)
N	143979	143979

Note: The regression models are weighted using the provided person weight variable. The weights are normalized in each survey to add up to one, to give equal weights to each survey when I pool the data. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 1.3: Variable definitions

Dependent variables	
UHC	1= unmet health care needs, 0 otherwise.
System	1= system reasons, 0 if UHC=0.
Personal	1= personal reasons, 0 if UHC=0.
Health care utilization variables	
FamDr visits	number of visits in the last 12 months to a family doctor.
SpecDr visits	number of visits in the last 12 months to any specialist. doctor.
MedDr visits	number of visits in the last 12 months to any medical doctor.
FDV3+	1= FamDr visits >=3, 0 otherwise.
ConsSpec	1= SpecDr visit>=1, 0 otherwise.
Independent Variables	
Female	1= female, 0 otherwise.
Male	1= male, 0 otherwise: **Reference**
Age	age in years.
Age Sq	age square.
Marital status	
Married	1= married, 0 otherwise.
Common	1= common law relationship, 0 otherwise.
Single	1= single, widow, separated or divorced, 0 otherwise: **Reference**
Canadian born	1= Canadian born; 0 otherwise: **Reference**
Imm<10	1= immigrated to Canada less than or equal 10 years, 0 otherwise.
Imm >=10	1= immigrated to Canada more than 10 years, 0 otherwise
HHI<20	1= total household income in Dollar <20,000, 0 otherwise: **Reference**
HHI2040	1= total household income in Dollar >=20, 000 and <=39, 999, 0 otherwise.
HHI4060	1= total household income in Dollar >=40, 000 and <=59, 000, 0 otherwise.
HHI6080	1= total household income in Dollar >=60, 000 and <=79, 999, 0 otherwise.
HHI>=80	1= total household income in Dollar >=80, 000, 0 otherwise.
MHHI	1= household income not stated, 0 otherwise.
< Sec	1= less than secondary education, 0 otherwise.
Sec	1= secondary school degree, 0 otherwise.
OtherGrad	1= some post-secondary education, 0 otherwise.
Postsec	1= post-secondary school degree, 0 otherwise: **Reference**
MEduc	1= education not stated, 0 otherwise.
HHSize	Total number of household size.
Student	1= student, 0 otherwise.
MStudent	1= student not stated, 0 otherwise.
SelfEmpld	1= work self-employed, 0 otherwise.
HExcellent	1= health status excellent, 0 otherwise.
HVgood	1= health status very good, 0 otherwise.
HGood	1= health status good, 0 otherwise.
Hfair-Poor	1= health status fair or poor, 0 otherwise: **Reference**
Heart	1= heart problems, 0 otherwise.
Cancer	1= cancer, 0 otherwise.
Arthritis	1= arthritis, 0 otherwise.
Diabetes	1= diabetes, 0 otherwise.
Stroke	1= stroke, 0 otherwise.
Injury	1= an injury in the last 12 months, 0 otherwise.
HPrblm_Impact	1= health problem impacts his/her life most of the time, 0 otherwise.
Obesity	1= BMI $\geq$ 30 kg/m^2, 0 otherwise: Body Mass Index (BMI) is an indicator of obesity and it is calculated as (weight in kilograms)/(height in meters) ^{2}
NAObesity	1=BMI non-applicable, 0 otherwise: Obesity is constructed from the respondents who self-report their weights and heights. The question

	on weight and height is asked for individuals aged 18-64 and excludes pregnant women.
DrinkNever	1= non-drinker, 0 otherwise: **Reference**
DrinkReg	1= regular drinker, 0 otherwise.
DrinkOcc	1= occasional drinker, 0 otherwise.
SmkNever	1= never smoked, 0 otherwise: **Reference**
SmkDaily	1= daily smoker, 0 otherwise.
SmkOcc	1= occasional smoker, 0 otherwise.
Urban	1= living in an urban area; 0 if rural.
Rural	1= living in rural areas, 0 otherwise: **Reference**
BC	1= living in the province of British Columbia, 0 otherwise
QC	1= living in the province of Quebec, 0 otherwise
ON	1= living in the province of Ontario, 0 otherwise: **Reference**
Atlantic	1= living in the province of Newfoundland, Prince Edward, Nova Scotia or New Brunswick, 0 otherwise.
Prairies	1= living in the province of Manitoba, Saskatchewan or Alberta, 0 otherwise.

Table 1.4: Distribution of UHC, System and Personal reasons of UHC in Canada

Cycle	UHC %	System %	Personal %
Cycle 1 (2000/2001)	13.45	64.60	44.83
Cycle 2 (2003)	11.55	74.81	36.02
Cycle 3 (2005)	11.87	68.07	26.12
Cycle 4 (2010)	11.88	71.97	21.38
Overall	12.19	68.61	30.85
Number of observations	46,603	31,975	14,378

Note: About 3,049 individuals listed both "System" and "Personal". There are 3,229 individuals who listed "other" as the only reasons for UHC, so those are included in the UHC but not in 'System" or "Personal". Also, there are 70 individuals who responded that they had UHC but they did not list any reason. In other way: #UHC > ((#System+ #Personal) - #Both) by 3,299.

Table 1.5: Percent distribution of reasons of UHC among individuals with UHC- in the full sample CCHS (2000-2010)

System reasons	%	Personal	%
Waiting time too long	34.36	Felt would be inadequate	8.15
Unavailable at the time required	16.03	Did not get around to it	7.98
Unavailable in the area	9.45	Dislikes doctor	2.00
Cost	9.70	Too busy	7.58
Language	0.42	Decided not to seek care	6.83
Transportation	1.53	Personal/ Family responsibilities	1.16
Did not know where to go	2.79		
Unable to leave the house because of health problem.	0.57		

Most reported combination of reasons for UHC	**%**
Waiting time too long ***and*** Unavailable at the time required	4.61
Waiting time too long ***and*** Unavailable in the area.	2.86
Unavailable at the time required ***and*** Unavailable in the area	1.91
Waiting time too long ***and*** Felt would be inadequate	1.52
Waiting time too long ***and*** Too busy	1.14
Unavailable at the time required ***and*** Unavailable in the area ***and*** Waiting time too long	1.08
Waiting time too long ***and*** Cost	0.91
Unavailable at the time required ***and*** Felt would be inadequate	0.87
Cost ***and*** Unavailable in the area	0.61
Unavailable at the time required ***and*** Did not know where to go	0.40
Felt would be inadequate ***and*** Dislikes doctors	0.30

Note: All descriptive statistics are weighted. The weights are normalized for each cycle to add up to one. Because respondents could report more than one reason, details may add to more than the total.

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Table 1.6: Summary statistics-for total sample and subgroups by UHC (2001-2010)

Variables	Total Sample	No UHC	Any UHC	UHC		
				System	Personal	Both
N	**382,211**	**335,608**	**46,603**	**31,975**	**14,378**	**3,049**
Female	0.509	0.500	0.576	0.592	0.535	0.576
Male	0.491	0.500	0.424	0.408	0.465	0.424
Age	45.65	46.09	42.43	43.37	39.39	40.58
Age Sq	2377.7	2423.6	2043.7	2120.7	1780.3	1870.3
Married	0.544	0.553	0.478	0.496	0.432	0.440
Common	0.103	0.099	0.129	0.129	0.129	0.130
Single	0.353	0.348	0.393	0.375	0.439	0.430
Canadian born	0.776	0.774	0.797	0.782	0.831	0.785
Imm<10	0.059	0.059	0.058	0.064	0.043	0.065
Imm >=10	0.165	0.167	0.145	0.154	0.126	0.150
HHI<20	0.092	0.088	0.121	0.125	0.114	0.130
HHI2040	0.173	0.172	0.184	0.189	0.182	0.197
HHI4060	0.171	0.172	0.168	0.168	0.176	0.195
HHI6080	0.147	0.147	0.142	0.139	0.146	0.141
HHI>=80	0.284	0.287	0.265	0.260	0.250	0.210
MHHI	0.133	0.134	0.120	0.119	0.132	0.127
< Sec	0.178	0.182	0.149	0.146	0.156	0.144
Sec	0.183	0.186	0.158	0.151	0.172	0.148
OtherGrad	0.085	0.083	0.103	0.098	0.121	0.127
Postsec	0.546	0.541	0.580	0.595	0.542	0.576
MEduc	0.008	0.008	0.010	0.010	0.009	0.005
HHSize	2.894	2.895	2.888	2.852	2.977	2.842
Student	0.102	0.099	0.121	0.112	0.144	
SelfEmpld	0.112	0.112	0.110	0.109	0.114	0.0956
HExcellent	0.230	0.244	0.133	0.130	0.138	0.110
HVgood	0.368	0.374	0.318	0.309	0.337	0.293
HGood	0.284	0.277	0.333	0.336	0.333	0.343
HFair-Poor	0.118	0.105	0.216	0.225	0.192	0.254
Heart	0.053	0.052	0.059	0.062	0.049	0.063
Cancer	0.025	0.024	0.030	0.032	0.022	0.026
Arthritis	0.174	0.166	0.228	0.244	0.190	0.230
Diabetes	0.054	0.054	0.052	0.056	0.038	0.051
Stroke	0.011	0.010	0.015	0.015	0.013	0.015
Injury	0.128	0.118	0.206	0.201	0.220	0.224
HPrblm_Impact	0.242	0.213	0.453	0.465	0.429	0.536
Obesity	0.149	0.147	0.169	0.172	0.161	0.176
DrinkNever	0.099	0.101	0.087	0.092	0.055	0.074
DrinkReg	0.640	0.640	0.641	0.631	0.667	0.622
DrinkOcc	0.261	0.259	0.272	0.277	0.278	0.304
SmkNever	0.552	0.560	0.499	0.504	0.490	0.477
SmkDaily	0.319	0.312	0.366	0.364	0.369	0.381
SmkOcc	0.129	0.128	0.135	0.132	0.141	0.142

Urban	0.819	0.818	0.829	0.829	0.823	0.821
Rural	0.181	0.182	0.171	0.171	0.177	0.179
BC	0.131	0.132	0.130	0.128	0.132	0.108
QC	0.242	0.238	0.270	0.284	0.250	0.282
ON	0.389	0.391	0.369	0.365	0.373	0.366
Atlantic	0.076	0.076	0.072	0.072	0.072	0.075
Prairies	0.162	0.163	0.159	0.151	0.173	0.169
MStudent	0.001	0.001	0.001	0.001	0.001	
NAObesity	0.060	0.061	0.048	0.048	0.062	0.056
NSObesity	0.022	0.022	0.025	0.025	0.020	0.026
FamDr visits	3.194	2.974	4.798	5.134	4.249	5.298
SpecDr visits	0.945	0.848	1.655	1.800	1.286	1.707
MedDr visits	4.140	3.822	6.453	6.934	5.535	7.005

Note: All descriptive statistics are weighted. The weights are normalized for each cycle to add up to one to give equal weights to each survey when I pool the data. Gap in the table indicates small cell numbers.

Table 1.7: The effect of health care utilization on UHC total sample (2001-2010)

Health care utilization	UHC	System	Personal
FamDr visits (LPM)	0.003***	0.003***	0.001***
	(0.000)	(0.000)	(0.000)
FamDr visits (IVLPM)	-0.071**	-0.050**	-0.039**
	(0.022)	(0.017)	(0.014)
FamDr visits (2SRI)	-0.067***	-0.047***	-0.029***
	(0.013)	(0.011)	(0.008)
Observations	382,211	367,583	349,986
Cragg-Donald Wald F Statistic	28.375	30.767	22.471
Hansen J Statistic	0.797	1.982	0.923
(P-value)	(0.372)	(0.159)	(0.337)
Durbin-Wu-Hausman Chi2 statistic	25.696	18.395	16.563
and (P-value)	(0.000)	(0.000)	(0.000)
SpecDr visits (LPM)	0.003***	0.003***	0.003
	(0.000)	(0.000)	(0.000)
SpecDr visits (IVLPM)	-0.046***	-0.033***	-0.024**
	(0.011)	(0.009)	(0.008)
SpecDr visits (2SRI)	-0.044***	-0.031***	-0.018**
	(0.009)	(0.007)	(0.005)
Observations	382,211	367,583	349,986
Cragg-Donald Wald F Statistic	144.812	156.211	107.895
Hansen J Statistic	0.668	1.507	2.486
(P-value)	(0.413)	(0.220)	(0.115)
Durbin-Wu- Hausman Chi2 statistic	27.274	20.921	14.863
and (P-value)	(0.000)	(0.000)	(0.000)

Note: All the regressions are weighted. The weights are normalized for each cycle to add up to one to give equal weights to each survey when I pool the data. System=1 if UHC is due to system reasons, and 0 if UHC=0. Personal=1 if UHC is due to personal reasons, 0 if UHC=0. Controls for all variables previously described, but suppressed for brevity. Full regression results can be found in tables A1.1, A1.2 and A1.3 in Appendix 1. The regression models are weighted by the probability weight. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 1.8: The effect of health care utilization on UHC- total sample (2001-2010)

Variables	LPM: UHC	IVLPM: UHC	IVLPM: System	IVLPM: Personal	2SRI: UHC	2SRI: System	2SRI: Personal	IVLPM: UHC	2SRI: UHC
MedDr visits	0.003***	-0.028***	-0.020***	-0.015***	-0.027***	-0.019***	-0.011***		
	(0.000)	(0.007)	(0.006)	(0.005)	(0.005)	(0.004)	(0.003)		
FDV3+								-0.463**	-0.456***
								(0.155)	(0.118)
ConsSpec								-0.247*	-0.231**
								(0.136)	(0.095)
Female	0.030***	0.069***	0.053***	0.026***	0.066***	0.050***	0.019***	0.111***	0.106***
	(0.002)	(0.009)	(0.007)	(0.006)	(0.007)	(0.006)	(0.004)	(0.018)	(0.013)
Urban	0.004*	0.015***	0.011***	0.006**	0.015***	0.010***	0.004**	0.023***	0.022***
	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.005)	(0.004)
Age	0.001***	0.001**	0.002***	-0.001***	0.001***	0.002***	-0.000*	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
AgeSq	-3.4E-05***	-4.2E-05***	-4.0E-05***	-4.8E-05	-4.5E-05***	-3.8E-05***	-1.0E-05***	-2.4E-05**	-2.7E-05**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SelfEmpld	0.013***	0.002	0.000	0.000	0.002	-0.000	0.001	-0.009	-0.010
	(0.003)	(0.004)	(0.004)	(0.003)	(0.004)	(0.003)	(0.002)	(0.008)	(0.006)
Married	-0.003	0.006*	0.008**	0.000	0.006**	0.008***	-0.001	0.018**	0.017***
	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.006)	(0.004)
Common	0.013***	0.020***	0.018***	0.005**	0.017***	0.016***	0.003*	0.029***	0.026***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)	(0.006)	(0.004)
<Sec	-0.038***	-0.051***	-0.042***	-0.015***	-0.048***	-0.039***	-0.012***	-0.063***	-0.060***
	(0.002)	(0.004)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.010)	(0.007)
Sec	-0.029***	-0.037***	-0.031***	-0.012***	-0.037***	-0.029***	-0.010***	-0.049***	-0.047***
	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)	(0.006)	(0.004)

OtherGrad	0.000	-0.002	-0.003	0.003	-0.004	-0.004	0.001	-0.006	-0.008**
	(0.004)	(0.004)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)	(0.005)	(0.003)
Student	0.006	-0.006	-0.004	-0.005	-0.006	-0.005	-0.003	0.008	0.007**
	(0.004)	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)	(0.002)	(0.005)	(0.003)
Imm<10	0.006	-0.005	0.009*	-0.014***	-0.002	0.009**	-0.010***	0.003	0.006
	(0.005)	(0.006)	(0.005)	(0.003)	(0.005)	(0.004)	(0.003)	(0.007)	(0.005)
Imm>=10	0.002	0.000	0.005	-0.002	0.001	0.005*	-0.002	0.012**	0.013**
	(0.003)	(0.004)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.005)	(0.004)
HHI2040	-0.014***	-0.022***	-0.017***	-0.007**	-0.017***	-0.013***	-0.005**	-0.008	-0.004
	(0.004)	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)	(0.005)	(0.004)
HHI4060	-0.025***	-0.037***	-0.029***	-0.012***	-0.030***	-0.022***	-0.008***	-0.020**	-0.014***
	(0.004)	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)	(0.002)	(0.006)	(0.004)
HHI6080	-0.027***	-0.040***	-0.033***	-0.015***	-0.033***	-0.025***	-0.009***	-0.022**	-0.016**
	(0.004)	(0.006)	(0.005)	(0.003)	(0.004)	(0.003)	(0.002)	(0.007)	(0.005)
HHI>=80	-0.027***	-0.040***	-0.032***	-0.017***	-0.031***	-0.024***	-0.010***	-0.018*	-0.011
	(0.004)	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)	(0.002)	(0.010)	(0.007)
HHSize	-0.002**	-0.002**	-0.003**	-0.000	-0.002**	-0.002**	-0.000	-0.005**	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.002)	(0.001)
Hexcellent	-0.108***	-0.243***	-0.180***	-0.103***	-0.226***	-0.160***	-0.078***	-0.275***	-0.258***
	(0.004)	(0.031)	(0.025)	(0.018)	(0.024)	(0.019)	(0.013)	(0.038)	(0.028)
Hvgood	-0.081***	-0.202***	-0.151***	-0.085***	-0.179***	-0.128***	-0.061***	-0.202***	-0.180***
	(0.004)	(0.027)	(0.022)	(0.016)	(0.021)	(0.017)	(0.011)	(0.027)	(0.019)
Hgood	-0.050***	-0.147***	-0.110***	-0.062***	-0.128***	-0.091***	-0.045***	-0.124***	-0.106***
	(0.004)	(0.022)	(0.018)	(0.013)	(0.017)	(0.013)	(0.009)	(0.016)	(0.011)
Heart	-0.010**	0.037**	0.025**	0.020**	0.046***	0.033***	0.019***	0.081***	0.089***
	(0.004)	(0.012)	(0.010)	(0.008)	(0.009)	(0.007)	(0.006)	(0.022)	(0.015)
Cancer	0.002	0.088***	0.065***	0.041**	0.087***	0.063***	0.032***	0.103**	0.102***

	(0.005)	(0.020)	(0.016)	(0.013)	(0.015)	(0.012)	(0.009)	(0.033)	(0.023)
Arthritis	0.020***	0.043***	0.035***	0.014***	0.043***	0.033***	0.013***	0.073***	0.072***
	(0.003)	(0.006)	(0.005)	(0.004)	(0.005)	(0.004)	(0.003)	(0.013)	(0.009)
Diabetes	-0.023***	0.023**	0.016*	0.014*	0.026**	0.019**	0.010*	0.076**	0.079***
	(0.004)	(0.011)	(0.009)	(0.008)	(0.009)	(0.007)	(0.005)	(0.026)	(0.020)
Stroke	-0.002	0.035**	0.021*	0.013	0.045***	0.028***	0.017**	0.023*	0.034***
	(0.008)	(0.015)	(0.012)	(0.008)	(0.009)	(0.007)	(0.005)	(0.013)	(0.009)
Injury	0.058***	0.094***	0.068***	0.043***	0.080***	0.057***	0.028***	0.118***	0.104***
	(0.003)	(0.009)	(0.007)	(0.005)	(0.007)	(0.005)	(0.004)	(0.014)	(0.010)
HPrblm_Impact	0.111***	0.187***	0.140***	0.079***	0.160***	0.114***	0.055***	0.221***	0.193***
	(0.003)	(0.017)	(0.014)	(0.011)	(0.013)	(0.011)	(0.007)	(0.025)	(0.017)
SmkDaily	0.020***	0.022***	0.014***	0.008***	0.019***	0.012***	0.005***	0.010**	0.008**
	(0.002)	(0.003)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.004)	(0.003)
SmkOcc	0.016***	0.016***	0.010**	0.007**	0.015***	0.008***	0.005***	0.011**	0.010***
	(0.003)	(0.004)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.004)	(0.003)
Obesity	-0.004	0.004	0.002	0.003	0.004	0.002	0.003	0.016**	0.016**
	(0.003)	(0.004)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.007)	(0.005)
DrinkReg	0.015***	-0.000	-0.001	0.005*	0.001	-0.001	0.008**	0.009	0.009
	(0.004)	(0.006)	(0.005)	(0.003)	(0.005)	(0.004)	(0.002)	(0.008)	(0.006)
DrinkOcc	0.007*	0.009*	0.005	0.010***	0.009**	0.005	0.011***	0.013*	0.012**
	(0.004)	(0.005)	(0.004)	(0.002)	(0.004)	(0.003)	(0.002)	(0.007)	(0.005)
Year2003	-0.026***	-0.030***	-0.011***	-0.026***	-0.029***	-0.010***	-0.022***	-0.027***	-0.026***
	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.003)
Year2005	-0.022***	-0.032***	-0.019***	-0.039***	-0.030***	-0.018***	-0.031***	-0.030***	-0.028***
	(0.002)	(0.004)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.004)	(0.003)
Year2010	-0.011***	-0.023***	-0.009**	-0.039***	-0.023***	-0.009**	-0.033***	-0.021**	-0.021***
	(0.003)	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)	(0.002)	(0.007)	(0.006)

BC	0.001	0.011**	0.006*	0.005**	0.010**	0.005**	0.004**	0.019	0.019**
	(0.003)	(0.004)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.012)	(0.009)
QC	0.024***	-0.006	0.003	-0.011**	-0.005	0.002	-0.008**	-0.022	-0.022
	(0.003)	(0.007)	(0.006)	(0.005)	(0.006)	(0.005)	(0.003)	(0.023)	(0.018)
Atlantic	-0.005*	-0.007**	-0.003	-0.004**	-0.006**	-0.002	-0.003**	0.008	0.008**
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)	(0.005)	(0.004)
Prairies	0.001	-0.003	-0.003	-0.001	-0.002	-0.003	-0.000	-0.008	-0.007
	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)	(0.007)	(0.005)
MEduc	-0.009	-0.016	-0.017*	-0.002	-0.016*	-0.015**	-0.002	-0.024*	-0.022**
	(0.009)	(0.011)	(0.009)	(0.007)	(0.009)	(0.008)	(0.005)	(0.013)	(0.010)
MHHI	-0.026***	-0.041***	-0.030***	-0.015***	-0.035***	-0.024***	-0.011***	-0.033***	-0.028***
	(0.004)	(0.006)	(0.005)	(0.004)	(0.004)	(0.003)	(0.003)	(0.007)	(0.005)
MStudent	0.038	0.084**	0.046	0.024	0.080**	0.043*	0.022	0.075*	0.071**
	(0.032)	(0.039)	(0.030)	(0.019)	(0.030)	(0.025)	(0.017)	(0.044)	(0.029)
NAObesity	-0.011**	0.024**	0.021**	0.009	0.026***	0.022***	0.013**	0.041**	0.042***
	(0.004)	(0.009)	(0.007)	(0.006)	(0.007)	(0.006)	(0.004)	(0.013)	(0.009)
NSObesity	-0.001	-0.009	-0.011	-0.006	-0.007	-0.009*	-0.004	-0.020**	-0.018**
	(0.007)	(0.010)	(0.007)	(0.006)	(0.006)	(0.005)	(0.004)	(0.010)	(0.007)
Constant	0.183***	0.405***	0.263***	0.225***				0.470***	
	(0.011)	(0.050)	(0.041)	(0.031)				(0.073)	
N	382,211	382,211	367,583	349,986	382,211	367,583	349,986	382,211	382,211
Cragg-Donald Wald F Statistic		111.995	121.896	87.722	111.995	121.896	87.722	37.539	37.539
Hansen J Statistic		0.855	1.921	1.994	0.855	1.921	1.994	-	-
(P-value)		(0.355)	(0.166)	(0.158)	(0.355)	(0.166)	(0.158)		
Durbin-Wu-Hausman		28.911	22.403	16.188	28.911	22.403	16.188	37.866	37.866
Chi2 statistic		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Note: All the regressions are weighted. The weights are normalized for each cycle to add up to one System=1 if UHC is due to system reasons, and 0 if UHC=0. Personal=1 if UHC is due to personal reasons, 0 if UHC=0. Robust standard errors in parentheses *** p<0.001, ** p<0.05, * p<0.1.

Table 1.9: First stage regressions

	Full sample (2001-2010)			2003 and 2005 (Ont.)	
Variables	**FamDr visits**	**SpecDr visits**	**MedDr visits**	**MedDr visits (Proxy)**	**MedDr visits (Actual)**
Female	0.887***	0.367***	1.254***	1.240***	1.272***
	(0.028)	(0.021)	(0.037)	(0.062)	(0.059)
Urban	0.200***	0.182***	0.381***	0.393***	0.365***
	(0.028)	(0.018)	(0.035)	(0.064)	(0.064)
Age	-0.020***	0.013***	-0.007	-0.028**	-0.026**
	(0.005)	(0.004)	(0.007)	(0.011)	(0.011)
AgeSq	0.000	-0.000***	-0.000**	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SelfEmpld	-0.440***	-0.184***	-0.623***	-0.657***	-0.323***
	(0.042)	(0.033)	(0.056)	(0.090)	(0.073)
Married	0.200***	0.093**	0.293***	0.255***	0.223**
	(0.037)	(0.031)	(0.051)	(0.074)	(0.074)
Common	0.218***	0.025	0.243***	0.150	0.127
	(0.041)	(0.034)	(0.057)	(0.100)	(0.100)
<Sec	-0.053	-0.377***	-0.431***	-0.584***	-0.556***
	(0.044)	(0.027)	(0.055)	(0.082)	(0.082)
Sec	-0.101**	-0.187***	-0.288***	-0.347***	-0.328***
	(0.037)	(0.028)	(0.049)	(0.076)	(0.077)
OtherGrad	-0.013	-0.079**	-0.092	-0.109	-0.093
	(0.049)	(0.036)	(0.065)	(0.120)	(0.119)
Student	-0.319***	-0.187***	-0.505***	-0.396***	-0.367**
	(0.048)	(0.039)	(0.064)	(0.115)	(0.112)
Imm<10	-0.180**	-0.193***	-0.372***	-0.331**	-0.241*
	(0.069)	(0.048)	(0.088)	(0.134)	(0.134)
Imm>=10	0.052	-0.121***	-0.069	-0.118	-0.098
	(0.043)	(0.030)	(0.055)	(0.073)	(0.073)
HHI2040	-0.274***	0.022	-0.253**	-0.046	-0.057
	(0.064)	(0.037)	(0.078)	(0.113)	(0.113)
HHI4060	-0.396***	0.037	-0.360***	-0.177	-0.259**
	(0.065)	(0.040)	(0.080)	(0.112)	(0.112)
HHI6080	-0.447***	0.052	-0.395***	-0.321**	-0.454***
	(0.070)	(0.041)	(0.085)	(0.120)	(0.122)
HHI>=80	-0.487***	0.134**	-0.353***	-0.244**	-0.415***
	(0.066)	(0.044)	(0.083)	(0.113)	(0.116)
HHSize	0.028*	-0.050***	-0.022	-0.010	0.001
	(0.014)	(0.008)	(0.017)	(0.025)	(0.025)
Hexcellent	-3.149***	-1.240***	-4.389***	-4.336***	-4.352***
	(0.077)	(0.050)	(0.097)	(0.155)	(0.155)
Hvgood	-2.765***	-1.144***	-3.909***	-3.855***	-3.879***
	(0.076)	(0.049)	(0.096)	(0.153)	(0.154)
Hgood	-2.190***	-0.949***	-3.139***	-3.111***	-3.131***
	(0.077)	(0.050)	(0.098)	(0.153)	(0.153)

Heart	1.093***	0.442***	1.535***	1.769***	1.757***
	(0.081)	(0.058)	(0.108)	(0.193)	(0.193)
Cancer	0.946***	1.847***	2.792***	2.634***	2.639***
	(0.115)	(0.141)	(0.190)	(0.233)	(0.232)
Arthritis	0.681***	0.071**	0.752***	0.799***	0.803***
	(0.049)	(0.031)	(0.063)	(0.092)	(0.092)
Diabetes	1.220***	0.297***	1.517***	1.666***	1.643***
	(0.086)	(0.056)	(0.108)	(0.188)	(0.188)
Stroke	1.161***	0.053	1.214***	1.770**	1.768**
	(0.245)	(0.155)	(0.297)	(0.590)	(0.590)
Injury	0.888***	0.286***	1.174***	1.277***	1.272***
	(0.052)	(0.033)	(0.066)	(0.120)	(0.120)
Hprblm_Impact	1.666***	0.804***	2.470***	2.406***	2.404***
	(0.042)	(0.029)	(0.054)	(0.084)	(0.084)
SmkDaily	0.074**	-0.001	0.073	0.212***	0.218***
	(0.033)	(0.027)	(0.045)	(0.062)	(0.062)
SmkOcc	-0.008	0.021	0.013	0.078	0.079
	(0.040)	(0.035)	(0.057)	(0.077)	(0.077)
Obesity	0.253***	0.021	0.274***	0.359***	0.348***
	(0.042)	(0.031)	(0.056)	(0.085)	(0.085)
DrinkReg	-0.368***	-0.136**	-0.504***	-0.431***	-0.473***
	(0.057)	(0.062)	(0.088)	(0.119)	(0.119)
DrinkOcc	0.031	0.038	0.070	0.151	0.119
	(0.061)	(0.060)	(0.090)	(0.129)	(0.128)
Year2003	-0.106**	-0.018	-0.124**		
	(0.043)	(0.027)	(0.054)		
Year2005	-0.250***	-0.094**	-0.343***	-0.135*	-0.123
	(0.040)	(0.030)	(0.053)	(0.076)	(0.077)
Year2010	-0.523***	0.075**	-0.448***		
	(0.042)	(0.036)	(0.059)		
BC	0.500***	-0.261***	0.238***	0.152	0.168
	(0.048)	(0.036)	(0.064)	(0.106)	(0.105)
QC	-0.994***	-0.078**	-1.071***	-1.042***	-1.123***
	(0.038)	(0.032)	(0.052)	(0.103)	(0.103)
Atlantic	0.129**	-0.251***	-0.123**	0.107	0.106
	(0.046)	(0.034)	(0.061)	(0.129)	(0.130)
Prairies	0.109**	-0.248***	-0.139**	-0.041	-0.047
	(0.040)	(0.029)	(0.052)	(0.094)	(0.094)
MEdu	-0.037	-0.199	-0.236	-0.388	-0.359
	(0.165)	(0.129)	(0.210)	(0.308)	(0.307)
MHHI	-0.431***	-0.038	-0.469***	-0.325**	-0.368**
	(0.069)	(0.038)	(0.082)	(0.117)	(0.117)
Mstudent	0.815*	0.639*	1.454**	1.234	1.307
	(0.428)	(0.367)	(0.583)	(0.904)	(0.905)
NAObesity	0.716***	0.470***	1.186***	4.585***	4.568***
	(0.066)	(0.051)	(0.087)	(0.422)	(0.423)

NSObesity	-0.297**	0.052	-0.245	-0.260	-0.262
	(0.092)	(0.150)	(0.183)	(0.190)	(0.189)
NumPhysicans	0.001	0.002***	0.003***	0.004**	0.005**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
DrugIns	-0.151***	-0.228***	-0.379***	-0.300***	0.582***
	(0.037)	(0.031)	(0.051)	(0.081)	(0.067)
Cons	5.716***	1.642***	7.358***	7.031***	6.448***
	(0.174)	(0.123)	(0.224)	(0.362)	(0.359)
N	382211	382211	382211	143979	143979

Note: All the regressions are weighted. The weights are normalized for each cycle to add up to one to give equal weights to each survey when I pool the data. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 1.10: The effect of visits to a medical doctor on UHC- Sub samples

Variables	Gender		Geographic location		Income	
	Females	**Males**	**Urban**	**Rural**	**Income <$40,000**	**Income >=$40,000**
MedDr visits (IVLPM)	-0.041**	-0.017**	-0.026***	-0.040**	-0.050**	-0.024**
	(0.014)	(0.007)	(0.007)	(0.016)	(0.020)	(0.009)
MedDr visits (2SRI)	-0.041***	-0.017**	-0.025***	-0.038**	-0.048***	-0.024***
	(0.010)	(0.006)	(0.006)	(0.012)	(0.012)	(0.007)
N	208,990	173,221	282,925	99,286	137,425	193,539
% with UHC	13.66	10.45	12.23	11.42	13.29	11.54
Cragg- Donald Wald F Statistic	33.575	84.492	90.679	20.625	18.070	74.106
Hansen J Statistic	0.135	2.314	0.508	1.459	0.033	2.535
(p-value)	(0.714)	(0.128)	(0.476)	(0.227)	(0.855)	(0.114)
Durbin-Wu-Hausman Chi2 statistic	17.898	8.158	20.656	10.652	16.297	12.676
and (P-value)	(0.000)	(0.004)	(0.000)	(0.001)	(0.000)	(0.000)

Note: All the regressions are weighted. The weights are normalized for each cycle to add up to one to give equal weights to each survey when I pool the data. Controls for all variables previously described, but suppressed for brevity. Full regression results can be found in tables A1.4 and A1.5. Robust standard errors in parentheses. *** p<0.001, ** p<0.05, * p<0.1.

Appendix 1

Table A1.1: The effect of health care utilization on UHC-LPM

Variables	FamDr visits UHC	SpecDr visits UHC	MedDr visits UHC
FamDr visits	0.003***		
	(0.000)		
SpecDr visits		0.003***	
		(0.000)	
MedDr visits			0.003***
			(0.000)
Female	0.030***	0.032***	0.030***
	(0.002)	(0.002)	(0.002)
Urban	0.004**	0.004**	0.004*
	(0.002)	(0.002)	(0.002)
Age	0.001***	0.001**	0.001***
	(0.000)	(0.000)	(0.000)
AgeSq	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)
SelfEmpld	0.014***	0.013***	0.013***
	(0.003)	(0.003)	(0.003)
Married	-0.003	-0.003	-0.003
	(0.002)	(0.002)	(0.002)
Common	0.013***	0.013***	0.013***
	(0.004)	(0.004)	(0.004)
<Sec	-0.039***	-0.038***	-0.038***
	(0.002)	(0.002)	(0.002)
Sec	-0.029***	-0.029***	-0.029***
	(0.002)	(0.002)	(0.002)
OtherGrad	0.000	0.000	0.000
	(0.004)	(0.004)	(0.004)
Student	0.006	0.005	0.006
	(0.004)	(0.004)	(0.004)

Imm<10	0.006	0.006	0.006
	(0.005)	(0.005)	(0.005)
Imm>=10	0.002	0.003	0.002
	(0.003)	(0.003)	(0.003)
HHI2040	-0.014***	-0.015***	-0.014***
	(0.004)	(0.004)	(0.004)
HHI4060	-0.025***	-0.026***	-0.025***
	(0.004)	(0.004)	(0.004)
HHI6080	-0.026***	-0.028***	-0.027***
	(0.004)	(0.004)	(0.004)
HHI>=80	-0.027***	-0.028***	-0.027***
	(0.004)	(0.004)	(0.004)
HHSize	-0.002**	-0.002**	-0.002**
	(0.001)	(0.001)	(0.001)
Hexcellent	-0.110***	-0.117***	-0.108***
	(0.004)	(0.004)	(0.004)
Hvgood	-0.083***	-0.088***	-0.081***
	(0.004)	(0.004)	(0.004)
Hgood	-0.052***	-0.056***	-0.050***
	(0.004)	(0.004)	(0.004)
Heart	-0.009**	-0.007	-0.010**
	(0.004)	(0.004)	(0.004)
Cancer	0.006	0.004	0.002
	(0.005)	(0.005)	(0.005)
Arthritis	0.020***	0.022***	0.020***
	(0.003)	(0.003)	(0.003)
Diabetes	-0.023***	-0.020***	-0.023***
	(0.004)	(0.004)	(0.004)
Stroke	-0.002	0.001	-0.002
	(0.008)	(0.008)	(0.008)
Injury	0.058***	0.060***	0.058***
	(0.003)	(0.003)	(0.003)
HPrblm_Impact	0.112***	0.115***	0.111***
	(0.003)	(0.003)	(0.003)
SmkDaily	0.020***	0.020***	0.020***
	(0.002)	(0.002)	(0.002)
SmkOcc	0.016***	0.016***	0.016***

	(0.003)	(0.003)	(0.003)
Obesity	-0.004	-0.004	-0.004
	(0.003)	(0.003)	(0.003)
DrinkReg	0.015***	0.014***	0.015***
	(0.004)	(0.004)	(0.004)
DrinkOcc	0.007*	0.007*	0.007*
	(0.004)	(0.004)	(0.004)
Year2003	-0.026***	-0.027***	-0.026***
	(0.002)	(0.002)	(0.002)
Year2005	-0.022***	-0.022***	-0.022***
	(0.002)	(0.002)	(0.002)
Year2010	-0.010**	-0.012***	-0.011***
	(0.003)	(0.003)	(0.003)
BC	-0.000	0.002	0.001
	(0.003)	(0.003)	(0.003)
QC	0.025***	0.022***	0.024***
	(0.003)	(0.003)	(0.003)
Atlantic	-0.005**	-0.004*	-0.005*
	(0.003)	(0.003)	(0.003)
Prairies	0.000	0.001	0.001
	(0.003)	(0.003)	(0.003)
M-Edu	-0.010	-0.009	-0.009
	(0.009)	(0.009)	(0.009)
MHHI	-0.026***	-0.027***	-0.026***
	(0.004)	(0.004)	(0.004)
M-Student	0.039	0.040	0.038
	(0.032)	(0.032)	(0.032)
NA_Obesity	-0.011**	-0.010**	-0.011**
	(0.004)	(0.004)	(0.004)
NS-Obesity	-0.001	-0.002	-0.001
	(0.007)	(0.007)	(0.007)
Constant	0.185***	0.198***	0.183***
	(0.011)	(0.011)	(0.011)
N	382211	382211	382211

Note: Robust standard errors in parentheses. *** p<0.001, ** p<0.05, * p<0.1

Table A1.2: The effect of health care utilization on UHC- for total sample (2001-2010)-IVLPM

Variables	FamDr visits			SpecDr visits			MedDr visits		
	UHC	**System**	**Personal**	**UHC**	**System**	**Personal**	**UHC**	**System**	**Personal**
FamDr visits	-0.071**	-0.050**	-0.039**						
	(0.022)	(0.017)	(0.014)						
SpecDr visits				-0.046***	-0.033***	-0.024**			
				(0.011)	(0.009)	(0.008)			
MedDr visits							-0.028***	-0.020***	-0.015***
							(0.007)	(0.006)	(0.005)
Female	0.097***	0.072***	0.042***	0.051***	0.041***	0.016***	0.069***	0.053***	0.026***
	(0.020)	(0.015)	(0.012)	(0.005)	(0.004)	(0.003)	(0.009)	(0.007)	(0.006)
Urban	0.019***	0.014**	0.008**	0.013***	0.009***	0.004**	0.015***	0.011***	0.006**
	(0.005)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)
Age	-0.000	0.001*	-0.002***	0.002***	0.002***	-0.001**	0.001**	0.002***	-0.001***
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AgeSq	-0.000***	-0.000***	0.000	-0.000***	-0.000***	-0.000**	-0.000***	-0.000***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SelfEmpld	-0.012	-0.009	-0.007	0.010**	0.007**	0.005**	0.002	0.000	0.000
	(0.009)	(0.007)	(0.005)	(0.003)	(0.003)	(0.002)	(0.004)	(0.004)	(0.003)
Married	0.012**	0.012**	0.004	0.002	0.005**	-0.002	0.006*	0.008**	0.000
	(0.006)	(0.005)	(0.004)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)
Common	0.028***	0.024***	0.010**	0.014***	0.014***	0.003	0.020***	0.018***	0.005**
	(0.007)	(0.006)	(0.004)	(0.004)	(0.003)	(0.002)	(0.004)	(0.004)	(0.003)
<Sec	-0.042***	-0.036***	-0.010***	-0.056***	-0.047***	-0.018***	-0.051***	-0.042***	-0.015***
	(0.004)	(0.003)	(0.002)	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)	(0.002)
Sec	-0.037***	-0.030***	-0.012***	-0.038***	-0.031***	-0.013***	-0.037***	-0.031***	-0.012***

	(0.004)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
OtherGrad	-0.000	-0.002	0.003	-0.003	-0.004	0.003	-0.002	-0.003	0.003
	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)
Student	-0.014*	-0.010	-0.011**	-0.000	-0.000	-0.002	-0.006	-0.004	-0.005
	(0.008)	(0.006)	(0.005)	(0.004)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
Imm<10	-0.007	0.007	-0.015***	-0.003	0.010**	-0.014***	-0.005	0.009*	-0.014***
	(0.008)	(0.007)	(0.004)	(0.006)	(0.005)	(0.003)	(0.006)	(0.005)	(0.003)
Imm>=10	0.006	0.008**	0.002	-0.003	0.002	-0.004**	0.000	0.005	-0.002
	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
HHI2040	-0.034***	-0.026***	-0.014**	-0.014***	-0.011**	-0.003	-0.022***	-0.017***	-0.007**
	(0.009)	(0.007)	(0.005)	(0.004)	(0.003)	(0.002)	(0.005)	(0.004)	(0.003)
HHI4060	-0.055***	-0.041***	-0.022**	-0.025***	-0.021***	-0.006**	-0.037***	-0.029***	-0.012***
	(0.011)	(0.008)	(0.007)	(0.004)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
HHI6080	-0.061***	-0.046***	-0.026***	-0.027***	-0.024***	-0.008**	-0.040***	-0.033***	-0.015***
	(0.013)	(0.009)	(0.008)	(0.005)	(0.004)	(0.003)	(0.006)	(0.005)	(0.003)
HHI>=80	-0.064***	-0.049***	-0.030***	-0.024***	-0.020***	-0.009**	-0.040***	-0.032***	-0.017***
	(0.013)	(0.010)	(0.008)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
HHSize	0.000	-0.001	0.001	-0.004***	-0.004***	-0.001*	-0.002**	-0.003**	-0.000
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Hexcellent	-0.343***	-0.248***	-0.157***	-0.178***	-0.134***	-0.070***	-0.243***	-0.180***	-0.103***
	(0.070)	(0.054)	(0.041)	(0.015)	(0.012)	(0.009)	(0.031)	(0.025)	(0.018)
Hvgood	-0.288***	-0.209***	-0.131***	-0.145***	-0.111***	-0.056***	-0.202***	-0.151***	-0.085***
	(0.062)	(0.047)	(0.036)	(0.014)	(0.011)	(0.008)	(0.027)	(0.022)	(0.016)
Hgood	-0.214***	-0.155***	-0.099***	-0.103***	-0.079***	-0.039***	-0.147***	-0.110***	-0.062***
	(0.049)	(0.037)	(0.029)	(0.012)	(0.009)	(0.007)	(0.022)	(0.018)	(0.013)
Heart	0.072**	0.049**	0.042**	0.015**	0.009	0.006	0.037**	0.025**	0.020**
	(0.025)	(0.020)	(0.017)	(0.007)	(0.006)	(0.004)	(0.012)	(0.010)	(0.008)
Cancer	0.076**	0.054**	0.037**	0.095***	0.072***	0.044**	0.088***	0.065***	0.041**
	(0.023)	(0.017)	(0.014)	(0.022)	(0.018)	(0.014)	(0.020)	(0.016)	(0.013)
Arthritis	0.070***	0.053***	0.029**	0.025***	0.023***	0.005**	0.043***	0.035***	0.014***
	(0.016)	(0.012)	(0.009)	(0.004)	(0.003)	(0.002)	(0.006)	(0.005)	(0.004)

Diabetes	0.067**	0.045**	0.040**	-0.006	-0.003	-0.002	0.023**	0.016*	0.014*
	(0.027)	(0.020)	(0.018)	(0.006)	(0.005)	(0.003)	(0.011)	(0.009)	(0.008)
Stroke	0.084**	0.052**	0.035**	0.004	-0.001	-0.000	0.035**	0.021*	0.013
	(0.031)	(0.023)	(0.016)	(0.011)	(0.009)	(0.007)	(0.015)	(0.012)	(0.008)
Injury	0.124***	0.088***	0.059***	0.074***	0.055***	0.033***	0.094***	0.068***	0.043***
	(0.020)	(0.015)	(0.012)	(0.005)	(0.004)	(0.003)	(0.009)	(0.007)	(0.005)
HPrblm_Impact	0.235***	0.174***	0.105***	0.155***	0.118***	0.063***	0.187***	0.140***	0.079***
	(0.037)	(0.029)	(0.022)	(0.010)	(0.008)	(0.006)	(0.017)	(0.014)	(0.011)
SmkDaily	0.025***	0.016***	0.009***	0.020***	0.013***	0.008***	0.022***	0.014***	0.008***
	(0.004)	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)	(0.003)	(0.002)	(0.001)
SmkOcc	0.015***	0.008**	0.007**	0.017***	0.010***	0.008***	0.016***	0.010**	0.007**
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
Obesity	0.014**	0.009*	0.010**	-0.003	-0.002	-0.001	0.004	0.002	0.003
	(0.007)	(0.005)	(0.005)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
DrinkReg	-0.012	-0.009	-0.001	0.007	0.004	0.009***	-0.000	-0.001	0.005*
	(0.010)	(0.008)	(0.005)	(0.005)	(0.004)	(0.002)	(0.006)	(0.005)	(0.003)
DrinkOcc	0.009	0.005	0.010**	0.009*	0.005	0.010***	0.009*	0.005	0.010***
	(0.006)	(0.005)	(0.003)	(0.005)	(0.004)	(0.002)	(0.005)	(0.004)	(0.002)
Year 2003	-0.034***	-0.013***	-0.028***	-0.027***	-0.009***	-0.025***	-0.030***	-0.011***	-0.026***
	(0.005)	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)
Year 2005	-0.040***	-0.024***	-0.042***	-0.027***	-0.016***	-0.036***	-0.032***	-0.019***	-0.039***
	(0.007)	(0.005)	(0.004)	(0.003)	(0.002)	(0.002)	(0.004)	(0.003)	(0.002)
Year 2010	-0.047***	-0.025**	-0.052***	-0.007*	0.001	-0.032***	-0.023***	-0.009**	-0.039***
	(0.012)	(0.009)	(0.007)	(0.004)	(0.003)	(0.002)	(0.005)	(0.004)	(0.003)
BC	0.039**	0.025**	0.019**	-0.008**	-0.007**	-0.004*	0.011**	0.006*	0.005**
	(0.013)	(0.010)	(0.007)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
QC	-0.047**	-0.026	-0.033**	0.020***	0.022***	0.002	-0.006	0.003	-0.011**
	(0.022)	(0.017)	(0.013)	(0.003)	(0.003)	(0.002)	(0.007)	(0.006)	(0.005)
Atlantic	0.006	0.006	0.003	-0.015***	-0.008**	-0.008***	-0.007**	-0.003	-0.004**
	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
Prairies	0.009*	0.005	0.005*	-0.010**	-0.008**	-0.004*	-0.003	-0.003	-0.001

	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
MEduc	-0.012	-0.013	0.001	-0.019*	-0.020**	-0.004	-0.016	-0.017*	-0.002
	(0.015)	(0.012)	(0.009)	(0.011)	(0.009)	(0.007)	(0.011)	(0.009)	(0.007)
MHHI	-0.058***	-0.042***	-0.025***	-0.029***	-0.022***	-0.009***	-0.041***	-0.030***	-0.015***
	(0.012)	(0.009)	(0.007)	(0.004)	(0.004)	(0.003)	(0.006)	(0.005)	(0.004)
MStudent	0.100**	0.051	0.029	0.072*	0.043	0.021	0.084**	0.046	0.024
	(0.050)	(0.036)	(0.024)	(0.037)	(0.030)	(0.019)	(0.039)	(0.030)	(0.019)
NAObesity	0.041**	0.033**	0.020*	0.012*	0.013**	0.001	0.024**	0.021**	0.009
	(0.017)	(0.013)	(0.011)	(0.007)	(0.006)	(0.004)	(0.009)	(0.007)	(0.006)
NSObesity	-0.023*	-0.018**	-0.013*	0.001	-0.006	-0.003	-0.009	-0.011	-0.006
	(0.012)	(0.009)	(0.006)	(0.011)	(0.007)	(0.007)	(0.010)	(0.007)	(0.006)
Constant	0.602***	0.399***	0.333***	0.275***	0.172***	0.157***	0.405***	0.263***	0.225***
	(0.126)	(0.097)	(0.076)	(0.020)	(0.017)	(0.012)	(0.050)	(0.041)	(0.031)
N	382211	367583	349986	382211	367583	349986	382211	367583	349986

Note: Reference category for UHC, System and Personal is UHC=0. Robust standard errors in parentheses. *** p<0.001, ** p<0.05, * p<0.1

Table A1.3: The effect of health care utilization on UHC- for total sample and subgroups of UHC (2001-2010)- 2SRI

Variables	FamDr visits			SpecDr visits			MedDr visits		
	UHC	**System**	**Personal**	**UHC**	**System**	**Personal**	**UHC**	**System**	**Personal**
FamDr visits	-0.067***	-0.047***	-0.029***						
	(0.013)	(0.011)	(0.008)						
SpecDr visits				-0.044***	-0.031***	-0.018***			
				(0.009)	(0.007)	(0.005)			
MedDr visits							-0.027***	-0.019***	-0.011***
							(0.005)	(0.004)	(0.003)
Female	0.092***	0.067***	0.031***	0.049***	0.038***	0.012***	0.066***	0.050***	0.019***
	(0.012)	(0.010)	(0.007)	(0.004)	(0.003)	(0.002)	(0.007)	(0.006)	(0.004)
Urban	0.018***	0.013***	0.006**	0.013***	0.009***	0.003**	0.015***	0.010***	0.004**
	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)	(0.003)	(0.002)	(0.002)
Age	0.000	0.001**	-0.001***	0.002***	0.002***	0.000	0.001***	0.002***	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AgeSq	-0.000***	-0.000***	-0.000**	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SelfEmpld	-0.011**	-0.009*	-0.005	0.010***	0.006**	0.005**	0.002	-0.000	0.001
	(0.006)	(0.005)	(0.003)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
Married	0.011**	0.012***	0.001	0.002	0.005**	-0.003**	0.006**	0.008***	-0.001
	(0.004)	(0.003)	(0.002)	(0.002)	(0.002)	(0.001)	(0.003)	(0.002)	(0.002)
Common	0.025***	0.021***	0.006**	0.011***	0.012***	0.001	0.017***	0.016***	0.003*
	(0.004)	(0.004)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
<Sec	-0.041***	-0.033***	-0.008***	-0.054***	-0.043***	-0.014***	-0.048***	-0.039***	-0.012***
	(0.003)	(0.002)	(0.001)	(0.004)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
Sec	-0.036***	-0.029***	-0.010***	-0.037***	-0.029***	-0.010***	-0.037***	-0.029***	-0.010***
	(0.003)	(0.002)	(0.001)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.001)
OtherGrad	-0.002	-0.003	0.000	-0.005	-0.005*	0.001	-0.004	-0.004	0.001
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)

Student	-0.014**	-0.010**	-0.008**	-0.001	-0.001	-0.001	-0.006	-0.005	-0.003
	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
Imm<10	-0.004	0.008*	-0.011***	-0.000	0.010**	-0.010***	-0.002	0.009**	-0.010***
	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
Imm>=10	0.006**	0.008**	0.001	-0.002	0.002	-0.003**	0.001	0.005*	-0.002
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
HHI2040	-0.029***	-0.021***	-0.009***	-0.010**	-0.007**	-0.002	-0.017***	-0.013***	-0.005**
	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
HHI4060	-0.047***	-0.034***	-0.015***	-0.019***	-0.015***	-0.003*	-0.030***	-0.022***	-0.008***
	(0.006)	(0.005)	(0.003)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
HHI6080	-0.052***	-0.038***	-0.017***	-0.020***	-0.017***	-0.004**	-0.033***	-0.025***	-0.009***
	(0.007)	(0.006)	(0.004)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
HHI>=80	-0.054***	-0.040***	-0.020***	-0.016***	-0.013***	-0.004**	-0.031***	-0.024***	-0.010***
	(0.008)	(0.006)	(0.004)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
HHSize	0.000	-0.001	0.001*	-0.004***	-0.003***	-0.001*	-0.002**	-0.002**	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)
Hexcellent	-0.320***	-0.224***	-0.118***	-0.163***	-0.116***	-0.053***	-0.226***	-0.160***	-0.078***
	(0.043)	(0.034)	(0.023)	(0.011)	(0.009)	(0.006)	(0.024)	(0.019)	(0.013)
Hvgood	-0.260***	-0.182***	-0.096***	-0.125***	-0.090***	-0.040***	-0.179***	-0.128***	-0.061***
	(0.037)	(0.030)	(0.020)	(0.011)	(0.008)	(0.005)	(0.021)	(0.017)	(0.011)
Hgood	-0.191***	-0.132***	-0.072***	-0.086***	-0.061***	-0.028***	-0.128***	-0.091***	-0.045***
	(0.030)	(0.024)	(0.016)	(0.009)	(0.007)	(0.005)	(0.017)	(0.013)	(0.009)
Heart	0.079***	0.055***	0.036***	0.025***	0.017***	0.009**	0.046***	0.033***	0.019***
	(0.015)	(0.012)	(0.010)	(0.005)	(0.004)	(0.003)	(0.009)	(0.007)	(0.006)
Cancer	0.076***	0.053***	0.029***	0.094***	0.070***	0.034***	0.087***	0.063***	0.032***
	(0.013)	(0.010)	(0.008)	(0.017)	(0.013)	(0.010)	(0.015)	(0.012)	(0.009)
Arthritis	0.069***	0.050***	0.024***	0.026***	0.022***	0.006***	0.043***	0.033***	0.013***
	(0.009)	(0.007)	(0.005)	(0.003)	(0.002)	(0.001)	(0.005)	(0.004)	(0.003)
Diabetes	0.067***	0.046***	0.029**	-0.002	0.000	-0.002	0.026**	0.019**	0.010*
	(0.017)	(0.013)	(0.010)	(0.005)	(0.004)	(0.003)	(0.009)	(0.007)	(0.005)
Stroke	0.091***	0.058***	0.033***	0.015**	0.008	0.007*	0.045***	0.028***	0.017**

	(0.017)	(0.013)	(0.009)	(0.007)	(0.005)	(0.004)	(0.009)	(0.007)	(0.005)
Injury	0.109***	0.075***	0.040***	0.061***	0.044***	0.021***	0.080***	0.057***	0.028***
	(0.012)	(0.010)	(0.007)	(0.003)	(0.003)	(0.002)	(0.007)	(0.005)	(0.004)
HPrblm_Impact	0.206***	0.145***	0.074***	0.129***	0.092***	0.043***	0.160***	0.114***	0.055***
	(0.023)	(0.018)	(0.013)	(0.007)	(0.006)	(0.004)	(0.013)	(0.011)	(0.007)
SmkDaily	0.021***	0.013***	0.006***	0.017***	0.011***	0.005***	0.019***	0.012***	0.005***
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)
SmkOcc	0.014***	0.007**	0.005**	0.015***	0.009***	0.005***	0.015***	0.008***	0.005***
	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)
Obesity	0.014**	0.008**	0.008**	-0.002	-0.002	-0.000	0.004	0.002	0.003
	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)	(0.001)	(0.003)	(0.002)	(0.002)
DrinkReg	-0.011*	-0.008	0.003	0.008**	0.004	0.011***	0.001	-0.001	0.008**
	(0.006)	(0.005)	(0.003)	(0.004)	(0.003)	(0.002)	(0.005)	(0.004)	(0.002)
DrinkOcc	0.009**	0.005	0.011***	0.009**	0.005	0.011***	0.009**	0.005	0.011***
	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
Year 2003	-0.034***	-0.012***	-0.025***	-0.025***	-0.008***	-0.020***	-0.029***	-0.010***	-0.022***
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
Year 2005	-0.039***	-0.022***	-0.036***	-0.024***	-0.014***	-0.028***	-0.030***	-0.018***	-0.031***
	(0.005)	(0.003)	(0.003)	(0.002)	(0.002)	(0.001)	(0.003)	(0.002)	(0.002)
Year 2010	-0.047***	-0.024***	-0.043***	-0.007**	0.001	-0.028***	-0.023***	-0.009**	-0.033***
	(0.007)	(0.006)	(0.004)	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
BC	0.037***	0.023***	0.014***	-0.008**	-0.007**	-0.003	0.010**	0.005**	0.004**
	(0.008)	(0.006)	(0.004)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
QC	-0.043**	-0.024**	-0.024**	0.020***	0.020***	0.002*	-0.005	0.002	-0.008**
	(0.013)	(0.011)	(0.007)	(0.003)	(0.002)	(0.001)	(0.006)	(0.005)	(0.003)
Atlantic	0.006*	0.006**	0.002	-0.014***	-0.007**	-0.006***	-0.006**	-0.002	-0.003**
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)
Prairies	0.009**	0.005*	0.004**	-0.009**	-0.008**	-0.003	-0.002	-0.003	-0.000
	(0.003)	(0.003)	(0.001)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.001)
MEduc	-0.012	-0.012	-0.000	-0.018*	-0.018**	-0.003	-0.016*	-0.015**	-0.002
	(0.009)	(0.008)	(0.005)	(0.009)	(0.008)	(0.005)	(0.009)	(0.008)	(0.005)

MHHI	-0.051***	-0.035***	-0.018***	-0.024***	-0.017***	-0.006**	-0.035***	-0.024***	-0.011***
	(0.007)	(0.005)	(0.004)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.003)
MStudent	0.096**	0.047*	0.025	0.070**	0.041*	0.019	0.080**	0.043*	0.022
	(0.031)	(0.025)	(0.017)	(0.030)	(0.024)	(0.017)	(0.030)	(0.025)	(0.017)
NAObesity	0.042***	0.032***	0.021***	0.015**	0.014**	0.008**	0.026***	0.022***	0.013**
	(0.010)	(0.008)	(0.006)	(0.005)	(0.004)	(0.003)	(0.007)	(0.006)	(0.004)
NSObesity	-0.020**	-0.016**	-0.008*	0.002	-0.005	-0.001	-0.007	-0.009*	-0.004
	(0.007)	(0.006)	(0.004)	(0.006)	(0.005)	(0.004)	(0.006)	(0.005)	(0.004)
N	382211	367583	349986	382211	367583	349986	382211	367583	349986

Note: Reference category for UHC, System and Personal is UHC=0. Robust standard errors in parentheses. *** p<0.001, ** p<0.05, * p<0.1

Table A1.4: The effect of visits to a medical doctor on UHC - by gender and location of resident

Variables	IVLPM		2SRI		IVLPM		2SRI	
	Females	Males	Females	Males	Urban	Rural	Urban	Rural
MedDr visits	-0.041**	-0.017**	-0.041***	-0.017**	-0.026***	-0.040**	-0.025***	-0.038**
	(0.014)	(0.007)	(0.010)	(0.006)	(0.007)	(0.016)	(0.006)	(0.012)
Urban	0.024***	0.009**	0.024***	0.009**				
	(0.007)	(0.004)	(0.005)	(0.003)				
Female					0.068***	0.074***	0.065***	0.070***
					(0.010)	(0.020)	(0.008)	(0.015)
Age	-0.001	0.001**	-0.000	0.001**	0.001**	-0.002	0.002***	-0.002*
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)
AgeSq	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000**	-0.000***	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SelfEmpld	-0.005	0.004	-0.005	0.004	0.003	-0.006	0.003	-0.005
	(0.009)	(0.005)	(0.007)	(0.005)	(0.005)	(0.009)	(0.004)	(0.007)
Married	0.006	-0.005	0.006	-0.004	0.004	0.022**	0.003	0.021**
	(0.006)	(0.004)	(0.004)	(0.003)	(0.004)	(0.009)	(0.003)	(0.006)
Common	0.012*	0.019***	0.012**	0.015***	0.019***	0.029**	0.016***	0.025***
	(0.007)	(0.005)	(0.005)	(0.004)	(0.005)	(0.009)	(0.004)	(0.006)
<Sec	-0.064***	-0.034***	-0.064***	-0.032***	-0.051***	-0.052***	-0.049***	-0.050***
	(0.008)	(0.004)	(0.006)	(0.004)	(0.005)	(0.010)	(0.004)	(0.007)
Sec	-0.045***	-0.026***	-0.046***	-0.026***	-0.039***	-0.030***	-0.038***	-0.029***
	(0.007)	(0.004)	(0.005)	(0.003)	(0.004)	(0.007)	(0.003)	(0.005)
OtherGrad	-0.005	-0.002	-0.008	-0.003	-0.001	-0.012	-0.002	-0.014**
	(0.007)	(0.006)	(0.005)	(0.004)	(0.005)	(0.009)	(0.004)	(0.007)
Student	-0.026*	-0.006	-0.026**	-0.005	-0.005	-0.002	-0.006	-0.002
	(0.015)	(0.006)	(0.010)	(0.005)	(0.006)	(0.011)	(0.004)	(0.007)
Imm<10	-0.026**	0.011	-0.022**	0.011*	-0.004	-0.019	-0.001	-0.021
	(0.013)	(0.007)	(0.009)	(0.006)	(0.006)	(0.021)	(0.005)	(0.019)
Imm>=10	-0.011	0.005	-0.009*	0.005	-0.000	0.005	0.001	0.005
	(0.007)	(0.004)	(0.005)	(0.004)	(0.004)	(0.008)	(0.003)	(0.006)
HHI2040	-0.023**	-0.026***	-0.020***	-0.019***	-0.023***	-0.013	-0.019***	-0.009*
	(0.008)	(0.006)	(0.005)	(0.005)	(0.005)	(0.008)	(0.004)	(0.005)
HHI4060	-0.035***	-0.041***	-0.030***	-0.033***	-0.038***	-0.026**	-0.032***	-0.021***
	(0.009)	(0.007)	(0.006)	(0.005)	(0.006)	(0.009)	(0.004)	(0.006)
HHI6080	-0.041***	-0.039***	-0.034***	-0.031***	-0.042***	-0.028**	-0.034***	-0.022**
	(0.009)	(0.007)	(0.006)	(0.006)	(0.006)	(0.010)	(0.005)	(0.007)
HHI>=80	-0.037***	-0.040***	-0.030***	-0.031***	-0.041***	-0.028**	-0.032***	-0.021***
	(0.009)	(0.007)	(0.006)	(0.005)	(0.006)	(0.009)	(0.005)	(0.006)
HHSize	-0.006**	-0.000	-0.005***	-0.000	-0.002*	-0.005**	-0.002*	-0.004**

	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)
Hexcellent	-0.338***	-0.168***	-0.324***	-0.155***	-0.236***	-0.274***	-0.219***	-0.252***
	(0.070)	(0.028)	(0.049)	(0.023)	(0.033)	(0.066)	(0.026)	(0.048)
Hvgood	-0.283***	-0.136***	-0.263***	-0.119***	-0.196***	-0.226***	-0.174***	-0.201***
	(0.062)	(0.025)	(0.043)	(0.021)	(0.030)	(0.058)	(0.023)	(0.042)
Hgood	-0.203***	-0.100***	-0.187***	-0.086***	-0.141***	-0.173***	-0.123***	-0.151***
	(0.049)	(0.022)	(0.034)	(0.017)	(0.024)	(0.047)	(0.019)	(0.034)
Heart	0.053**	0.015	0.064***	0.026**	0.035**	0.055*	0.045***	0.061**
	(0.021)	(0.012)	(0.014)	(0.010)	(0.012)	(0.032)	(0.009)	(0.023)
Cancer	0.122**	0.056**	0.124***	0.060***	0.078***	0.137**	0.079***	0.130***
	(0.042)	(0.020)	(0.029)	(0.016)	(0.021)	(0.054)	(0.016)	(0.037)
Arthritis	0.051***	0.046***	0.054***	0.044***	0.041***	0.055***	0.042***	0.052***
	(0.013)	(0.008)	(0.009)	(0.006)	(0.007)	(0.014)	(0.005)	(0.010)
Diabetes	0.038*	0.002	0.042**	0.007	0.020	0.038	0.022**	0.040**
	(0.021)	(0.012)	(0.014)	(0.010)	(0.012)	(0.024)	(0.010)	(0.017)
Stroke	0.037	0.026	0.048***	0.037**	0.033*	0.035*	0.043***	0.042**
	(0.024)	(0.017)	(0.014)	(0.012)	(0.017)	(0.020)	(0.011)	(0.013)
Injury	0.124***	0.077***	0.109***	0.065***	0.091***	0.107***	0.078***	0.091***
	(0.021)	(0.009)	(0.014)	(0.007)	(0.009)	(0.020)	(0.007)	(0.014)
Hprblm_Impact	0.224***	0.154***	0.202***	0.128***	0.182***	0.205***	0.156***	0.175***
	(0.037)	(0.017)	(0.026)	(0.014)	(0.019)	(0.036)	(0.015)	(0.026)
SmkDaily	0.027***	0.013***	0.024***	0.011***	0.022***	0.021***	0.019***	0.018***
	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.005)	(0.002)	(0.004)
SmkOcc	0.023***	0.008*	0.020***	0.008**	0.018***	0.007	0.016***	0.007
	(0.006)	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)	(0.003)	(0.005)
Obesity	0.011	0.002	0.011*	0.002	0.006	-0.006	0.006*	-0.005
	(0.008)	(0.004)	(0.006)	(0.003)	(0.004)	(0.006)	(0.004)	(0.004)
DrinkReg	-0.010	-0.001	-0.008	-0.001	0.000	-0.000	0.001	0.002
	(0.011)	(0.007)	(0.008)	(0.006)	(0.006)	(0.009)	(0.005)	(0.007)
DrinkOcc	0.002	0.006	0.004	0.006	0.009*	0.013	0.009**	0.012
	(0.007)	(0.007)	(0.005)	(0.006)	(0.005)	(0.010)	(0.005)	(0.008)
Yea2003	-0.034***	-0.026***	-0.033***	-0.025***	-0.029***	-0.034***	-0.028***	-0.033***
	(0.005)	(0.004)	(0.004)	(0.004)	(0.003)	(0.006)	(0.003)	(0.005)
Year2005	-0.038***	-0.026***	-0.036***	-0.026***	-0.030***	-0.042***	-0.028***	-0.041***
	(0.007)	(0.005)	(0.005)	(0.004)	(0.004)	(0.008)	(0.003)	(0.006)
Year2010	-0.027***	-0.023***	-0.027***	-0.024***	-0.020***	-0.039***	-0.020***	-0.040***
	(0.008)	(0.006)	(0.006)	(0.005)	(0.005)	(0.010)	(0.004)	(0.007)
BC	0.014*	0.009**	0.014**	0.009**	0.010**	0.010	0.010**	0.008
	(0.008)	(0.004)	(0.006)	(0.004)	(0.004)	(0.008)	(0.004)	(0.006)
QC	-0.032*	0.014*	-0.030**	0.012**	-0.005	-0.009	-0.004	-0.008
	(0.017)	(0.007)	(0.012)	(0.006)	(0.008)	(0.013)	(0.007)	(0.009)

Atlantic	-0.017**	0.003	-0.016***	0.003	-0.007*	-0.000	-0.006*	0.000
	(0.005)	(0.004)	(0.004)	(0.003)	(0.004)	(0.006)	(0.003)	(0.004)
Prairies	-0.001	-0.003	0.000	-0.003	-0.004	0.005	-0.003	0.006
	(0.005)	(0.004)	(0.004)	(0.003)	(0.004)	(0.006)	(0.003)	(0.005)
MEduc	-0.014	-0.008	-0.014	-0.011	-0.013	-0.038	-0.013	-0.035*
	(0.021)	(0.014)	(0.015)	(0.011)	(0.012)	(0.023)	(0.011)	(0.018)
MHIncome	-0.049***	-0.033***	-0.046***	-0.027***	-0.041***	-0.038***	-0.035***	-0.033***
	(0.011)	(0.007)	(0.008)	(0.005)	(0.007)	(0.010)	(0.005)	(0.007)
Mstudent	0.089*	0.054	0.087**	0.057	0.055	0.217**	0.055	0.177**
	(0.051)	(0.055)	(0.042)	(0.043)	(0.040)	(0.106)	(0.034)	(0.060)
NAObesity	0.049**	-0.004	0.053***	-0.001	0.023**	0.025	0.025**	0.026**
	(0.022)	(0.006)	(0.015)	(0.005)	(0.010)	(0.017)	(0.008)	(0.013)
NSObesity	-0.012	-0.015	-0.010	-0.011	-0.009	-0.004	-0.008	-0.001
	(0.014)	(0.014)	(0.008)	(0.012)	(0.011)	(0.015)	(0.007)	(0.011)
Constant	0.704***	0.281***			0.396***	0.528***		
	(0.157)	(0.039)			(0.055)	(0.132)		
N	208990	173221	208990	173221	282925	99286	282925	99286

Table A1.5: The effect of visits to a medical doctor on UHC - household income

Variables	IVLPM		2SRI	
	<=$40,000	**> $40,000**	**<=$40,000**	**> $40,000**
MedDr visits	-0.050**	-0.024**	-0.048***	-0.024***
	(0.020)	(0.009)	(0.012)	(0.007)
Female	0.084***	0.071***	0.079***	0.069***
	(0.024)	(0.013)	(0.014)	(0.011)
Urban	0.032**	0.011**	0.030***	0.011**
	(0.012)	(0.004)	(0.007)	(0.004)
Age	0.002*	0.000	0.002**	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
AgeSq	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
SelfEmpld	-0.015	0.004	-0.012	0.004
	(0.016)	(0.005)	(0.010)	(0.004)
Married	-0.004	0.011**	-0.005	0.010**
	(0.007)	(0.005)	(0.005)	(0.004)
Common	0.001	0.019***	0.000	0.016***
	(0.010)	(0.005)	(0.006)	(0.004)
<Sec	-0.059***	-0.046***	-0.058***	-0.045***
	(0.010)	(0.005)	(0.006)	(0.005)
Sec	-0.046***	-0.036***	-0.044***	-0.035***
	(0.009)	(0.005)	(0.005)	(0.004)
OtherGrad	0.012	-0.008	0.009	-0.009**
	(0.010)	(0.005)	(0.006)	(0.004)
Student	-0.006	-0.007	-0.008	-0.007
	(0.015)	(0.006)	(0.009)	(0.005)
Imm<10	-0.028*	0.001	-0.020*	0.001
	(0.017)	(0.007)	(0.012)	(0.006)
Imm>=10	0.002	-0.004	0.005	-0.004
	(0.008)	(0.005)	(0.006)	(0.004)
HHSize	0.002	-0.004**	0.002	-0.003**
	(0.003)	(0.001)	(0.002)	(0.001)
Hexcellent	-0.363***	-0.220***	-0.343***	-0.204***
	(0.095)	(0.038)	(0.054)	(0.031)
Hvgood	-0.302***	-0.178***	-0.278***	-0.157***
	(0.082)	(0.034)	(0.047)	(0.028)
Hgood	-0.232***	-0.125***	-0.210***	-0.108***
	(0.067)	(0.028)	(0.038)	(0.022)
Heart	0.066**	0.030**	0.074***	0.039***
	(0.033)	(0.015)	(0.018)	(0.012)
Cancer	0.137**	0.081**	0.134***	0.083***
	(0.052)	(0.028)	(0.029)	(0.022)
Arthritis	0.066***	0.037***	0.067***	0.036***
	(0.019)	(0.008)	(0.011)	(0.006)
Diabetes	0.063**	0.008	0.063***	0.012
	(0.032)	(0.014)	(0.019)	(0.012)
Stroke	0.077**	0.012	0.083***	0.025**
	(0.037)	(0.019)	(0.019)	(0.013)
Injury	0.155***	0.080***	0.133***	0.070***

	(0.033)	(0.010)	(0.019)	(0.008)
Hprblm_Impact	0.256***	0.174***	0.232***	0.146***
	(0.056)	(0.021)	(0.032)	(0.017)
SmkDaily	0.038***	0.014***	0.034***	0.013***
	(0.008)	(0.003)	(0.004)	(0.003)
SmkOcc	0.026**	0.010**	0.023***	0.010**
	(0.008)	(0.004)	(0.006)	(0.003)
Obesity	0.018	0.000	0.017**	0.001
	(0.012)	(0.004)	(0.007)	(0.004)
DrinkReg	-0.027*	0.004	-0.025**	0.006
	(0.015)	(0.008)	(0.009)	(0.007)
DrinkOcc	-0.003	0.013*	-0.003	0.014**
	(0.009)	(0.007)	(0.006)	(0.006)
Yea2003	-0.046***	-0.025***	-0.045***	-0.024***
	(0.011)	(0.004)	(0.007)	(0.003)
Year2005	-0.053***	-0.026***	-0.050***	-0.026***
	(0.014)	(0.004)	(0.008)	(0.003)
Year2010	-0.031*	-0.026***	-0.032**	-0.025***
	(0.017)	(0.005)	(0.010)	(0.004)
BC	0.034**	0.007	0.033***	0.006
	(0.013)	(0.005)	(0.007)	(0.004)
QC	-0.057**	0.010	-0.053**	0.009
	(0.028)	(0.008)	(0.016)	(0.006)
Atlantic	-0.001	-0.010**	-0.000	-0.010**
	(0.007)	(0.004)	(0.005)	(0.004)
Prairies	0.001	-0.003	0.002	-0.002
	(0.008)	(0.004)	(0.006)	(0.004)
MEduc	-0.061**	-0.001	-0.064***	-0.002
	(0.027)	(0.018)	(0.016)	(0.015)
Mstudent	0.276	0.043	0.166	0.035
	(0.405)	(0.107)	(0.136)	(0.070)
NAObesity	0.026*	0.031*	0.028**	0.032**
	(0.015)	(0.017)	(0.009)	(0.014)
NSObesity	-0.036*	0.003	-0.034**	0.006
	(0.021)	(0.016)	(0.014)	(0.010)
Constant	0.565***	0.343***		
	(0.135)	(0.065)		
N	137425	193539	137425	193539

Note: Reference category for UHC, System and Personal is UHC=0. Robust standard errors in parentheses. *** p<0.001, ** p<0.05, * p<0.1

Table A1.6: The effect of health care utilization on UHC- CCHS 2003-2005 (Ont.) using actual drug insurance- IVLPM

	FamDr visits			SpecDr visits			MedDr visits		
Variables	**UHC**	**System**	**Personal**	**UHC**	**System**	**Personal**	**UHC**	**System**	**Personal**
FamDr visits	-0.049***	-0.047***	-0.009						
	(0.011)	(0.011)	(0.006)						
SpecDr visits				-0.093***	-0.090***	-0.018			
				(0.022)	(0.022)	(0.013)			
MedDr visits							-0.032***	-0.031***	-0.006
							(0.007)	(0.007)	(0.004)
Female	0.077***	0.071***	0.014**	0.073***	0.069***	0.014**	0.076***	0.071***	0.014**
	(0.010)	(0.010)	(0.005)	(0.010)	(0.009)	(0.006)	(0.009)	(0.009)	(0.005)
Urban	0.016**	0.018***	-0.001	0.018**	0.020***	0.000	0.016***	0.019***	-0.000
	(0.005)	(0.004)	(0.003)	(0.006)	(0.005)	(0.003)	(0.005)	(0.004)	(0.003)
Age	-0.002**	-0.000	-0.002***	0.001	0.002**	-0.001***	-0.001	0.000	-0.002***
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)
AgeSq	-0.000**	-0.000***	0.000	-0.000***	-0.000***	-0.000	-0.000***	-0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SelfEmpld	-0.006	-0.007	-0.003	0.008	0.007	-0.001	-0.001	-0.002	-0.002
	(0.007)	(0.007)	(0.003)	(0.006)	(0.005)	(0.003)	(0.006)	(0.006)	(0.003)
Married	0.007	0.010**	-0.002	0.008	0.011**	-0.001	0.007	0.010**	-0.002
	(0.005)	(0.004)	(0.002)	(0.005)	(0.005)	(0.003)	(0.005)	(0.004)	(0.002)
Common	0.018**	0.021**	0.003	0.011	0.015**	0.002	0.015**	0.019**	0.003
	(0.007)	(0.007)	(0.004)	(0.008)	(0.007)	(0.004)	(0.007)	(0.006)	(0.004)
< Sec	-0.038***	-0.035***	-0.007**	-0.073***	-0.069***	-0.013**	-0.050***	-0.047***	-0.009**
	(0.005)	(0.005)	(0.002)	(0.011)	(0.010)	(0.006)	(0.006)	(0.005)	(0.003)
Sec	-0.032***	-0.031***	-0.005**	-0.046***	-0.044***	-0.008**	-0.037***	-0.035***	-0.006**
	(0.005)	(0.005)	(0.003)	(0.007)	(0.006)	(0.004)	(0.005)	(0.004)	(0.003)
OtherGrad	0.001	-0.002	0.007*	0.002	-0.001	0.008*	0.001	-0.002	0.008*
	(0.007)	(0.007)	(0.004)	(0.009)	(0.009)	(0.004)	(0.007)	(0.006)	(0.004)
Student	-0.012	-0.010	-0.004	-0.009	-0.007	-0.002	-0.011	-0.009	-0.003
	(0.008)	(0.007)	(0.005)	(0.009)	(0.008)	(0.004)	(0.007)	(0.007)	(0.004)
Imm<10	0.002	0.012	-0.011**	-0.006	0.004	-0.013**	-0.001	0.009	-0.012**
	(0.010)	(0.009)	(0.004)	(0.011)	(0.010)	(0.004)	(0.009)	(0.008)	(0.004)
Imm>=10	-0.001	0.004	0.000	-0.009	-0.005	-0.001	-0.004	0.001	-0.000
	(0.005)	(0.004)	(0.002)	(0.006)	(0.005)	(0.003)	(0.005)	(0.004)	(0.002)
HHI2040	-0.020**	-0.018**	-0.010**	-0.018**	-0.013*	-0.009**	-0.019**	-0.016**	-0.009**
	(0.007)	(0.007)	(0.004)	(0.008)	(0.007)	(0.004)	(0.007)	(0.006)	(0.004)

HHI4060	-0.027***	-0.023**	-0.010**	-0.026**	-0.021**	-0.009**	-0.027***	-0.022***	-0.010**
	(0.007)	(0.007)	(0.004)	(0.008)	(0.007)	(0.004)	(0.007)	(0.006)	(0.004)
HHI6080	-0.044***	-0.037***	-0.016***	-0.032***	-0.027***	-0.014***	-0.040***	-0.034***	-0.015***
	(0.008)	(0.008)	(0.004)	(0.008)	(0.008)	(0.004)	(0.007)	(0.007)	(0.004)
HHI>=80	-0.046***	-0.042***	-0.017***	-0.026**	-0.022**	-0.014***	-0.039***	-0.035***	-0.016***
	(0.008)	(0.007)	(0.004)	(0.009)	(0.008)	(0.004)	(0.007)	(0.007)	(0.004)
HHSize	-0.000	-0.001	0.001	-0.006**	-0.007***	0.000	-0.002	-0.003**	0.001
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)
Hexcellent	-0.268***	-0.236***	-0.065***	-0.216***	-0.191***	-0.059***	-0.250***	-0.221***	-0.063***
	(0.038)	(0.036)	(0.018)	(0.027)	(0.026)	(0.014)	(0.031)	(0.029)	(0.016)
Hvgood	-0.222***	-0.199***	-0.051**	-0.186***	-0.168***	-0.046***	-0.210***	-0.189***	-0.049***
	(0.033)	(0.031)	(0.016)	(0.025)	(0.025)	(0.013)	(0.028)	(0.026)	(0.015)
Hgood	-0.164***	-0.149***	-0.035**	-0.140***	-0.130***	-0.032**	-0.156***	-0.143***	-0.034**
	(0.027)	(0.025)	(0.013)	(0.021)	(0.020)	(0.011)	(0.023)	(0.021)	(0.012)
Heart	0.057***	0.055***	0.004	0.054**	0.052**	0.002	0.056***	0.054***	0.003
	(0.016)	(0.016)	(0.009)	(0.017)	(0.017)	(0.007)	(0.015)	(0.014)	(0.008)
Cancer	0.050***	0.047***	0.010	0.180***	0.175***	0.034	0.096***	0.091***	0.018
	(0.015)	(0.014)	(0.007)	(0.043)	(0.042)	(0.024)	(0.021)	(0.020)	(0.012)
Arthritis	0.051***	0.049***	0.007	0.026***	0.027***	0.002	0.042***	0.041***	0.005
	(0.009)	(0.009)	(0.005)	(0.006)	(0.006)	(0.003)	(0.007)	(0.007)	(0.004)
Diabetes	0.049**	0.052**	0.002	0.016	0.021	-0.002	0.038**	0.042**	0.001
	(0.017)	(0.016)	(0.009)	(0.013)	(0.013)	(0.006)	(0.014)	(0.013)	(0.008)
Stroke	0.084**	0.078**	0.003	-0.004	-0.009	-0.008	0.053**	0.048*	-0.001
	(0.035)	(0.033)	(0.011)	(0.020)	(0.019)	(0.008)	(0.026)	(0.025)	(0.010)
Injury	0.113***	0.095***	0.032***	0.105***	0.090***	0.032***	0.110***	0.094***	0.032***
	(0.012)	(0.011)	(0.006)	(0.012)	(0.012)	(0.006)	(0.011)	(0.010)	(0.006)
HPrblm_Impact	0.197***	0.171***	0.058***	0.182***	0.157***	0.057***	0.192***	0.166***	0.057***
	(0.020)	(0.020)	(0.010)	(0.017)	(0.017)	(0.010)	(0.017)	(0.017)	(0.010)
SmkDaily	0.028***	0.021***	0.009***	0.032***	0.025***	0.010***	0.030***	0.022***	0.010***
	(0.004)	(0.004)	(0.002)	(0.005)	(0.005)	(0.003)	(0.004)	(0.004)	(0.002)
SMKOcc	0.016***	0.009**	0.006**	0.026***	0.020**	0.008**	0.019***	0.012**	0.007**
	(0.005)	(0.004)	(0.002)	(0.006)	(0.006)	(0.003)	(0.005)	(0.004)	(0.002)
Obesity	0.011*	0.011*	0.002	0.004	0.004	0.001	0.008	0.008*	0.002
	(0.006)	(0.006)	(0.003)	(0.006)	(0.005)	(0.003)	(0.005)	(0.005)	(0.003)
DrinkReg	-0.009	-0.013	0.010**	0.002	-0.003	0.011***	-0.005	-0.010	0.010**
	(0.009)	(0.008)	(0.004)	(0.009)	(0.009)	(0.003)	(0.008)	(0.008)	(0.004)
DrinkOcc	0.006	0.004	0.008**	0.013	0.010	0.010**	0.008	0.006	0.009**
	(0.008)	(0.008)	(0.003)	(0.009)	(0.009)	(0.004)	(0.008)	(0.007)	(0.003)
Year 2005	-0.008*	0.002	0.006**	-0.013**	-0.001	0.006**	-0.010**	0.001	0.006**
	(0.005)	(0.004)	(0.002)	(0.005)	(0.005)	(0.002)	(0.005)	(0.004)	(0.002)

BC	0.028***	0.021**	0.008**	-0.008	-0.013**	0.002	0.016**	0.009*	0.006*
	(0.008)	(0.007)	(0.004)	(0.007)	(0.006)	(0.004)	(0.006)	(0.005)	(0.003)
QC	-0.029**	-0.026**	-0.001	0.025***	0.025***	0.009**	-0.010	-0.009	0.002
	(0.013)	(0.012)	(0.007)	(0.008)	(0.007)	(0.003)	(0.009)	(0.008)	(0.005)
Atlantic	0.019**	0.024**	0.001	-0.007	-0.001	-0.004	0.010	0.016**	-0.001
	(0.008)	(0.008)	(0.004)	(0.007)	(0.007)	(0.004)	(0.006)	(0.006)	(0.003)
Prairies	0.008	0.005	0.008**	-0.018**	-0.020**	0.003	-0.001	-0.003	0.007**
	(0.006)	(0.006)	(0.003)	(0.007)	(0.007)	(0.004)	(0.005)	(0.005)	(0.003)
MEduc	-0.020	-0.019	-0.002	-0.028	-0.027	-0.004	-0.023	-0.022*	-0.003
	(0.015)	(0.014)	(0.008)	(0.022)	(0.021)	(0.009)	(0.014)	(0.013)	(0.008)
MHIncome	-0.039***	-0.033***	-0.014**	-0.034***	-0.027***	-0.014**	-0.038***	-0.031***	-0.014**
	(0.008)	(0.008)	(0.004)	(0.009)	(0.008)	(0.004)	(0.008)	(0.007)	(0.004)
Mstudent	0.051	0.049	0.009	0.034	0.034	0.006	0.045	0.043	0.008
	(0.042)	(0.040)	(0.010)	(0.036)	(0.035)	(0.009)	(0.034)	(0.033)	(0.009)
NAObesity	0.124**	0.129***	0.010	0.162**	0.164***	0.020	0.138***	0.142***	0.014
	(0.039)	(0.038)	(0.018)	(0.051)	(0.050)	(0.026)	(0.039)	(0.037)	(0.020)
NSObesity	0.006	0.007	-0.007	-0.008	-0.007	-0.010*	0.001	0.002	-0.008
	(0.014)	(0.013)	(0.006)	(0.014)	(0.013)	(0.006)	(0.013)	(0.012)	(0.006)
Constant	0.485***	0.384***	0.144***	0.358***	0.264***	0.125***	0.442***	0.343***	0.138***
	(0.066)	(0.062)	(0.034)	(0.041)	(0.039)	(0.021)	(0.052)	(0.049)	(0.029)
Observations	143979	139244	131981	143979	139244	131981	143979	139244	131981
Cragg- Donald Wald F Statistic	58.374	54.745	58.968	34.285	30.380	24.179	82.468	75.956	75.201
Hansen J Statistic	0.463	0.013	1.687	1.095	0.312	1.691	0.802	0.099	1.726
P-value	0.496	0.908	0.194	0.295	0.577	0.194	0.370	0.753	0.189
Endogeneity test	36.883	39.942	2.305	32.840	36.161	1.892	37.429	41.064	2.223
P-value	0.000	0.000	0.129	0.000	0.000	0.169	0.000	0.000	0.136

Note: Reference category for UHC, System and Personal is UHC=0. Robust standard errors in parentheses. *** p<0.001, ** p<0.05, * p<0.1

Table A1.7: The effect of health care utilization on UHC- CCHS 2003-2005 (Ont.) using proxy drug insurance- IVLPM

	FamDr visits			SpecDr visits			MedDr visits		
Variables	**UHC**	**System**	**Personal**	**UHC**	**System**	**Personal**	**UHC**	**System**	**Personal**
FamDr visits	-0.065**	-0.054**	-0.019						
	(0.029)	(0.026)	(0.015)						
SpecDr visits				-0.082**	-0.062**	-0.008			
				(0.028)	(0.024)	(0.011)			
MedDr visits							-0.037**	-0.029**	-0.004
							(0.013)	(0.011)	(0.006)
Female	0.090***	0.077***	0.023*	0.069***	0.058***	0.010**	0.081***	0.068***	0.012
	(0.025)	(0.022)	(0.012)	(0.012)	(0.010)	(0.005)	(0.017)	(0.014)	(0.008)
Urban	0.020**	0.020**	0.002	0.016**	0.016**	-0.001	0.018**	0.018***	-0.001
	(0.008)	(0.007)	(0.004)	(0.006)	(0.005)	(0.003)	(0.006)	(0.005)	(0.003)
Age	-0.002*	-0.001	-0.002**	0.001	0.002**	-0.001***	-0.001	0.000	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)
AgeSq	-0.000	-0.000**	0.000	-0.000***	-0.000***	0.000	-0.000***	-0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SelfEmpld	-0.013	-0.010	-0.007	0.009*	0.009*	-0.000	-0.003	-0.001	-0.001
	(0.013)	(0.012)	(0.006)	(0.005)	(0.005)	(0.003)	(0.008)	(0.007)	(0.004)
Married	0.009	0.011*	-0.001	0.007	0.008*	-0.002	0.008	0.009**	-0.002
	(0.007)	(0.006)	(0.003)	(0.005)	(0.005)	(0.003)	(0.005)	(0.005)	(0.003)
Common	0.020**	0.022**	0.004	0.011	0.014**	0.002	0.016**	0.019**	0.002
	(0.009)	(0.008)	(0.005)	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)
< Sec	-0.040***	-0.035***	-0.007**	-0.068***	-0.057***	-0.009*	-0.053***	-0.045***	-0.008**
	(0.007)	(0.006)	(0.003)	(0.013)	(0.011)	(0.005)	(0.009)	(0.008)	(0.004)
Sec	-0.034***	-0.032***	-0.007**	-0.044***	-0.038***	-0.006*	-0.039***	-0.035***	-0.006*
	(0.007)	(0.006)	(0.003)	(0.007)	(0.006)	(0.003)	(0.007)	(0.005)	(0.003)
OtherGrad	-0.000	-0.003	0.006	0.002	-0.001	0.008**	0.001	-0.002	0.008*
	(0.008)	(0.007)	(0.005)	(0.008)	(0.007)	(0.004)	(0.007)	(0.006)	(0.004)
Student	-0.016	-0.012	-0.007	-0.008	-0.005	-0.001	-0.012	-0.009	-0.003
	(0.011)	(0.009)	(0.006)	(0.008)	(0.007)	(0.004)	(0.008)	(0.007)	(0.004)
Imm<10	-0.000	0.011	-0.012**	-0.005	0.008	-0.011**	-0.002	0.010	-0.011**
	(0.011)	(0.010)	(0.005)	(0.010)	(0.009)	(0.004)	(0.010)	(0.009)	(0.004)
Imm>=10	-0.001	0.004	0.001	-0.008	-0.003	-0.001	-0.004	0.001	-0.000

	(0.005)	(0.005)	(0.003)	(0.006)	(0.005)	(0.002)	(0.005)	(0.004)	(0.002)
HHI2040	-0.021**	-0.018**	-0.011**	-0.018**	-0.013**	-0.009**	-0.020**	-0.016**	-0.009**
	(0.008)	(0.007)	(0.004)	(0.007)	(0.006)	(0.003)	(0.007)	(0.006)	(0.004)
HHI4060	-0.029**	-0.024**	-0.012**	-0.025***	-0.019**	-0.009**	-0.028***	-0.022**	-0.009**
	(0.010)	(0.008)	(0.005)	(0.008)	(0.006)	(0.004)	(0.008)	(0.007)	(0.004)
HHI6080	-0.049***	-0.039***	-0.019**	-0.031***	-0.025***	-0.014***	-0.041***	-0.033***	-0.015***
	(0.013)	(0.011)	(0.006)	(0.008)	(0.007)	(0.004)	(0.009)	(0.008)	(0.004)
HHI>=80	-0.051***	-0.044***	-0.021**	-0.027**	-0.023**	-0.014***	-0.040***	-0.034***	-0.016***
	(0.013)	(0.011)	(0.007)	(0.008)	(0.007)	(0.004)	(0.008)	(0.007)	(0.004)
HHSize	0.000	-0.001	0.002	-0.006**	-0.006**	0.000	-0.002	-0.003**	0.001
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)
Hexcellent	-0.319***	-0.257**	-0.096**	-0.204***	-0.160***	-0.048***	-0.269***	-0.213***	-0.058**
	(0.091)	(0.081)	(0.042)	(0.033)	(0.029)	(0.011)	(0.055)	(0.049)	(0.023)
Hvgood	-0.266***	-0.217**	-0.077**	-0.174***	-0.139***	-0.036***	-0.226***	-0.181***	-0.045**
	(0.079)	(0.070)	(0.036)	(0.031)	(0.027)	(0.011)	(0.049)	(0.043)	(0.020)
Hgood	-0.199**	-0.164**	-0.056**	-0.130***	-0.105***	-0.024**	-0.169***	-0.137***	-0.030*
	(0.063)	(0.055)	(0.028)	(0.026)	(0.023)	(0.009)	(0.040)	(0.035)	(0.016)
Heart	0.076**	0.063*	0.018	0.048**	0.036**	-0.003	0.064**	0.051**	0.001
	(0.036)	(0.032)	(0.019)	(0.020)	(0.016)	(0.007)	(0.025)	(0.021)	(0.011)
Cancer	0.063**	0.052**	0.020	0.160**	0.125**	0.016	0.107**	0.086**	0.014
	(0.028)	(0.024)	(0.015)	(0.053)	(0.046)	(0.020)	(0.036)	(0.031)	(0.017)
Arthritis	0.062**	0.053**	0.014	0.025***	0.024***	0.001	0.046***	0.040***	0.004
	(0.020)	(0.018)	(0.010)	(0.006)	(0.005)	(0.002)	(0.011)	(0.010)	(0.005)
Diabetes	0.070*	0.061*	0.016	0.013	0.011	-0.006	0.045**	0.038*	-0.002
	(0.037)	(0.034)	(0.020)	(0.014)	(0.011)	(0.006)	(0.022)	(0.020)	(0.011)
Stroke	0.112**	0.089*	0.017	-0.004	-0.007	-0.008	0.061*	0.045*	-0.003
	(0.056)	(0.048)	(0.022)	(0.019)	(0.016)	(0.008)	(0.032)	(0.027)	(0.011)
Injury	0.127***	0.101***	0.041***	0.101***	0.079***	0.028***	0.116***	0.091***	0.031***
	(0.026)	(0.023)	(0.012)	(0.014)	(0.012)	(0.005)	(0.017)	(0.015)	(0.008)
HPrblm_Impact	0.224***	0.182***	0.074**	0.174***	0.137***	0.049***	0.202***	0.162***	0.054***
	(0.048)	(0.044)	(0.023)	(0.021)	(0.018)	(0.008)	(0.031)	(0.028)	(0.014)
SmkDaily	0.030***	0.021***	0.010***	0.031***	0.022***	0.009***	0.031***	0.022***	0.009***
	(0.006)	(0.005)	(0.003)	(0.005)	(0.004)	(0.002)	(0.005)	(0.004)	(0.002)
SMKOcc	0.015**	0.009*	0.006**	0.025***	0.017**	0.007**	0.020***	0.012**	0.007**
	(0.005)	(0.005)	(0.003)	(0.007)	(0.005)	(0.003)	(0.005)	(0.004)	(0.003)
Obesity	0.015	0.012	0.006	0.003	0.002	0.000	0.010	0.008	0.002
	(0.010)	(0.009)	(0.005)	(0.005)	(0.005)	(0.003)	(0.007)	(0.006)	(0.004)
DrinkReg	-0.015	-0.015	0.006	0.003	-0.001	0.012***	-0.007	-0.009	0.011**
	(0.014)	(0.012)	(0.006)	(0.009)	(0.007)	(0.003)	(0.010)	(0.009)	(0.004)
DrinkOcc	0.006	0.005	0.009**	0.012	0.008	0.009**	0.009	0.006	0.009**

	(0.009)	(0.008)	(0.004)	(0.009)	(0.008)	(0.003)	(0.008)	(0.007)	(0.003)
Year 2005	-0.007	0.003	0.007**	-0.013**	-0.001	0.006**	-0.009*	0.001	0.006**
	(0.006)	(0.005)	(0.003)	(0.005)	(0.004)	(0.002)	(0.005)	(0.004)	(0.002)
BC	0.035**	0.024*	0.013*	-0.006	-0.009	0.004	0.017**	0.009	0.006
	(0.015)	(0.013)	(0.007)	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)
QC	-0.045	-0.032	-0.011	0.025***	0.024***	0.008**	-0.014	-0.007	0.004
	(0.029)	(0.026)	(0.014)	(0.007)	(0.006)	(0.003)	(0.013)	(0.011)	(0.006)
Atlantic	0.024*	0.027**	0.004	-0.006	0.002	-0.003	0.011	0.015**	-0.001
	(0.012)	(0.011)	(0.006)	(0.007)	(0.006)	(0.003)	(0.007)	(0.006)	(0.004)
Prairies	0.010	0.007	0.011**	-0.016**	-0.015**	0.005	-0.001	-0.003	0.007**
	(0.009)	(0.008)	(0.005)	(0.007)	(0.006)	(0.003)	(0.005)	(0.005)	(0.003)
MEdu	-0.023	-0.020	-0.003	-0.026	-0.023	-0.003	-0.024	-0.021*	-0.003
	(0.019)	(0.016)	(0.009)	(0.020)	(0.016)	(0.008)	(0.015)	(0.013)	(0.008)
MHIncome	-0.043***	-0.035***	-0.017**	-0.033***	-0.025***	-0.013**	-0.039***	-0.031***	-0.014**
	(0.012)	(0.011)	(0.006)	(0.008)	(0.007)	(0.004)	(0.009)	(0.008)	(0.005)
Mstudent	0.065	0.055	0.018	0.031	0.025	0.003	0.050	0.041	0.007
	(0.057)	(0.050)	(0.020)	(0.034)	(0.030)	(0.008)	(0.039)	(0.034)	(0.010)
NAObesity	0.168**	0.147**	0.040	0.142**	0.114**	0.001	0.157**	0.133**	0.007
	(0.082)	(0.074)	(0.041)	(0.059)	(0.050)	(0.022)	(0.063)	(0.056)	(0.028)
NSObesity	0.005	0.007	-0.008	-0.006	-0.002	-0.008	0.000	0.003	-0.008
	(0.015)	(0.013)	(0.007)	(0.014)	(0.012)	(0.006)	(0.014)	(0.012)	(0.006)
Constant	0.572***	0.420**	0.199**	0.342***	0.222***	0.110***	0.471***	0.329***	0.129**
	(0.160)	(0.142)	(0.076)	(0.048)	(0.041)	(0.018)	(0.092)	(0.081)	(0.040)
Observations	143979	139244	131981	143979	139244	131981	143979	139244	131981
Cragg- Donald Wald F Statistic	14.685	13.224	13.047	23.039	20.731	36.463	30.618	27.804	41.060
Hansen J Statistic	1.790	0.147	10.976	0.855	0.0001	14.99	1.643	0.057	14.804
P-value	0.181	0.701	0.001	0.355	0.989	0.001	0.200	0.811	0.001
Endogeneity test	15.865	12.517	2.730	17.342	12.267	1.029	17.593	13.476	1.388
P-value	0.000	0.000	0.100	0.000	0.001	0.3105	0.000	0.000	0.239

Note: Reference category for UHC, System and Personal is UHC=0. Robust standard errors in parentheses. *** p<0.001, ** p<0.05, * p<0.1

Table A1.8: The effect of health care utilization on UHC-CCHS 2003-2005 (Ont.) using actual drug insurance- 2SRI

	FamDr visits			SpecDr visits			MedDr visits		
Variables	**UHC**	**System**	**Personal**	**UHC**	**System**	**Personal**	**UHC**	**System**	**Personal**
FamDr visits	-0.047***	-0.043***	-0.007						
	(0.008)	(0.007)	(0.005)						
SpecDr visits				-0.087***	-0.082***	-0.015			
				(0.015)	(0.013)	(0.010)			
MedDr visits							-0.031***	-0.028***	-0.005
							(0.005)	(0.005)	(0.003)
Female	0.071***	0.065***	0.011**	0.068***	0.063***	0.011**	0.071***	0.064***	0.011**
	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)
Urban	0.014***	0.016***	-0.001	0.016***	0.018***	-0.000	0.015***	0.017***	-0.000
	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
Age	-0.001*	-0.000	-0.001**	0.001**	0.002***	-0.000	-0.000	0.001	-0.001**
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AgeSq	-0.000***	-0.000***	-0.000*	-0.000***	-0.000***	-0.000**	-0.000***	-0.000***	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SelfEmpld	-0.006	-0.006	-0.002	0.008*	0.006*	-0.000	-0.001	-0.002	-0.002
	(0.005)	(0.005)	(0.003)	(0.004)	(0.004)	(0.002)	(0.005)	(0.004)	(0.003)
Married	0.006*	0.009**	-0.002	0.008**	0.010***	-0.001	0.007**	0.010**	-0.002
	(0.003)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
Common	0.015**	0.017***	0.001	0.008*	0.012**	0.001	0.013**	0.016***	0.001
	(0.005)	(0.004)	(0.002)	(0.005)	(0.004)	(0.002)	(0.005)	(0.004)	(0.002)
< Sec	-0.036***	-0.031***	-0.006**	-0.068***	-0.062***	-0.011**	-0.047***	-0.041***	-0.008**
	(0.004)	(0.003)	(0.002)	(0.007)	(0.006)	(0.005)	(0.005)	(0.004)	(0.003)
Sec	-0.031***	-0.029***	-0.004**	-0.044***	-0.041***	-0.006**	-0.036***	-0.033***	-0.005**
	(0.004)	(0.003)	(0.002)	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)	(0.002)
OtherGrad	-0.001	-0.003	0.004	0.000	-0.002	0.005*	-0.001	-0.003	0.004
	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
Student	-0.011**	-0.009**	-0.002	-0.007	-0.006	-0.001	-0.009*	-0.008*	-0.002
	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
Imm<10	0.004	0.012**	-0.008**	-0.004	0.004	-0.010**	0.002	0.009	-0.009**
	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)
Imm>=10	-0.001	0.003	0.000	-0.009**	-0.005	-0.001	-0.004	0.000	-0.000
	(0.004)	(0.003)	(0.002)	(0.004)	(0.004)	(0.002)	(0.004)	(0.003)	(0.002)
HHI2040	-0.017***	-0.014***	-0.007**	-0.014**	-0.009**	-0.006**	-0.016***	-0.012**	-0.007**
	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.002)	(0.005)	(0.004)	(0.003)
HHI4060	-0.022***	-0.017***	-0.006**	-0.020***	-0.015***	-0.006**	-0.021***	-0.016***	-0.006**

	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
HHI6080	-0.036***	-0.029***	-0.011***	-0.024***	-0.020***	-0.009**	-0.032***	-0.026***	-0.010***
	(0.006)	(0.005)	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.005)	(0.003)
HHI>=80	-0.037***	-0.032***	-0.011***	-0.018***	-0.014**	-0.008**	-0.030***	-0.026***	-0.010***
	(0.006)	(0.005)	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
HHSize	0.000	-0.001	0.001	-0.006***	-0.006***	0.000	-0.002	-0.003**	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Hexcellent	-0.245***	-0.207***	-0.053***	-0.197***	-0.166***	-0.047***	-0.230***	-0.194***	-0.051***
	(0.026)	(0.022)	(0.014)	(0.018)	(0.016)	(0.010)	(0.023)	(0.020)	(0.013)
Hvgood	-0.197***	-0.168***	-0.038**	-0.163***	-0.140***	-0.035***	-0.186***	-0.159***	-0.037***
	(0.022)	(0.019)	(0.012)	(0.017)	(0.015)	(0.010)	(0.020)	(0.018)	(0.011)
Hgood	-0.143***	-0.123***	-0.026**	-0.120***	-0.106***	-0.024**	-0.136***	-0.118***	-0.026**
	(0.018)	(0.015)	(0.010)	(0.014)	(0.013)	(0.008)	(0.017)	(0.014)	(0.009)
Heart	0.064***	0.058***	0.008	0.061***	0.056***	0.006	0.064***	0.058***	0.008
	(0.010)	(0.009)	(0.007)	(0.010)	(0.009)	(0.006)	(0.010)	(0.009)	(0.006)
Cancer	0.051***	0.044***	0.011*	0.173***	0.162***	0.031*	0.094***	0.085***	0.017*
	(0.009)	(0.008)	(0.006)	(0.028)	(0.025)	(0.018)	(0.015)	(0.013)	(0.009)
Arthritis	0.051***	0.045***	0.008**	0.027***	0.026***	0.004**	0.043***	0.039***	0.007**
	(0.007)	(0.006)	(0.004)	(0.004)	(0.003)	(0.002)	(0.005)	(0.005)	(0.003)
Diabetes	0.049***	0.050***	0.002	0.018**	0.021**	-0.001	0.038***	0.040***	0.001
	(0.012)	(0.010)	(0.007)	(0.008)	(0.007)	(0.005)	(0.010)	(0.009)	(0.006)
Stroke	0.091***	0.079***	0.010	0.008	0.000	0.001	0.062***	0.052***	0.007
	(0.017)	(0.014)	(0.009)	(0.010)	(0.008)	(0.006)	(0.013)	(0.011)	(0.008)
Injury	0.095***	0.078***	0.021***	0.087***	0.073***	0.021***	0.093***	0.076***	0.021***
	(0.008)	(0.007)	(0.004)	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)
HPrblm_Impact	0.169***	0.140***	0.041***	0.155***	0.128***	0.040***	0.164***	0.137***	0.041***
	(0.014)	(0.012)	(0.008)	(0.011)	(0.010)	(0.007)	(0.013)	(0.011)	(0.007)
SmkDaily	0.026***	0.019***	0.007***	0.030***	0.022***	0.008***	0.028***	0.020***	0.007***
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
SMKOcc	0.016***	0.009**	0.005**	0.025***	0.018***	0.006**	0.019***	0.012***	0.006**
	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
Obesity	0.011**	0.010**	0.002	0.005	0.004	0.002	0.009**	0.008**	0.002
	(0.004)	(0.004)	(0.002)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
DrinkReg	-0.009	-0.013**	0.010**	0.001	-0.004	0.012**	-0.006	-0.010*	0.011**
	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)
DrinkOcc	0.004	0.002	0.010**	0.012*	0.008	0.011**	0.007	0.004	0.010**
	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)
Year 2005	0.009**	-0.002	-0.005**	0.013***	0.001	-0.006**	0.010**	-0.001	-0.005**
	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
BC	0.028***	0.020***	0.008**	-0.005	-0.011**	0.003	0.017***	0.009**	0.006**

	(0.006)	(0.005)	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
QC	-0.025**	-0.023**	-0.001	0.025***	0.023***	0.007**	-0.008	-0.007	0.002
	(0.009)	(0.008)	(0.005)	(0.004)	(0.004)	(0.002)	(0.007)	(0.006)	(0.004)
Atlantic	0.018***	0.022***	0.001	-0.006	-0.001	-0.003	0.009**	0.014***	-0.001
	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
Prairies	0.007	0.004	0.007**	-0.017***	-0.019***	0.002	-0.001	-0.004	0.005**
	(0.004)	(0.004)	(0.002)	(0.005)	(0.004)	(0.003)	(0.004)	(0.004)	(0.002)
MEdu	-0.019	-0.018*	-0.002	-0.027**	-0.025**	-0.003	-0.022*	-0.020**	-0.002
	(0.012)	(0.010)	(0.007)	(0.012)	(0.010)	(0.007)	(0.012)	(0.010)	(0.007)
MHIncome	-0.034***	-0.026***	-0.011**	-0.029***	-0.021***	-0.010**	-0.032***	-0.025***	-0.011**
	(0.006)	(0.005)	(0.003)	(0.006)	(0.005)	(0.003)	(0.006)	(0.005)	(0.003)
Mstudent	0.023	0.030	-0.004	0.009	0.018	-0.006	0.018	0.026	-0.005
	(0.047)	(0.040)	(0.016)	(0.045)	(0.038)	(0.016)	(0.046)	(0.040)	(0.016)
NAObesity	0.118***	0.117***	0.011	0.154***	0.149***	0.018	0.132***	0.129***	0.013
	(0.026)	(0.023)	(0.014)	(0.032)	(0.028)	(0.019)	(0.028)	(0.025)	(0.016)
NSObesity	0.005	0.006	-0.006	-0.008	-0.007	-0.009	0.000	0.002	-0.007
	(0.009)	(0.007)	(0.005)	(0.010)	(0.008)	(0.006)	(0.009)	(0.008)	(0.005)
Observations	143979	139244	131981	143979	139244	131981	143979	139244	131981

Note: Reference category for UHC, System and Personal is UHC=0. Robust standard errors in parentheses. *** p<0.001, ** p<0.05, * p<0.1

Table A1.9: The effect of health care utilization on UHC-CCHS 2003-2005 (Ont.) using proxy drug insurance- 2SRI

	FamDr visits			SpecDr visits			MedDr visits		
Variables	**UHC**	**System**	**Personal**	**UHC**	**System**	**Personal**	**UHC**	**System**	**Personal**
FamDr visits	-0.063***	-0.051***	-0.017						
	(0.016)	(0.014)	(0.011)						
SpecDr visits				-0.078***	-0.058***	-0.006			
				(0.019)	(0.016)	(0.009)			
MedDr visits							-0.035***	-0.028***	-0.004
							(0.009)	(0.008)	(0.005)
Female	0.085***	0.071***	0.019**	0.064***	0.053***	0.008*	0.076***	0.063***	0.010
	(0.014)	(0.012)	(0.009)	(0.008)	(0.007)	(0.004)	(0.011)	(0.010)	(0.006)
Urban	0.018***	0.018***	0.001	0.014***	0.014***	-0.001	0.017***	0.017***	-0.001
	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)	(0.002)	(0.004)	(0.004)	(0.002)
Age	-0.001**	-0.000	-0.001**	0.001**	0.002***	-0.000	-0.000	0.001	-0.001*
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AgeSq	-0.000***	-0.000***	-0.000	-0.000***	-0.000***	-0.000**	-0.000***	-0.000***	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SelfEmpld	-0.013	-0.010	-0.006	0.008*	0.008**	0.000	-0.004	-0.002	-0.001
	(0.008)	(0.007)	(0.005)	(0.004)	(0.004)	(0.002)	(0.006)	(0.005)	(0.003)
Married	0.009**	0.011**	-0.001	0.007*	0.008**	-0.002	0.008**	0.009**	-0.002
	(0.004)	(0.004)	(0.002)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
Common	0.017**	0.019***	0.003	0.009*	0.012**	0.000	0.013**	0.016***	0.001
	(0.005)	(0.005)	(0.003)	(0.005)	(0.004)	(0.002)	(0.005)	(0.004)	(0.003)
< Sec	-0.038***	-0.031***	-0.006**	-0.064***	-0.051***	-0.008*	-0.050***	-0.041***	-0.007**
	(0.004)	(0.004)	(0.002)	(0.009)	(0.008)	(0.004)	(0.006)	(0.005)	(0.003)
Sec	-0.033***	-0.030***	-0.006**	-0.042***	-0.036***	-0.005	-0.037***	-0.033***	-0.005*
	(0.004)	(0.003)	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
OtherGrad	-0.002	-0.003	0.003	0.000	-0.002	0.005*	-0.001	-0.003	0.004*
	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
Student	-0.014**	-0.011**	-0.005	-0.007	-0.004	-0.001	-0.011**	-0.008*	-0.002
	(0.006)	(0.005)	(0.004)	(0.005)	(0.004)	(0.003)	(0.006)	(0.005)	(0.003)
Imm<10	0.002	0.011*	-0.009**	-0.002	0.008	-0.009**	0.000	0.009	-0.009**
	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)
Imm>=10	-0.001	0.003	0.001	-0.008*	-0.003	-0.000	-0.004	0.001	-0.000
	(0.004)	(0.003)	(0.002)	(0.004)	(0.004)	(0.002)	(0.004)	(0.003)	(0.002)

HHI2040	-0.017***	-0.014***	-0.008**	-0.014**	-0.009**	-0.006**	-0.016***	-0.012**	-0.006**
	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.002)	(0.005)	(0.004)	(0.003)
HHI4060	-0.024***	-0.018***	-0.008**	-0.020***	-0.014**	-0.005*	-0.022***	-0.016***	-0.006*
	(0.005)	(0.005)	(0.003)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
HHI6080	-0.041***	-0.031***	-0.013**	-0.024***	-0.018***	-0.009**	-0.034***	-0.026***	-0.010**
	(0.007)	(0.006)	(0.004)	(0.005)	(0.005)	(0.003)	(0.006)	(0.005)	(0.003)
HHI>=80	-0.042***	-0.035***	-0.014**	-0.019***	-0.015***	-0.009**	-0.032***	-0.026***	-0.010**
	(0.007)	(0.006)	(0.005)	(0.005)	(0.004)	(0.003)	(0.006)	(0.005)	(0.003)
HHSize	0.001	-0.001	0.001	-0.005***	-0.005***	0.000	-0.002	-0.003**	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Hexcellent	-0.297***	-0.231***	-0.080**	-0.187***	-0.139***	-0.039***	-0.250***	-0.190***	-0.046**
	(0.052)	(0.045)	(0.031)	(0.022)	(0.019)	(0.009)	(0.038)	(0.033)	(0.019)
Hvgood	-0.242***	-0.189***	-0.062**	-0.153***	-0.115***	-0.026**	-0.204***	-0.156***	-0.033**
	(0.045)	(0.039)	(0.027)	(0.021)	(0.018)	(0.009)	(0.034)	(0.029)	(0.017)
Hgood	-0.179***	-0.140***	-0.045**	-0.112***	-0.084***	-0.017**	-0.150***	-0.115***	-0.022*
	(0.036)	(0.031)	(0.021)	(0.018)	(0.015)	(0.007)	(0.027)	(0.024)	(0.013)
Heart	0.083***	0.068***	0.020	0.056***	0.042***	0.002	0.072***	0.056***	0.006
	(0.020)	(0.017)	(0.014)	(0.012)	(0.010)	(0.005)	(0.016)	(0.014)	(0.009)
Cancer	0.064***	0.050***	0.020*	0.156***	0.118***	0.015	0.106***	0.083***	0.014
	(0.015)	(0.012)	(0.011)	(0.035)	(0.030)	(0.017)	(0.024)	(0.021)	(0.013)
Arthritis	0.062***	0.051***	0.015*	0.026***	0.023***	0.004*	0.047***	0.038***	0.006
	(0.012)	(0.010)	(0.008)	(0.004)	(0.003)	(0.002)	(0.008)	(0.007)	(0.004)
Diabetes	0.070**	0.060**	0.015	0.014*	0.013*	-0.005	0.046**	0.039**	-0.001
	(0.022)	(0.019)	(0.015)	(0.009)	(0.007)	(0.005)	(0.015)	(0.013)	(0.009)
Stroke	0.119***	0.093***	0.022	0.008	0.002	0.001	0.070***	0.051***	0.006
	(0.030)	(0.026)	(0.015)	(0.010)	(0.008)	(0.006)	(0.018)	(0.015)	(0.009)
Injury	0.110***	0.085***	0.028***	0.084***	0.063***	0.018***	0.099***	0.075***	0.020***
	(0.015)	(0.013)	(0.009)	(0.008)	(0.007)	(0.004)	(0.012)	(0.010)	(0.006)
HPrblm_Impact	0.196***	0.154***	0.055***	0.148***	0.110***	0.034***	0.176***	0.135***	0.038***
	(0.027)	(0.024)	(0.017)	(0.014)	(0.012)	(0.006)	(0.021)	(0.019)	(0.011)
SmkDaily	0.028***	0.019***	0.008***	0.029***	0.020***	0.007***	0.028***	0.020***	0.007***
	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
SMKOcc	0.015***	0.009**	0.005**	0.024***	0.016***	0.006**	0.019***	0.012***	0.006**
	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
Obesity	0.015**	0.012**	0.005	0.004	0.002	0.001	0.010**	0.008**	0.002
	(0.005)	(0.005)	(0.004)	(0.004)	(0.003)	(0.002)	(0.004)	(0.004)	(0.003)
DrinkReg	-0.015	-0.016**	0.007	0.001	-0.002	0.012***	-0.008	-0.010	0.011**
	(0.009)	(0.008)	(0.005)	(0.007)	(0.006)	(0.004)	(0.008)	(0.007)	(0.004)
DrinkOcc	0.005	0.003	0.010**	0.011	0.006	0.010**	0.007	0.004	0.010**
	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)	(0.007)	(0.006)	(0.004)

Year 2005	0.007*	-0.002	-0.006**	0.013***	0.001	-0.005**	0.009**	-0.001	-0.005**
	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)	(0.004)	(0.003)	(0.002)
BC	0.035***	0.023**	0.012**	-0.004	-0.008*	0.004	0.018***	0.009**	0.006**
	(0.008)	(0.007)	(0.005)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
QC	-0.042**	-0.031**	-0.010	0.024***	0.022***	0.007**	-0.013	-0.007	0.003
	(0.017)	(0.014)	(0.010)	(0.004)	(0.004)	(0.002)	(0.009)	(0.008)	(0.005)
Atlantic	0.023***	0.025***	0.004	-0.005	0.002	-0.002	0.010**	0.014***	-0.001
	(0.007)	(0.006)	(0.004)	(0.005)	(0.004)	(0.003)	(0.005)	(0.004)	(0.003)
Prairies	0.010*	0.006	0.009**	-0.015**	-0.015**	0.004	-0.001	-0.004	0.005**
	(0.005)	(0.005)	(0.003)	(0.005)	(0.005)	(0.003)	(0.004)	(0.004)	(0.002)
MEdu	-0.022*	-0.019*	-0.002	-0.025**	-0.021**	-0.002	-0.023*	-0.020**	-0.002
	(0.012)	(0.010)	(0.007)	(0.012)	(0.010)	(0.007)	(0.012)	(0.010)	(0.007)
MHIncome	-0.038***	-0.028***	-0.013**	-0.028***	-0.020***	-0.010**	-0.034***	-0.024***	-0.010**
	(0.007)	(0.006)	(0.004)	(0.006)	(0.005)	(0.003)	(0.006)	(0.005)	(0.004)
Mstudent	0.037	0.036	0.004	0.004	0.009	-0.008	0.022	0.023	-0.006
	(0.048)	(0.041)	(0.018)	(0.045)	(0.038)	(0.015)	(0.047)	(0.040)	(0.016)
NAObesity	0.162***	0.138***	0.036	0.136***	0.106**	0.002	0.153***	0.125***	0.007
	(0.047)	(0.041)	(0.030)	(0.038)	(0.033)	(0.018)	(0.043)	(0.037)	(0.023)
NSObesity	0.004	0.006	-0.007	-0.007	-0.003	-0.007	-0.001	0.001	-0.007
	(0.009)	(0.007)	(0.005)	(0.010)	(0.008)	(0.006)	(0.010)	(0.008)	(0.006)
Observations	143979	139244	131981	143979	139244	131981	143979	139244	131981

Note: Reference category for UHC, System and Personal is UHC=0. Robust standard errors in parentheses. *** p<0.001, ** p<0.05, * p<0.1

Chapter Two: The effects of UHC on health outcomes

2.1 Introduction[14]

In every country in the world, a significant proportion of the population claims to have unmet health care needs (UHC) (OECD, 2011). Does this matter? In publicly-funded health care systems, it is likely that some proportion of the population may want more care than is provided by the public system, even though such care may not be considered medically necessary. Positive responses may also reflect the limits of consumers' medical knowledge: individuals in poor health may report that they have UHC, but in fact these individuals have health problems that cannot be solved, even if health system resources were unlimited. Or they might be due to the system kicking into gear: individuals who have experienced recent adverse health transitions report UHC while they are waiting to receive treatment, but once they access care they will experience an improvement in their health. If any of these reasons explain reported UHC, then perhaps this is not an issue that should be of concern to policy makers.

UHC – and, in particular, increasing prevalence of UHC – should be of concern to policy makers if individuals reporting UHC are more likely to experience deteriorations in their health status than otherwise similar individuals. In countries with privately-financed health care systems, lack of financial resources may result in individuals not seeking care that could improve their quality of life, and it could be expected that individuals reporting UHC would be more likely to

[14] The analysis presented in this chapter was conducted at the COOL RDC which is part of the Canadian Research Data Centre Network (CRDCN). The services and activities provided by the COOL RDC are made possible by the financial or in-kind support of the SSHRC - Social Sciences and Humanities. Research Council of Canada, the CIHR - Canadian Institutes of Health Research, the CFI - Canada Foundation for Innovation, Statistics Canada, Carleton University, the University of Ottawa and the Université du Québec en Outaouais. The views expressed in this chapter do not necessarily represent the CRDCN's or that of its partners.

experience deterioration in their health status. In countries with publicly-financed systems, a high prevalence of UHC may be indicative of an underfinanced of health care system, possibly leading to citizens experiencing difficulties in accessing appropriate care, and increasing the likelihood of a decline in health status. Or they may be indicative of other lacks – such as difficulties accessing prescription drugs or limited social networks – which could be addressed by thoughtful reforms of public policy.

The main research question motivating this chapter is: does UHC have an adverse effect on health? I investigate this relationship using a longitudinal Canadian data set, the National Population Health Survey (NPHS), which spans 18 years from 1994 to 2010. This data set contains a rich set of measures of health outcomes, as well as reporting information on a large number socio-economic variables, enabling me to study the link between UHC and health while also taking account of time invariant unobserved heterogeneity.

Canada has a publicly-funded health care system, and does not require co-payments for doctor or hospital visits. Unlike most other countries with publicly-funded systems, however, only the elderly (age 65+) and individuals receiving social assistance have access to publicly-funded prescription drugs, and a significant proportion of the population does not have insurance coverage for prescription drugs. Over the period of my study there was a significant uptick in the proportion of the population reporting UHC (As in figure 2.1: UHC rose steeply between 1994 and 2002 form 4% to over 10%. Since 2002 the percentage of individuals reporting UHC has remained steady at over 9% in 2010. There is evidence that accessing appropriate care has become more difficult in Canada over the past twenty years: for example, recent Canadian statistics on waiting times for necessary medical care have found that they increased from 9.3 weeks in 1993 to 18.2 weeks in

2013, the longest among developed countries (Bacchus et al., 2014). These stylized facts mean that Canadian data is well-suited to testing the hypothesis that UHC causes poorer health.

I find clear and robust evidence of the impact of UHC on a rich set of measures of health outcomes. Individuals who report UHC are more likely to experience a deterioration in their health status than are otherwise similar individuals who do not report UHC. The negative impact of UHC persists and remains high even when attention is focused only on accessibility reasons such as long waiting and unavailable services in the area. The health impact of accessibility barriers is larger for individuals who live in rural areas compared to those who live in urban area, and those who have low household income compared to those who have high household income. Somewhat surprisingly, the results show that the effect of accessibility barriers on health is about the same for those who have or who do not have a regular family doctor.

The rest of this chapter is organized as follows. The next section reviews the relevant literature; this is followed by a discussion of the possible pathways by which unmet health care (UHC) may affect health outcomes and my consequent choice of methodologies. Section 4 describes the data and the variables used in my analysis. Results are presented in Section 5, and I then wrap up with a discussion of the implications of my findings for policy makers and directions for future research.

2.2 Related literature

There are two ways to measure UHC for individuals. The first relies on assessments by health care professionals, and defines UHC as "the difference, if any, between the health care service(s) judged to be effective to deal with the health problem(s) a person experiences and the actual health care service they receive" (Carr and Wolf, 1976, p.417). The second relies on individuals' own assessments of the adequacy of the health care that they have received as

compared to the health care that they believe they need. Self-reported measures of unmet health care needs (UHC) are commonly used by researchers as an indicator of the difficulties that people face in accessing health care services (OECD, 2011). They are arguably superior to the alternative approach since individuals are better at assessing their own health status (Idler and Benyamini, 1997) and better able to identify deficiencies in the health care provided to them (Allin et al., 2010). Most research on UHC, regardless of the specific question of interest, does in fact rely on data on self-assessed UHC.

The literature examining the effect of UHC on health status is quite limited. An early paper by Alonso et al. (1997) found that UHC (defined as no visits to a physician in the previous twelve months) was associated with an increased risk of mortality in the elderly. Two other studies have accounted for UHC, albeit indirectly, along with other factors affecting self-assessed health status: Wilson et al. (2007) and Setia et al. (2012). Wilson et al. (2007) investigate the factors associated with changes in health status using two rounds of a dataset (2001 and 2003) that was collected across four different neighbourhoods in Hamilton, Ontario. They use a logistic regression to explore how variables measured in the baseline year (2001) can be used to predict improvements or declines in health status two years later (2003). They identify several characteristics which are important to predicting improvements in health status: daily smokers, overweight individuals and those reporting dissatisfaction with their health in the initial year are all more likely to report improvements in their health status two years later. In their study, UHC was not significantly associated with improvements or declines in health status.

Setia et al. (2012) study the difference between the health status of immigrants and Canadian born individuals using the first six cycles of the National Population Health Survey (NPHS). They use a random effects logistic model to assess the effects of various socio-economic

factors on self-assessed health status. They find that UHC is positively associated with poor or fair self-assessed health status. However, by focusing on contemporaneous values for UHC and health status in each period cannot assess the direction of causality.

The impact of unmet health care (UHC) needs on health care utilization – rather than health outcomes - is the explicit focus of Ronksley et al. (2013), who studies this question using data from the 2001 and 2003 cycles of the CCHS which is linked to national hospitalization data. They focus only on individuals with chronic conditions, rather than considering the population in general. The association between UHC, admissions to hospital, and the length of stay is estimated using a negative binomial regression model, and controls are included for socio-demographic indicators, health behaviors and health status. A logistic regression model estimates the association between UHC, re-admissions and in-hospital deaths. Their results show that, overall, UHC is not associated with higher rates of hospitalization for individuals who suffer from chronic conditions. However, individuals who report UHC for availability reasons – that is, problems such as limited resource availability or long waiting times – are found to have a slightly higher risk of hospitalization.

Rupper at el. (2004) use a three year longitudinal data set for five counties in North Carolina, US, to determine whether self-reported delayed care increases mortality and functional decline among individuals aged 65 and older. They find that neither forgone care nor delayed care is a significant predictor of the three year mortality rate nor of functional decline (developing increased dependency in activities of daily living). In contrast, a more recent Canadian study by Bacchus et al. (2014) uses an ordinary least squares (OLS) model to analyze aggregate data covering the years 1993 to 2009 and finds a positive association between waiting times for medically necessary treatment and mortality. Their results indicate that an increase of one extra

week in the wait time from the date of referral by the general practitioner until receipt of treatment is associated with three extra female deaths per 100,000 people.

Of related interest, Okumura et al. (2013) analyze the impact of delays in access to care on changes in self-assessed health status for young adults with special needs in the United States. Using data from 2001 and 2007 and focusing on individuals aged 14 to 17 years old with special needs, they find that those reporting either delayed or forgone care are more likely to experience a decline in their health status.

Little consensus exists in the very limited literature regarding how, or even if, UHC affects health outcomes. Possible explanation for the lack of consensus may be attributable, amongst other factors, to the differences in the study populations, the different measures of health outcomes, or because the endogeneity between health status and UHC was ignored. The issue of causality is particularly crucial. Consequently, in this study I try to provide a compelling answer to the question regarding the link between UHC and health outcomes by using panel data and considering a wide array of direct and indirect health indicators including self-reported health, measure of mental health, HUI and medication use.

2.3 Theoretical motivation

In economic theory, health is treated as both a consumption good that yields direct satisfaction and utility, and as an investment good that yields satisfaction indirectly through fewer sick days, increase productivity and higher wages (Grossman, 1972). Accordingly, health is considered as a stock (or capital) that depreciates over time, and its rate of depreciation can be attenuated by re-investing in the production of health. Individuals combine time goods (doctor visits, exercise) and market commodities (diet) to produce "health" subject to time and budget constraints. In the theoretical framework, health care services are viewed as a form of investment

in health. If UHC reflects access barriers to health care services, then UHC is potentially a signal of a 'negative' investment in health

One potential consequence of UHC is a change in medication use. The use of medication may be an indicator of morbidity. If UHC adversely affect health status, experiencing UHC may also lead to an increase in the use of medication. Of course, it is possible for the use of medication to substitute for physician visits: instead of going to the doctor's with a headache, one takes an over-the-counter analgesic. By contrast, visits with the doctor are associated with increased prescription drug use. My data on drug use cannot distinguish between these two types of medications, and thus my findings on this front must be regarded accordingly.

2.3.1 Empirical methodology

Several approaches can be taken to examining the link between UHC and health outcomes. Equation (1) describes the basic relationship to be estimated:

$$h_{it} = \alpha + \delta(UHC)_{it} + \beta(X)_{it} + \varepsilon_{it} \qquad (1)$$

where h_{it} is an indicator of the health status of individual *i* at time *t*, UHC_{it} is a dichotomous variable that takes the value one if individual i has unmet health care needs at time t and zero otherwise, X_{it} is a vector of observable characteristics of individual i at time t, and ε_{it} is the error term.

I consider five direct and indirect measures of health outcomes: self-assessed health status (SAHS), mental health (no severe psychological distress) and the health utility index (HUI3) are direct measures of health outcomes, and two indicators of medication use are indirect measures of health outcomes and indicators of morbidity. The vector X_{it} includes socio-demographic variables (gender, age, education level and marital status), as well as variables such as total household annual income, employment status, immigrant status, the presence of chronic conditions, life style

indicators (smoking, alcohol drinking and physical activity) and geographic location (urban or rural, and the province of residence).

Two issues arising in examining the link between UHC and health outcomes: the first concern is the potential endogeneity of UHC and health outcomes. A negative estimated coefficient for UHC does not necessarily imply that UHC causes worse health: it may be that a decline in health status causes individuals to have a higher probability of reporting UHC. For example, individuals who recently experienced a change in health status (for example, the development of cataracts) may find themselves waiting for treatment, possibly for an extended period of time, and therefore report UHC. To address this issue of simultaneity, I use lagged UHC to predict current health care status in period t: UHC reported in a previous period cannot be affected by health status or by the use of medications in the current period. However, this strategy does not preclude poor health status in a previous period causing UHC in a previous period. Consequently, I apply two additional sample restrictions to rule out reverse causality. Firstly, I include in my sample only those individuals who report excellent or very good health, and no psychological stress, in both of the first two cycles of the data set (1994 and 1996). Secondly, I exclude from my sample all individuals who had UHC in the initial year (1994).[15] These restrictions imply that UHC is a shock and not caused by having UHC in the previous years (Pohl et al., 2014)[16], and allows us to establish causality.[17]

[15] Initial analysis for the full sample shows that individuals who report having UHC at *t*-1 are more likely to have a UHC in period *t* than those who report that they do not have UHC in *t*-1. The raw data indicates that there is a persistence in UHC- on average it is about 25 percentage points.

[16] This study estimated the effect of health shocks on employment.

[17] I have also estimated the model (i) using contemporaneous values of UHC and health outcomes for this restricted sample, and (ii) including the entire sample rather than excluding those individuals who are not in excellent health or who have UHC in the initial period. The results from (i) are similar to those reported below but the effect of UHC on health outcomes is slightly larger when using contemporaneous values of UHC than when using UHC (-1) (table A2.1). The effect of UHC (-1) on health outcomes when including the entire sample (from ii) are also very similar to those from the restricted sample (table 2.11 shows brief results) and full results are available in (tables A2.10 to A2.13).

A second issue arising in examining the link between UHC and health outcomes is the omitted variable bias. If there are unobserved individual effects then standard econometric procedures, like the pooled OLS, probit and Poisson models, will yield inconsistent results (Wooldridge, 2010). In studying the link between UHC and health outcomes there is a good reason to expect that there may be unobserved individual effects, reflecting heterogeneity across individuals with the respect to the probability of being in or maintaining good health. These unobserved individual factors may arise because of differences in ability, personality, in community or group characteristics, family genetics or in health behaviours, and will result in some individuals in my sample being more or less prone to health deterioration than others. A particularly salient concern is family disease history, which means that some individuals are at increased risk of developing a particular disease as compared to otherwise identical individuals without such a history.

To address this issue, I use a random effects model that controls for time invariant unobserved individual effects along with the other explanatory variables. The random effects model is:

$$h_{it} = \alpha + \delta(UHC)_{it-1} + \beta(X)_{it} + u_i + \mu_{it} \qquad (2)$$

where, u_i is an individual-specific unobserved heterogeneity term that represents all other individual-specific effects on health outcome not otherwise captured. A random effects OLS model is used when the health outcome is HUI3; a random effects probit model is used when the health outcome is the probability of reporting excellent or very good health, good mental health or the use of medications; and, finally, a random effects Poisson model is used when estimating the number of medications.

An additional concern is how to introduce appropriate controls for age. Aging is associated with increasing morbidity rates and a general deterioration in health outcomes, resulting in lower probabilities of maintaining good health and a higher risk of UHC, particularly for the very elderly. To examine whether the effect of UHC on health outcome varies differently by age categories, further analysis is carried out by interacting UHC with age and examining the joint effect on both the subjective and objective measures of health using the random effects model discussed before.

Inadequacies of the public health care system - such as unavailable services, long waiting times, or cost barriers - may be important reasons for experiencing UHC (Sibley and Glazier, 2009; Chapter 1, thesis). To explain these issues in more detail, I use the random effects model to further examine the health impact of UHC when it is due to accessibility reasons, such as unavailable services in the respondent's area of residence or to long wait times. [18] I also explore possible heterogeneity in the relationship between accessibility problems and health status by examining how the impact of accessibility related problems varies by location of residence (urban and rural), household income and the availability of a family doctor.

2.4 Data and variables

This study uses nine cycles (1994/1995 to 2010/2011) of the Canadian National Population Health Survey (NPHS) conducted by Statistics Canada. The NPHS is a longitudinal data set that collects detailed information about health, health care use and socio-demographic variables from the same sample of households every two years. The survey targets individuals aged 12 or more in all ten provinces. It excludes those living in the three territories, residents of health care

[18] Accessibility is a binary variable that is equal to one if an individual reports UHC due to any of these reasons: health care needed is unavailable in the area; unavailable at the time required; waiting times too long; cost; unable to leave the house because of health problem; language barriers, or if he/she did not know where to go.

institutions, Canadian Forces bases, those living on Indian reserves as well as in some additional remote areas. The panel started in 1994/1995 with 17,276 participants who were followed for up to nine cycles.

I restrict attention to respondents who are 1) aged 18 and older in the first cycle (1994) (lost 3,159 persons); 2) with no missing information on health outcomes and UHC (lost 39,177 person-year observations), and 3) reported health status as excellent or very good with no psychological distress in the first two cycles (1994/1995 and 1996/1997) and had no UHC in the first cycle (lost 37,609 person-year observations). When I use the three health outcomes (self-reported health status, mental health, and HUI3), the sample has 5,221 respondents, consisting of 24,569 person-year observations. When I consider use of medication as the health outcome, the sample has 4,956 respondents, consisting 20,107 person-year observations, and about 4,953 respondents, consisting 20,038 person-year observations when I consider the number of medications.[19] Not all respondents reported their household income, the highest level of education obtained or employment status. These missing observations was coded using dummy variables but these individuals were included in the regressions so as to not lose these observations. Note that because of the initial exclusion my regression results use data only from the last seven cycles. There are respondents reporting poor, fair, good, very good, and excellent general health in each of these seven cycles.

As noted above, five direct and indirect indicators are used as measures of health outcome. Self–assessed health status (SAHS) is the respondents' own assessment of their health and based on the question: "In general, how would you say your health is?" Respondents assign a value from one to five (representing excellent, very good, good, fair and poor health) to the

[19] A few individuals who answered "yes" to the question of whether they had used any of the medications in the last two days, but did not state the number of medications; I therefore have a slightly smaller sample size for number of medications than for the probability of use.

health status question. A value of one is assigned if the individual indicates that they are in excellent or very good health and zero otherwise. For mental health, the NPHS uses the Comprehensive International Diagnostic Interview (CIDI) index to measure self-reported psychological distress. I assign a value of one, reflecting 'good mental health', to those individuals with a CIDI score of less than four, and zero otherwise. Note that a CIDI score of four or above reflects severe psychological distress and is associated with a high probability of clinical depression (Kessler and Ustun, 2004; Curtis et al., 2009).

The third health outcome indicator is the Health Utility Index (HUI3) score, a generic measure of health status and health-related quality of life widely used in population health surveys and clinical studies (Horsman et al., 2003). Respondents evaluate their health along several dimensions (hearing, vision, speech, ambulation, dexterity, cognition, emotion and pain) and these answers are used to calculate the HUI3 scale. The methodology underlying the calculation of HUI3 uses weights derived from surveys of the general population, and assigns a value of 1.0 to perfect health and 0.0 to death. Observed HUI3 values fall between -0.36 to 1.0, where negative values indicate health states is worse than death (Feeny et al., 1999).[20] The remaining two health outcome measures are indirect ones. The first is a dichotomous indicator taking the value of one if the individual reports having taken at least one medication in the last two days, zero otherwise and the second is the number of distinct medications taken in the last two days. In particular, for medication use individuals are first asked about their use of different medications in the previous month, including pain relievers, tranquilizers, diet pills, codeine, Demerol or morphine, allergy medicine, asthma medications, medicine for the heart, medicine for blood pressure, insulin, pills to control diabetes, sleeping pills, stomach remedies, birth control pills, thyroid medication, cough

[20] For more detailed information on HUI3, see the online documentation available at: http://www.fhs.mcmaster.ca/hug/

or cold remedies. If individuals report using any of these medications, they are then asked if they used any of these medications in the last two days, and then asked how many they used.

The unmet health care variable is constructed from the answer to the question: "During the past 12 months, was there ever a time when you felt you needed health care but you did not receive it?" For each cycle, a dichotomous variable is created to capture the individual's experience of UHC in that specific cycle. Two alternative indicators of UHC are constructed. The first is the lagged value of UHC (UHC (-1)). The second is whether or not the individual experienced UHC in at least one previous cycle (PUHC). Using information regarding UHC in previous cycles to predict health outcomes allows us to address the problem of potential endogeneity due to simultaneity, and helps us to establish causality (McLeod, 2011; Dinca-Panaitescu et al., 2012).[21]

I also include a large array of explanatory variables commonly used in the empirical literature on health outcomes (for example, Clark, 2003; Buckley et al., 2004; Buckley et al., 2006; Deri, 2004; Wang et al., 2010; Sarma et al., 2015). Including sex, age, marital status, immigrant status, household income, education, employment, lifestyle, the presence of chronic conditions [22], urban and rural settings, and provincial dummy variables. These variables are defined in table 1. The data set provides a measure of household income with respect to the number of household members and provincial standards of living. As described in table 2.1, ten income ratio deciles are constructed. [23]

[21] McLeod (2011) used lagged variable for self-reported health status in order to correct for the endogeneity between health status and number of GP visits. Dinca-Panaitescu et al. (2012) used lagged variable income to correct for the endogeneity between income and the incidence of diabetes.

[22] Individuals are asked whether they have a long term health condition which has been diagnosed by a health professional, such as asthma, arthritis, high blood pressure, diabetes, heart disease, cancer, effects of stroke, cataracts and Alzheimer's disease or dementia.

[23] For details see the explanations in table 2.1. Also for more details on household income ratio methodology, see the online documentation available at: http://www.statcan.gc.ca/imdb-bmdi/ document/3225_D10_T9_V3-eng.pdf.

Table 2.2 presents some descriptive statistics for health outcomes and medication use in each cycle: the statistics are provided for the full sample and then separately for those who report having UHC and those who do not report having UHC. The first part of the table presents the trends in the main health outcomes over the 14 years (from 1998 to 2010). One can see that the proportion of individuals who report being in excellent or very good decreased over the years (from 100 percent in 1994 and 1996 to 85 percent in 1998, and ultimately to 71 percent on 2010). The proportion of individuals reporting being in good mental health remained steady over the years. As expected, the HUI3 score also decreased over time from 0.94 in 1998 to 0.89 in 2010. The proportion of individuals who report taking medications also increased over the years. The descriptive statistics for individuals reporting UHC versus those not reporting UHC show that, over the period between 1998 and 2010, individuals with UHC are, on average, less likely to be in excellent or very good health, with a lower HUI score, are less likely to be in good mental health and are more likely to use medications in every year. [24,25,26]

2.5 Empirical results

Tables 2.3 to 2.7 report the estimated impact of UHC on the five outcome variables. Table 2.3 reports the impact of UHC on being in excellent or very good health; table 2.4 reports the impact when the health outcome is the probability of being in good mental health, table 2.5 reports the impact when the health outcome is HUI3, table 2.6 presents the impact of UHC on the

[24] Figure 2 shows the percentage of individuals who report UHC in each cycle for the healthy cohort. Percentage of individuals who reported UHC has been increased from 4.32 in 1998 to 7.47 percent in 2010.
[25] These trends in health outcomes are similar to the ones for the full sample (1994 to 2010), when I include the entire sample rather than exclude those individuals who are not in excellent health or who have UHC in the initial period: table (A2.2). Although this full sample is not restricted to those who are in excellent or very good health, the proportion of individuals with excellent or very good health is decreased from 62 percent in 1994 to 55 percent in 2010. Moreover, for both the samples (the full sample and the healthy cohort) I notice a negative association between the health outcomes and UHC.
[26] Table A2.3, presents complete descriptive statistics for all the variables used in this study for the healthy cohort over the 14 years.

probability of requiring medications and finally, table 2.7 reports the impact on the number of medications used. These tables present the estimated average marginal effects of unmet health care as well the impacts of the other regressors for two specifications: the pooled model (OLS, probit or Poisson), and the random effects (OLS, probit or Poisson) model. [27] Each specification is represented twice in each table: the first controls for whether the individual reported UHC in the previous cycle (UHC (-1)), and the second controls for whether the individual reported UHC at least once in an early cycle (PUHC). The impact of PUHC on each health outcome is also presented separately for females and males in the last two columns of each table.

The results in table 2.3 from the pooled and random effects models show that reporting UHC in the previous cycle (UHC (-1)) has a negative impact on the probability of reporting being in excellent or very good health. Of course, some individuals who report UHC in the previous cycle may have experienced an improvement in their health. However, on average, individuals reporting UHC in the previous cycle are between 8.1 percentage points (random effects model) and 8.9 percentage points (pooled model) less likely to be in excellent or very good health than an individual who did not report UHC in the previous cycle.

The results in the first rows of tables 2.4 to 2.7 show that reporting UHC in the previous cycle (UHC (-1)) reduces the probability of reporting being in good mental health by between 1.2 percentage points (random effects model) and 3.7 percentage points (pooled model); it reduces the HUI3 score by between 2.9 percentage points (in the random effects model) and 4.9 percentage

[27] The average marginal effect is the marginal effect evaluated at own values of X for each person in the estimation sample and then takes the average (AME) so they are average of the marginal effects. For a binary variable X, the average marginal effect is the difference between the predicted probabilities of the outcome when X is set to 1 with the predicted probability when X is set to 0. Average marginal effect is equivalent to the difference between $E[pr(h_i = 1, UHC\ (-1) = 0)$ and $E[pr(h_i = 1, UHC\ (-1) = 1)$, holding everything else constant. The results are in percentage points rather than percentage change. For example, the average marginal effect of -0.081 for UHC (-1) on self-reported health (being in excellent/very good) is the average marginal effect of moving from having no unmet health care to having unmet health care needs, holding everything else constant.

points (in the pooled model). Reporting UHC in the previous period increases the probability of using medications by 5.5 percentage points (random effects model and pooled model), and the expected number of medications used by between 11% (incidence rate ratio (IRR)=1.11) (random effects Poisson model) and 15% (incidence rate ratio (IRR)=1.15) (pooled Poisson model) in comparison to those without UHC in the previous period.[28]

Very similar results arise when the measure of UHC is having reported UHC in at least one previous cycle (PUHC) rather than simply in the previous cycle. It reduces the probability of reporting being in excellent or very good health by 8.6 percentage points (random effects model) and 8.5 percentage points (pooled model). It reduces the probability of reporting being in good mental health by between 1.3 percentage points (random intercept model) and 3.2 percentage points (pooled model); leads to a reduction in the HUI3 of between 4 percentage points (random effects model) to 4.5 percentage points (pooled model); increases the probability of using medication by between 4.5 percentage points (pooled probit) to 6.3 percentage points (in the random effects model); and increases the expected number of medications used by 17% (incidence rate ratio (IRR)=1.17) (pooled OLS) and 21% (incidence rate ratio (IRR)=1.21) (in the random effects model) relative to those who had no UHC in any previous period.

One possibility is that these results are simply picking up on the fact that the health of individuals deteriorates over time. To explore whether the effect of UHC on health outcomes vary by age, I interact UHC with age groups using the random effects model which allows for heterogeneity between individuals in terms of health outcomes. Table 2.8 present these results.

[28] Interpretation of Poisson results: http://www.ats.ucla.edu/stat/mult_pkg/faq/general/citingats.htm
http://courses.statistics.com/count/hilbe_nbr_overview_on_interpreting_risk_ratios.pdf
the coefficient estimates of βi can be interpreted as (exp (βi) -1) * 100% change in y, given the change of 0 to 1 in independent variable. Another way is to report the estimates as incidence rate ratios which are defined as
E (y |xi=1) / E (y |xi=0) = exp (βi).

Column one presents the results for self-assessed health status (SAHS), column two for mental health, column three for HUI, column four for medication use; and finally, column five for the number of medications used. With the exception of the number of medications used by individuals aged 80 or over, the interaction term between age and previous unmet health care needs is not statistically significant. Strikingly, however, all of the results in table 2.8 point to a significant negative impact of PUHC on all of the measures of health outcomes and a positive impact on the probability of using medications and the number of medications. These results refute the suggestion that the coefficient on UHC is merely capturing the effect of ageing rather than the effect of unmet health care needs on health. Outcomes. [29]

To understand better the channels by which UHC adversely affects health outcomes, I further investigate the effect of reporting that UHC are attributed to accessibility barriers to health care. I define a new variable, Accessibility Barriers (-1) to take the value of one if the individual reported UHC in the previous cycle due to accessibility reasons and zero if no UHC (in this model, I am loosing 1600, and 1265 person-year observation depending on the measure of health outcome used). [30] The effect of Accessibility Barriers (-1) on health outcomes is presented in the first rows of table 2.9. For ease of comparison, I reproduce below these results the corresponding ones for UHC (-1). In addition, I add the predicted probabilities or means for each of the outcome variables. The top half of the table shows that when individuals report that UHC is due to accessibility reasons the effects of UHC on health outcomes is larger than for overall UHC (-1). However, this

[29] To test the sensitivity of the results to the categorization of age I also conduct analysis using the full sample (i) by including age and its square in the model, and (ii) re-estimate my models restricting the sample to individuals between the age of 18 and 64. Results are very similar and presented in table 2.11.

[30] Due to high correlation between both accessibility reasons and personal reasons, I could not control for both in the same regression. However, the only way to control for all the reasons of UHC is by re-grouping the reasons into two groups. The first group is availability reasons, which includes waiting times, unavailable services at the time required or unavailable services in the area. The second group includes all the other reasons. I re-estimate my models using the full sample and controlling for these two types of reasons. The results are presented in the table 2.11.

difference is small in general except for the number of medications used, which increases by 15% with accessibility barriers (-1) indicator and 11% with UHC (-1).

Also as a robustness test, I parsed the sample by geographic location, household income and with respect to access to a regular family doctor. Table 2.10 reports the estimation results when the health outcome is the probability of reporting excellent/very good health, using the random effects approach. I find that, *ceteris paribus,* if rural residents report unmet health care needs due to accessibility reasons in the previous cycle then the probability that they report being in excellent or very good health is 16.6 percentage points less than individuals who did not report UHC; UHC decreases the likelihood of reporting being in very good or excellent health by only 9.2 percentage points for urban residents. Individuals in low-income households who have reported UHC due to accessibility barriers are 17.3 percentage points less likely to report being in very good or excellent health than are individuals without UHC, whereas the impact of UHC on high-income households is only 8.3 percentage points. Somewhat surprisingly, however, the impact of accessibility barriers is about the same for those respondents who have a family doctor as compared to those who do not have a regular family doctor.

Several other robustness checks were undertaken, and all consistently support the claim that unmet health care needs affect health outcomes. For instance, I use the mixed model (depending on the health outcome: mixed effects logit, mixed effects linear, or mixed effect Poisson), which allows not only for a random intercept but also for random slopes (coefficients) as well. This means that the impact on health outcomes of experiencing UHC may differ across individuals. Using the random intercept and random coefficient model equation (2) becomes:

$$h_{it} = \alpha + u_i + (\delta + \nu i)(UHC)_{it-1} + \beta(X)_{it} + \mu_{it} \quad (3)$$

where the UHC variable is allowed to be heterogeneous or random (νi).

The results are presented in the table A2.7. Once again, they show that experiencing UHC, either in the previous cycle or at least once in a previous cycle, has a negative impact on all health outcomes and increases the likelihood and number of medications used.

I also checked to see whether the effect of UHC on the number of medications used is alleviated if I control for health status or the presence of a regular family doctor. The results from this robustness check are presented in table A2.8 and indicate that individuals who experience UHC are still more likely to use more medications, regardless of their current health status, or whether or not they have a regular family doctor.

Table A2.9 shows the effect of UHC on all health outcomes after controlling for the number of medications used. Although there is a negative association between the number of medications used and the probability of being in excellent or very good health, of being in good mental health, and of having a high HUI3 score, the impact of UHC on health outcomes remain negative and significant.

Finally, instead of restricting the sample to those in excellent or very good health in the first two cycles, I re-estimate the models using the full sample. Recall that I put this restriction on my sample because of the concern about reverse causality between poorer health and UHC. The results using the full sample are presented in table 2.11.[31] The estimated effects with this full sample are comparable to the main sample, but there are few differences. In particular, it seems that the medication use outcome is more sensitive to this sample restriction than the other outcomes. And this could be because the full sample has individuals with poorer health on average than my restricted sample.

[31] To estimate the effect of UHC on self-reported health status for the full sample, I used the pooled and random effects ordered probit models, I recoded self-reported health status into three categories: one indicates fair or poor health, two indicates good and three indicates health is very good or excellent.

2.6 Conclusions

Much attention has been paid in the media to the fact that large numbers of Canadians report having unmet health care needs, and particularly to what are perceived as excessive delays for patients seeking medical care. However, very little research has attempted to examine the impact of reported UHC on health outcomes. Indeed, there is no clear consensus which has emerges from previous research as to the effect of UHC on health. This chapter uses the panel data from the longitudinal National Population Health Survey over an 18-year time span (1994-2010) to discern the causal effect of unmet health care on five different measures of health outcomes: self-assessed health, mental health, HUI and medication utilization. Clear evidence is found that UHC causes poorer health outcomes.

To better understand the relationship between UHC and health outcomes, two measures of UHC were used. The first indicator used the individual's experience of UHC in the previous cycle (UHC (-1)). The second indicator measured experience of UHC in any previous cycle. To deal with for the potential endogeneity of UHC, the sample was restricted to those who started only with excellent or very good general and mental health for the first two cycles (1994 and 1996), and also excluded those who had UHC in 1994. These sample selection procedures increase the confidence about the claims with respect to the causal impact of UHC on health outcomes.

The relationship between UHC and health outcomes is first estimated using pooled OLS, probit or Poisson models. To deal with possible heterogeneity between individuals in their probabilities of being in good health, I use the random effect model which allows for a random intercept. To shed additional light on the consequences of UHC when it is due to accessibility reasons of UHC such as long waiting times and unavailable services on health outcomes, I further

refine the analysis by examining the impact of UHC (-1) when it is due specifically to these reasons. I also examine how the impact of these accessibility-related barriers on health status varies by geographic area (rural, urban), household income and for those with and without regular family doctor. Finally, UHC is interacted with age groups in the random effects model to see whether the effect of UHC on health outcomes varies by age.

The results reveal that UHC adversely affect health outcomes. The negative impact of unmet health care is robust to all model specifications and to all measures of health outcomes. The results also show that the mechanism by which UHC adversely affects health is the same for all age groups, indicating that the measured impact indeed reflects the effect of UHC, rather than simply age-related declines in health status. When individuals report that accessibility reasons, such as long waiting or unavailable services, are the main reasons of UHC leads to a reduction in the probability of being in excellent or very good health by 9.7 percentage points. I find that the health impact of accessibility driven UHC is larger for those living in rural areas as compared to those living in urban areas, and larger for those with lower household income as compared to those with high household income. These results suggest that improving access to care through public policy could have important positive consequences for health outcomes. To the extent that these positive consequences reduce the strain on the health care system and improve the wellbeing of individuals, it would be useful to examine whether the additional costs associated with improving access are worthwhile.

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Figure 2.1: Percentage of individuals reporting UHC over time for the full sample: 1994-2010

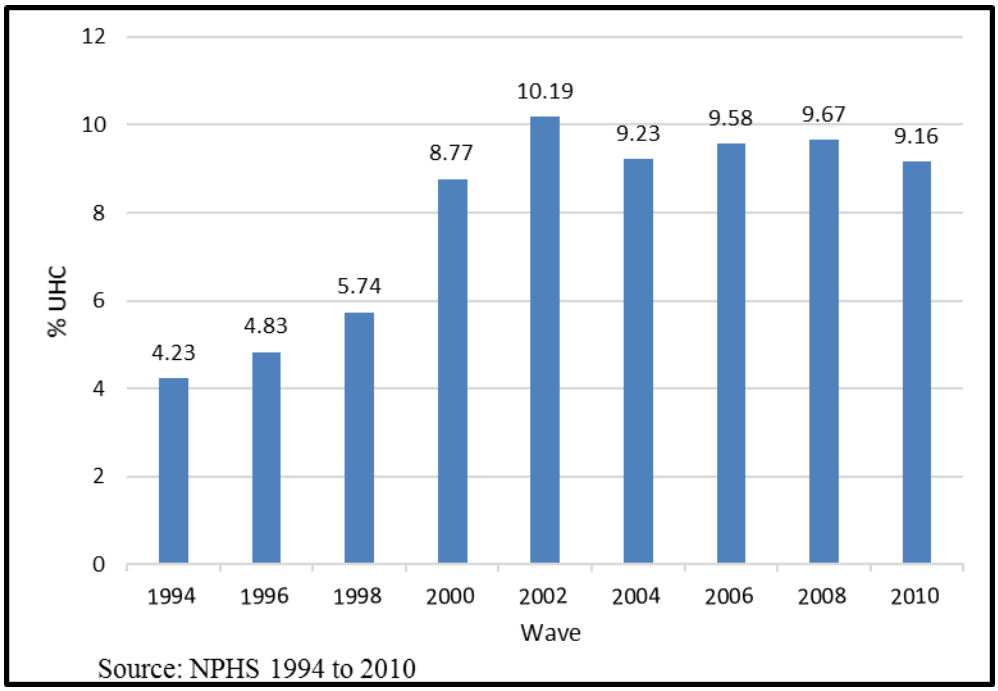

Figure 2.2: Percentage of individuals reporting UHC over time for the constructed sample: 1998-2010

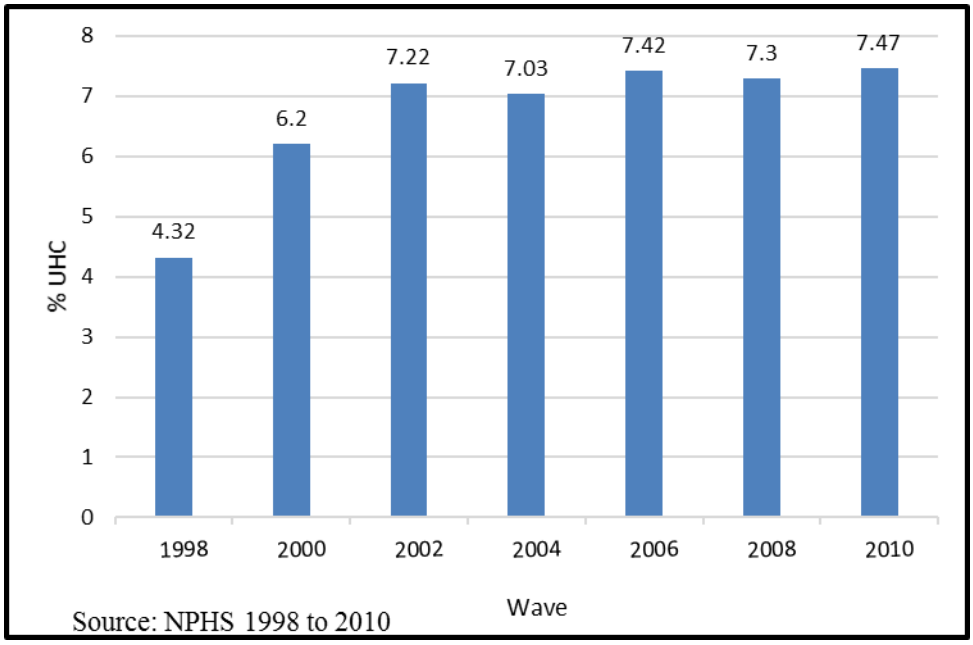

Table 2.1: Variable definitions

Health outcomes	
Good self-assessed health status (GSAHS)	SAHS is measured by the question: "In general, how would you say your health is?" Respondents assign a value from one to five to the health status question, corresponding to excellent, very good, good, fair and poor self-assessed health status. GSAHS =1 if the individual reports excellent or very good health status, 0 = otherwise.
Good mental health (GMH)	For Mental Health (MH), the NPHS uses the Comprehensive International Diagnostic Interview (CIDI) index to measure self-reported psychological distress. The value one - reflecting 'good mental health' (GMH) - is assigned to those individuals with a score of less than four in this index, indicating that they are not experiencing severe psychological distress; zero denotes those with a score of four or above, reflecting severe psychological distress and a high probability of clinical depression.
Health Utility Index (HUI3)	The observed value is between -0.36 to 1.0: 1.0 indicates perfect health, 0 indicates death, a negative value indicates health states that are worse than death.
Prob. of using medications	1 = individual used any medications in the previous two days, 0 = otherwise.
Number of medications	Number of different medications used by the individual in the previous two days.
Independent variables	
Unmet health care (UHC)	Dichotomous variable derived from the question: "during the past 12 months, was there ever a time when you felt you needed health care but you did not receive it?"
UHC (-1)	1 = individual reported unmet health care in the previous cycle, 0 = otherwise.
PUHC	1 = individual reported unmet health care in any previous cycle, 0 = otherwise.
Accessibility barriers	1= individual reported UHC in the previous cycle and indicated that this was due to a lack of services in their community, due to long waiting time, cost, unable to leave the house because of health problem, due to language barriers or did not know where to go, 0= reported unmet health care=0.
Female	1 = female, 0 = male.
Age1839	1 = Age >=18 and Age <=39, 0 = otherwise: **Reference**
Age4059	1 = Age >=40 and Age <=59, 0 = otherwise.
Age6079	1 = Age >=60 and Age <=79, 0 = otherwise.
Age80+	1 = Age>=80, 0 = otherwise.
Marital status	
Married	1 = married or in common relationship, 0 = otherwise.
WSD	1 = widowed, separate or divorced, 0 = otherwise.
Single	1 = single never married, 0 = otherwise: **Reference**
Imm	1 = immigrant, 0 = Canadian born.
IncDeci for I = 1, 2, .., 10	Nine income ratio dummy variables. The highest income ratio is used as the reference. The household income ratio represents the total household income in relation to the total number of members in the household and standards of living in the province. For more details on household income ratio methodology, see the documentation available at http://www.statcan.gc.ca/imdb-bmdi/ocument/3225_D10_T9_V3-eng.pdf.
Less than Sec	1 = less than secondary, 0 = otherwise: Reference
Sec grad	1 = secondary school diploma, 0 = otherwise.
Some Post Sec	1 = some post- secondary diploma, 0 = otherwise.
Post-Sec	1 = post-secondary diploma, 0 = otherwise.
M_Socio	1 = HHincome, education, or employment status is missing, but individual present in the cycle, 0 = otherwise.
Employed	1 = full or part time employed in the last year, 0 = otherwise: **Reference**

Unemployed	1 = unemployed in the last year, 0 = otherwise.
Nlabour force	1 = not looking for work in the last year, 0 = otherwise.
Condition	1 = has a health chronic condition, 0 = otherwise.
DrinkNever	1= never drinks, 0= otherwise: **Reference**
DrinkReg	1 = drinks regularly, 0 = otherwise. Regular drinking means the consumption of at least one alcoholic beverage per month in the last 12 months.
DrinkOcc	1 = drinks occasionally, 0 = otherwise. Occasional drinking means the consumption of an alcoholic beverage less than once per month (consume less than a bottle) in the last 12 months.
DrinkForm	1 = drinks formerly, where former drinkers are those who have previously consumed alcohol but did not do so in the previous twelve months, 0 = otherwise.
SmkNever	1 = never smokes, 0 = otherwise: **Reference**
SmkDaily	1 = smokes daily, 0 = otherwise.
SmkOcc	1 = smokes occasionally, 0 = otherwise.
Physically Active	1 = physically active, 0 = otherwise.
Physically M Active	1 = moderately active, 0 = otherwise.
Physically Inactive	1 = physically inactive, 0 = otherwise: **Reference**
Urban	1= Urban; 0 = otherwise.
Rural	1 = Rural, 0 = otherwise: **Reference**
NFLD	1 = Newfoundland, 0 = otherwise.
PEI	1 = Prince Edward, 0 = otherwise.
NS	1 = Nova Scotia, 0 = otherwise.
NB	1 = New Brunswick, 0 = otherwise.
QC	1 = Quebec, 0 = otherwise.
MAN	1 = Manitoba, 0 = otherwise.
SAS	1 = Saskatchewan, 0 = otherwise.
ALB	1 = Alberta, 0 = otherwise.
BC	1 = British Columbia, 0 = otherwise.
ON	1 = Ontario, 0 = otherwise: **Reference**
Low Income	1= IncDec1, IncDec2, IncDec3 or IncDec4.
High Income	1= IncDec5, IncDec6, IncDec7, IncDec8, IncDec9 or IncDec10.

Table 2.2: Mean health outcomes and medication use by UHC- for the full "healthy" sample over the years (1998- 2010)

		1998/99	2000/01	2002/03	2004/05	2006/07	2008/09	2010/11
Full "healthy" sample	Ex/V.Good	0.847	0.796	0.753	0.741	0.738	0.716	0.71
	GMH	0.966	0.967	0.959	0.961	0.964	0.963	0.963
	HUI score	0.939	0.940	0.921	0.917	0.906	0.896	0.89
	At least one medication	0.492	0.537	0.569	0.635	0.637	0.677	0.682
	Number of medications	0.822	0.970	1.10	1.286	1.417	1.578	2.041
	Average age	43	45	47	49	51	53	54
UHC=1	Ex/V.Good	0.742	0.662	0.622	0.591	0.639	0.551	0.500
	GMH	0.886	0.901	0.873	0.876	0.934	0.925	0.886
	HUI score	0.908	0.898	0.868	0.852	0.862	0.827	0.792
	At least one medication	0.571	0.582	0.592	0.674	0.634	0.635	0.841
	Number of medications	0.968	1.02	1.12	1.42	1.38	1.568	2.32
	Average age	40	42	43	46	48	50	51
UHC=0	Ex/V.Good	0.852	0.805	0.764	0.752	0.747	0.729	0.726
	GMH	0.970	0.971	0.966	0.957	0.967	0.965	0.969
	HUI score	0.940	0.943	0.926	0.921	0.910	0.902	0.900
	At least one medication	0.488	0.534	0.562	0.631	0.630	0.66	0.667
	Number of medications	0.815	0.967	1.00	1.270	1.320	1.560	2.00
	Average age	44	46	48	50	52	54	55

Data from NPHS (1998 to 2010).

Table 2.3: The effects of reporting UHC (in either the previous cycle UHC (-1) or at any time in the past (PUHC)) on the probability of reporting being in excellent or very good general health

Variables	Pooled probit	Random effects probit	Pooled probit	Random effects probit	Random effects probit: Females	Random effects probit: Males
UHC (-1)	-0.089***	-0.081***				
	(0.016)	(0.014)				
PUHC			-0.085***	-0.086***	-0.072***	-0.103***
			(0.011)	(0.012)	(0.015)	(0.020)
Age4059	-0.007	-0.032***	-0.007	-0.029***	-0.037***	-0.019
	(0.009)	(0.008)	(0.009)	(0.008)	(0.011)	(0.013)
Age6079	-0.012	-0.042***	-0.013	-0.038***	-0.052***	-0.017
	(0.012)	(0.013)	(0.012)	(0.013)	(0.017)	(0.019)
Age80+	-0.032	-0.072***	-0.032	-0.067***	-0.081**	-0.041
	(0.023)	(0.024)	(0.023)	(0.024)	(0.031)	(0.038)
Female	0.033***	0.042***	0.034***	0.043***		
	(0.007)	(0.008)	(0.007)	(0.008)		
Married	0.002	0.005	0.004	0.006	0.012	-0.001
	(0.011)	(0.011)	(0.011)	(0.011)	(0.015)	(0.016)
WSD	0.014	-0.000	0.017	0.002	0.007	-0.011
	(0.013)	(0.014)	(0.013)	(0.013)	(0.017)	(0.023)
Imm	-0.059***	-0.051***	-0.061***	-0.053***	-0.071***	-0.034*
	(0.011)	(0.015)	(0.011)	(0.015)	(0.022)	(0.020)
Sec grad	0.037***	0.028***	0.038***	0.030***	0.025*	0.035**
	(0.013)	(0.011)	(0.013)	(0.011)	(0.014)	(0.016)
Some Post Sec	0.051***	0.049***	0.052***	0.049***	0.046***	0.053***
	(0.012)	(0.010)	(0.012)	(0.010)	(0.013)	(0.015)
Post-Sec	0.060***	0.058***	0.066***	0.063***	0.058***	0.067***
	(0.013)	(0.011)	(0.013)	(0.012)	(0.016)	(0.017)
IncDec1	-0.101***	-0.075***	-0.097***	-0.071***	-0.053***	-0.089***
	(0.020)	(0.017)	(0.020)	(0.017)	(0.020)	(0.032)
IncDec2	-0.084***	-0.069***	-0.082***	-0.068***	-0.044**	-0.104***
	(0.017)	(0.015)	(0.017)	(0.015)	(0.018)	(0.026)
IncDec3	-0.057***	-0.036***	-0.055***	-0.035***	-0.016	-0.056***
	(0.015)	(0.013)	(0.015)	(0.013)	(0.016)	(0.022)
IncDec4	-0.038***	-0.027**	-0.037***	-0.026**	-0.008	-0.049**
	(0.014)	(0.012)	(0.014)	(0.012)	(0.015)	(0.020)
IncDec5	-0.021	-0.015	-0.021	-0.014	-0.011	-0.016
	(0.013)	(0.010)	(0.013)	(0.010)	(0.014)	(0.016)
IncDec6	-0.013	-0.011	-0.014	-0.011	0.009	-0.036**
	(0.012)	(0.010)	(0.012)	(0.010)	(0.013)	(0.016)
IncDec7	-0.018	-0.016	-0.017	-0.015	-0.006	-0.022
	(0.013)	(0.011)	(0.012)	(0.010)	(0.014)	(0.016)
IncDec8	-0.000	-0.006	-0.000	-0.006	0.007	-0.019
	(0.012)	(0.010)	(0.012)	(0.010)	(0.014)	(0.016)
IncDec9	-0.008	-0.013	-0.005	-0.011	0.008	-0.030*
	(0.014)	(0.012)	(0.014)	(0.012)	(0.015)	(0.017)
Unemployed	-0.011	0.000	-0.013	-0.001	-0.016	0.014
	(0.021)	(0.016)	(0.021)	(0.016)	(0.022)	(0.023)
Nlabour force	-0.048***	-0.056***	-0.049***	-0.057***	-0.035***	-0.103***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.012)	(0.019)
Condition	-0.111***	-0.096***	-0.109***	-0.094***	-0.092***	-0.097***
	(0.007)	(0.006)	(0.007)	(0.006)	(0.008)	(0.010)

DrinkReg	0.075***	0.051***	0.076***	0.053***	0.050**	0.071**
	(0.018)	(0.017)	(0.018)	(0.017)	(0.020)	(0.032)
DrinkOcc	0.039**	0.021	0.039**	0.022	0.020	0.032
	(0.016)	(0.015)	(0.016)	(0.015)	(0.019)	(0.026)
DrinkForm	0.013	-0.008	0.012	-0.008	-0.018	0.019
	(0.018)	(0.017)	(0.018)	(0.017)	(0.020)	(0.028)
SmkDaily	-0.052***	-0.066***	-0.053***	-0.065***	-0.069***	-0.059***
	(0.011)	(0.012)	(0.011)	(0.012)	(0.017)	(0.018)
SmkOcc	-0.019**	-0.032***	-0.017**	-0.030***	-0.039***	-0.018
	(0.008)	(0.008)	(0.008)	(0.008)	(0.011)	(0.013)
Physically	0.101***	0.088***	0.101***	0.089***	0.093***	0.085***
Active	(0.007)	(0.006)	(0.007)	(0.006)	(0.008)	(0.010)
Physically M	0.062***	0.059***	0.061***	0.060***	0.067***	0.051***
Active	(0.007)	(0.006)	(0.007)	(0.006)	(0.008)	(0.009)
M_Socio	-0.097***	-0.105***	-0.088***	-0.095***	-0.084**	-0.109***
	(0.029)	(0.026)	(0.029)	(0.026)	(0.035)	(0.039)
Urban	0.013	0.017*	0.012	0.017*	0.016	0.019
	(0.010)	(0.009)	(0.010)	(0.009)	(0.012)	(0.013)
NFLD	0.008	0.015	0.007	0.013	0.036*	-0.024
	(0.013)	(0.016)	(0.013)	(0.016)	(0.019)	(0.028)
PEI	0.004	0.007	0.003	0.005	0.031	-0.032
	(0.014)	(0.017)	(0.014)	(0.017)	(0.020)	(0.030)
NS	-0.028*	-0.003	-0.026*	-0.002	0.014	-0.022
	(0.015)	(0.018)	(0.015)	(0.018)	(0.022)	(0.030)
NB	-0.063***	-0.056***	-0.060***	-0.055***	-0.018	-0.101***
	(0.017)	(0.021)	(0.017)	(0.021)	(0.026)	(0.034)
QC	-0.019*	-0.029**	-0.017*	-0.028**	-0.032*	-0.023
	(0.010)	(0.013)	(0.010)	(0.013)	(0.017)	(0.019)
MAN	-0.007	-0.027	-0.004	-0.026	-0.032	-0.017
	(0.015)	(0.019)	(0.014)	(0.019)	(0.026)	(0.027)
SAS	-0.015	-0.034	-0.014	-0.033	-0.032	-0.035
	(0.014)	(0.021)	(0.014)	(0.021)	(0.029)	(0.031)
ALB	-0.010	-0.002	-0.008	-0.000	0.001	-0.001
	(0.011)	(0.014)	(0.011)	(0.014)	(0.018)	(0.023)
BC	-0.025**	-0.018	-0.024**	-0.018	0.011	-0.054**
	(0.012)	(0.016)	(0.012)	(0.016)	(0.018)	(0.027)
N	24569	24569	24569	24569	13623	10946
Groups (n)	5221	5221	5221	5221	2838	2383
Rho (ICC)		0.44		0.43	0.44	0.42
Predicted probability	0.80	0.86	0.80	0.86	0.86	0.85

Data from the National Population Health Survey (1998 to 2010). Sample sizes refer to periods 4 to T. Pooled probit and a random effects probit model are used and average marginal effects are reported above. Standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table 2.4: The effect of reporting UHC (in either the previous cycle UHC (-1) or at any time in the past (PUHC)) on the probability of being in good mental health

Variables	Pooled probit	Random effects probit	Pooled probit	Random effects probit	Random effects probit Females	Random effects probit Males
UHC (-1)	-0.037***	-0.012***				
	(0.008)	(0.004)				
PUHC			-0.032***	-0.013***	-0.015***	-0.010***
			(0.005)	(0.003)	(0.004)	(0.003)
Age4059	0.016***	0.006***	0.016***	0.007***	0.009***	0.004***
	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)
Age6079	0.031***	0.014***	0.031***	0.014***	0.019***	0.008***
	(0.003)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)
Age80+	0.029***	0.012***	0.028***	0.012***	0.018***	0.006***
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Female	-0.010***	-0.006***	-0.010***	-0.006***		
	(0.003)	(0.001)	(0.003)	(0.001)		
Married	0.015***	0.009***	0.016***	0.009***	0.010***	0.005**
	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
WSD	-0.009	-0.004	-0.008	-0.004	-0.006	-0.005
	(0.005)	(0.003)	(0.005)	(0.003)	(0.005)	(0.003)
Imm	0.002	0.002	0.002	0.002	0.004	0.000
	(0.004)	(0.002)	(0.004)	(0.002)	(0.003)	(0.002)
Sec grad	-0.009	-0.003	-0.009	-0.003	-0.005	-0.000
	(0.007)	(0.003)	(0.007)	(0.003)	(0.006)	(0.002)
Some Post Sec	-0.007	-0.004	-0.006	-0.004	-0.007	-0.002
	(0.007)	(0.003)	(0.006)	(0.003)	(0.006)	(0.003)
Post-Sec	-0.010**	-0.004*	-0.009*	-0.003	-0.005	-0.002
	(0.005)	(0.002)	(0.005)	(0.002)	(0.004)	(0.002)
IncDec1	-0.008	-0.004	-0.006	-0.003	-0.003	-0.004
	(0.007)	(0.003)	(0.007)	(0.003)	(0.005)	(0.004)
IncDec2	0.005	0.000	0.005	0.000	0.003	-0.003
	(0.005)	(0.002)	(0.004)	(0.002)	(0.004)	(0.003)
IncDec3	0.005	-0.000	0.006	-0.000	-0.001	0.001
	(0.005)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
IncDec4	-0.005	-0.005*	-0.005	-0.005*	-0.007	-0.003
	(0.006)	(0.003)	(0.005)	(0.003)	(0.005)	(0.003)
IncDec5	0.009**	0.003	0.009**	0.003	0.006**	0.000
	(0.004)	(0.002)	(0.004)	(0.002)	(0.003)	(0.002)
IncDec6	0.004	0.002	0.004	0.002	0.004	0.001
	(0.004)	(0.002)	(0.004)	(0.002)	(0.003)	(0.002)
IncDec7	0.003	0.001	0.003	0.001	0.001	0.001
	(0.004)	(0.002)	(0.004)	(0.002)	(0.003)	(0.002)
IncDec8	-0.001	-0.002	-0.001	-0.002	-0.004	-0.000
	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
IncDec9	0.000	-0.000	0.001	-0.000	-0.002	0.001
	(0.005)	(0.002)	(0.005)	(0.002)	(0.005)	(0.002)
Unemployed	-0.002	0.001	-0.002	0.001	0.005	-0.002
	(0.007)	(0.003)	(0.007)	(0.003)	(0.005)	(0.003)
Nlabour force	-0.014***	-0.008***	-0.015***	-0.008***	-0.006*	-0.010**
	(0.005)	(0.002)	(0.005)	(0.002)	(0.003)	(0.004)
Condition	-0.015***	-0.009***	-0.014***	-0.008***	-0.010***	-0.005***
	(0.003)	(0.001)	(0.003)	(0.001)	(0.002)	(0.001)
DrinkReg	0.003	-0.004	0.003	-0.004	-0.010*	0.002

	(0.008)	(0.003)	(0.008)	(0.003)	(0.006)	(0.004)
DrinkOcc	0.001	-0.005	0.001	-0.005	-0.011	0.000
	(0.008)	(0.005)	(0.008)	(0.005)	(0.008)	(0.003)
DrinkForm	-0.005	-0.008	-0.005	-0.008	-0.013	-0.003
	(0.010)	(0.006)	(0.010)	(0.006)	(0.010)	(0.005)
SmkDaily	-0.022***	-0.008***	-0.022***	-0.008***	-0.010**	-0.006**
	(0.005)	(0.003)	(0.005)	(0.003)	(0.004)	(0.003)
SmkOcc	-0.005*	-0.001	-0.004	-0.001	-0.002	-0.000
	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)
Physically	-0.004	0.001	-0.004	0.001	0.001	0.001
Active	(0.003)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)
Physically M	0.000	0.002	0.000	0.002	0.003	-0.000
Active	(0.003)	(0.001)	(0.003)	(0.001)	(0.002)	(0.001)
M_Socio	-0.006	-0.004	-0.003	-0.003	-0.005	-0.000
	(0.009)	(0.006)	(0.009)	(0.005)	(0.011)	(0.004)
Urban	-0.004	0.001	-0.005	0.000	0.005	-0.002*
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.001)
NFLD	-0.002	-0.000	-0.002	-0.001	-0.004	0.002
	(0.005)	(0.003)	(0.005)	(0.003)	(0.006)	(0.002)
PEI	0.011**	0.007***	0.010**	0.007***	0.010***	0.003*
	(0.004)	(0.002)	(0.004)	(0.002)	(0.003)	(0.002)
NS	-0.016**	-0.002	-0.015**	-0.002	-0.004	0.000
	(0.008)	(0.003)	(0.007)	(0.003)	(0.005)	(0.002)
NB	-0.007	-0.001	-0.006	-0.000	-0.002	0.001
	(0.007)	(0.003)	(0.007)	(0.003)	(0.006)	(0.003)
QC	-0.001	-0.001	-0.000	-0.001	0.003	-0.003
	(0.004)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
MAN	0.001	0.001	0.002	0.001	0.006	-0.003
	(0.005)	(0.003)	(0.005)	(0.003)	(0.004)	(0.004)
SAS	0.001	0.004	0.001	0.004*	0.012***	-0.003
	(0.006)	(0.002)	(0.006)	(0.002)	(0.003)	(0.004)
ALB	-0.003	-0.001	-0.002	-0.001	-0.000	-0.002
	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
BC	-0.008*	-0.005	-0.007	-0.005	-0.002	-0.006
	(0.005)	(0.003)	(0.005)	(0.003)	(0.005)	(0.004)
N	24569	24569	24569	24569	13623	10946
Groups (n)	5221	5221	5221	5221	2838	2383
Rho (ICC)		0.33		0.32	0.29	0.36
Predicted probability	0.97	0.99	0.97	0.99	0.98	0.99

Data from the National Population Health Survey (1998 to 2010). Sample sizes refer to periods 4 to T. Pooled probit and random effects probit are used and marginal effects are reported above. Standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. Average marginal effects are reported above. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table 2.5: The effect of reporting UHC (in either the previous cycle UHC (-1) or at any time in the past (PUHC)) on the health utility index (HUI3)

Variables	Pooled OLS	Random effects OLS	Pooled OLS	Random effects OLS	Random effects OLS Females	Random effects OLS Males
UHC (-1)	-0.049***	-0.029***				
	(0.007)	(0.005)				
PUHC			-0.045***	-0.040***	-0.033***	-0.049***
			(0.004)	(0.005)	(0.006)	(0.007)
Age4059	-0.018***	-0.021***	-0.018***	-0.019***	-0.020***	-0.017***
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)
Age6079	-0.012***	-0.020***	-0.012***	-0.018***	-0.023***	-0.012*
	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.007)
Age80+	-0.119***	-0.117***	-0.119***	-0.115***	-0.118***	-0.109***
	(0.015)	(0.011)	(0.015)	(0.011)	(0.014)	(0.020)
Female	0.009***	0.008***	0.009***	0.009***		
	(0.003)	(0.003)	(0.003)	(0.003)		
Married	0.006*	0.004	0.007**	0.005	0.003	0.004
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)
WSD	-0.003	-0.006	-0.001	-0.005	-0.009	-0.001
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.008)
Imm	0.004	-0.001	0.003	-0.002	-0.005	0.000
	(0.004)	(0.005)	(0.004)	(0.005)	(0.007)	(0.007)
Sec grad	-0.000	-0.003	0.000	-0.002	0.001	-0.006
	(0.007)	(0.005)	(0.007)	(0.005)	(0.007)	(0.008)
Some Post Sec	0.017***	0.009*	0.018***	0.010*	0.013*	0.005
	(0.006)	(0.005)	(0.006)	(0.005)	(0.007)	(0.008)
Post-Sec	0.011**	0.002	0.014**	0.005	0.005	0.005
	(0.006)	(0.005)	(0.006)	(0.005)	(0.007)	(0.007)
IncDec1	-0.047***	-0.036***	-0.046***	-0.034***	-0.040***	-0.028**
	(0.008)	(0.006)	(0.008)	(0.006)	(0.008)	(0.012)
IncDec2	-0.013**	-0.014***	-0.012*	-0.013***	-0.023***	0.001
	(0.006)	(0.005)	(0.006)	(0.005)	(0.007)	(0.007)
IncDec3	-0.004	-0.005	-0.003	-0.005	-0.008	0.000
	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.006)
IncDec4	-0.005	-0.008**	-0.004	-0.008**	-0.008*	-0.009
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)
IncDec5	-0.003	-0.001	-0.002	-0.001	-0.003	0.003
	(0.005)	(0.003)	(0.005)	(0.003)	(0.004)	(0.005)
IncDec6	0.001	0.001	0.001	0.002	0.001	0.002
	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)
IncDec7	0.001	-0.003	0.002	-0.002	-0.009**	0.005
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)
IncDec8	0.001	-0.000	0.001	0.000	-0.006	0.006
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)
IncDec9	-0.008	-0.004	-0.007	-0.002	-0.010**	0.005
	(0.006)	(0.003)	(0.006)	(0.003)	(0.005)	(0.005)
Unemployed	-0.007	-0.009*	-0.008	-0.010**	-0.011*	-0.011
	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.009)
Nlabour force	-0.050***	-0.041***	-0.051***	-0.042***	-0.035***	-0.055***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.008)
Condition	-0.034***	-0.029***	-0.032***	-0.028***	-0.028***	-0.027***

	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)
DrinkReg	0.010	0.004	0.011	0.005	0.001	0.010
	(0.008)	(0.006)	(0.008)	(0.006)	(0.007)	(0.010)
DrinkOcc	0.006	-0.001	0.006	-0.000	-0.005	0.007
	(0.008)	(0.006)	(0.008)	(0.006)	(0.008)	(0.011)
DrinkForm	-0.010	-0.014**	-0.010	-0.014**	-0.015*	-0.012
	(0.009)	(0.006)	(0.009)	(0.006)	(0.008)	(0.011)
SmkDaily	-0.013***	-0.009**	-0.014***	-0.009**	-0.008*	-0.010*
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)
SmkOcc	-0.007**	-0.011***	-0.006**	-0.010***	-0.013***	-0.006
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)
Physically	0.030***	0.021***	0.030***	0.022***	0.024***	0.019***
Active	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Physically M	0.021***	0.015***	0.021***	0.015***	0.019***	0.010***
Active	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)
M_Socio	-0.034***	-0.040***	-0.030***	-0.036***	-0.029**	-0.045***
	(0.012)	(0.010)	(0.011)	(0.010)	(0.012)	(0.015)
Urban	0.000	0.000	0.000	0.000	-0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)
NFLD	0.016***	0.015**	0.016***	0.014**	0.010	0.020***
	(0.004)	(0.006)	(0.004)	(0.006)	(0.009)	(0.007)
PEI	0.022***	0.018***	0.022***	0.017***	0.019***	0.014*
	(0.004)	(0.005)	(0.004)	(0.005)	(0.007)	(0.008)
NS	0.003	0.006	0.004	0.006	0.021***	-0.013
	(0.006)	(0.007)	(0.006)	(0.007)	(0.007)	(0.012)
NB	0.011**	0.012**	0.012**	0.012**	0.012	0.011
	(0.005)	(0.006)	(0.005)	(0.006)	(0.009)	(0.008)
QC	0.019***	0.017***	0.020***	0.018***	0.024***	0.011*
	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)	(0.006)
MAN	-0.007	-0.002	-0.005	-0.002	0.016**	-0.024**
	(0.006)	(0.007)	(0.006)	(0.007)	(0.007)	(0.012)
SAS	-0.005	-0.006	-0.004	-0.005	-0.000	-0.012
	(0.005)	(0.006)	(0.005)	(0.006)	(0.008)	(0.009)
ALB	0.0001	-0.002	0.001	-0.001	-0.005	0.002
	(0.004)	(0.005)	(0.004)	(0.005)	(0.007)	(0.007)
BC	0.0001	0.002	0.001	0.003	0.008	-0.003
	(0.004)	(0.005)	(0.004)	(0.005)	(0.008)	(0.008)
N	24569	24569	24569	24569	13623	10946
Groups (n)	5221	5221	5221	5221	2838	2383
Rho (ICC)		0.32		0.32	0.31	0.32
Predicted mean	0.92	0.92	0.92	0.92	0.92	0.92

Data from the National Population Health Survey (1998 to 2010). Sample sizes refer to periods 4 to T. Pooled and random effects OLS are used. Standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table 2.6: The effects of reporting UHC (in either the previous cycle UHC (-1) or at any time in the past (PUHC)) on the probability of using medications

Variables	Pooled probit	Random effects probit	Pooled probit	Random effects probit	Random effects probit Females	Random effects probit Males
UHC (-1)	0.055***	0.055***				
	(0.019)	(0.017)				
PUHC			0.045***	0.063***	0.044***	0.092***
			(0.013)	(0.014)	(0.017)	(0.024)
Age4059	0.105***	0.117***	0.105***	0.115***	0.094***	0.139***
	(0.011)	(0.012)	(0.011)	(0.012)	(0.014)	(0.020)
Age6079	0.283***	0.296***	0.283***	0.295***	0.250***	0.342***
	(0.013)	(0.012)	(0.013)	(0.013)	(0.015)	(0.023)
Age80+	0.308***	0.305***	0.308***	0.304***	0.251***	0.379***
	(0.016)	(0.012)	(0.016)	(0.012)	(0.014)	(0.026)
Female	0.100***	0.114***	0.099***	0.114***		
	(0.010)	(0.013)	(0.010)	(0.013)		
Married	-0.068***	-0.054***	-0.069***	-0.055***	-0.078***	-0.015
	(0.016)	(0.017)	(0.016)	(0.017)	(0.021)	(0.028)
WSD	-0.031	-0.034	-0.032	-0.036	-0.044	-0.009
	(0.020)	(0.023)	(0.020)	(0.023)	(0.027)	(0.040)
Imm	-0.044***	-0.063***	-0.044***	-0.062***	-0.069**	-0.061*
	(0.016)	(0.021)	(0.016)	(0.021)	(0.027)	(0.033)
Sec grad	0.007	0.013	0.006	0.011	-0.023	0.061*
	(0.022)	(0.022)	(0.022)	(0.022)	(0.028)	(0.035)
Some Post Sec	-0.023	-0.029	-0.023	-0.029	-0.050*	0.000
	(0.021)	(0.022)	(0.021)	(0.022)	(0.028)	(0.035)
Post-Sec	0.015	0.016	0.012	0.013	-0.012	0.046
	(0.019)	(0.020)	(0.019)	(0.020)	(0.025)	(0.032)
IncDec1	0.026	0.012	0.024	0.010	-0.009	0.023
	(0.024)	(0.024)	(0.024)	(0.024)	(0.028)	(0.044)
IncDec2	-0.028	0.000	-0.029	-0.000	-0.017	0.020
	(0.022)	(0.021)	(0.022)	(0.021)	(0.025)	(0.038)
IncDec3	-0.040**	-0.023	-0.041**	-0.025	-0.053**	0.022
	(0.020)	(0.019)	(0.020)	(0.019)	(0.024)	(0.032)
IncDec4	0.021	0.026	0.020	0.025	-0.001	0.065**
	(0.019)	(0.018)	(0.019)	(0.018)	(0.021)	(0.030)
IncDec5	-0.023	-0.023	-0.024	-0.023	-0.037*	-0.006
	(0.018)	(0.016)	(0.018)	(0.016)	(0.020)	(0.027)
IncDec6	-0.017	-0.016	-0.017	-0.016	-0.020	-0.014
	(0.017)	(0.016)	(0.017)	(0.016)	(0.019)	(0.026)
IncDec7	-0.019	-0.009	-0.019	-0.009	-0.022	0.007
	(0.017)	(0.015)	(0.017)	(0.015)	(0.019)	(0.026)
IncDec8	-0.015	-0.012	-0.015	-0.012	-0.005	-0.023
	(0.016)	(0.016)	(0.016)	(0.016)	(0.020)	(0.025)
IncDec9	0.048***	0.047***	0.046**	0.044***	0.030	0.061**
	(0.018)	(0.016)	(0.018)	(0.016)	(0.020)	(0.026)
Unemployed	-0.028	-0.015	-0.027	-0.013	-0.026	0.017
	(0.029)	(0.025)	(0.028)	(0.025)	(0.029)	(0.043)
Nlabour force	0.082***	0.098***	0.083***	0.098***	0.052***	0.207***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.017)	(0.026)
Condition	0.262***	0.284***	0.260***	0.282***	0.255***	0.307***

	(0.010)	(0.011)	(0.011)	(0.011)	(0.015)	(0.017)
DrinkReg	0.058**	0.030	0.058**	0.028	0.033	-0.003
	(0.028)	(0.029)	(0.028)	(0.029)	(0.031)	(0.056)
DrinkOcc	0.047	0.036	0.047*	0.036	0.044	-0.016
	(0.029)	(0.028)	(0.028)	(0.028)	(0.029)	(0.059)
DrinkForm	0.076***	0.071**	0.076***	0.071**	0.076***	0.033
	(0.029)	(0.028)	(0.029)	(0.028)	(0.029)	(0.059)
SmkDaily	-0.050***	-0.060***	-0.050***	-0.061***	-0.060***	-0.066**
	(0.015)	(0.018)	(0.015)	(0.018)	(0.021)	(0.029)
SmkOcc	-0.024**	-0.002	-0.026**	-0.004	-0.017	0.007
	(0.011)	(0.013)	(0.011)	(0.013)	(0.016)	(0.022)
Physically	-0.014	-0.025**	-0.015	-0.026**	-0.021	-0.038*
Active	(0.012)	(0.012)	(0.012)	(0.012)	(0.015)	(0.020)
Physically M	0.003	-0.011	0.004	-0.011	-0.013	-0.006
Active	(0.011)	(0.011)	(0.011)	(0.011)	(0.013)	(0.019)
M_Socio	-0.016	-0.008	-0.020	-0.014	-0.036	0.021
	(0.038)	(0.035)	(0.039)	(0.036)	(0.044)	(0.058)
Urban	0.000	-0.007	0.000	-0.007	-0.011	-0.002
	(0.013)	(0.014)	(0.013)	(0.014)	(0.017)	(0.022)
NFLD	0.031	0.024	0.031	0.025	0.036	0.005
	(0.019)	(0.025)	(0.019)	(0.025)	(0.030)	(0.040)
PEI	0.082***	0.062**	0.083***	0.063**	0.081***	0.014
	(0.018)	(0.025)	(0.018)	(0.025)	(0.028)	(0.045)
NS	0.025	0.010	0.025	0.009	0.025	-0.028
	(0.019)	(0.027)	(0.019)	(0.027)	(0.031)	(0.047)
NB	0.002	-0.005	0.001	-0.005	0.007	-0.021
	(0.021)	(0.029)	(0.021)	(0.029)	(0.036)	(0.046)
QC	-0.026*	-0.038**	-0.027**	-0.039**	-0.014	-0.078**
	(0.014)	(0.019)	(0.014)	(0.019)	(0.023)	(0.032)
MAN	-0.013	-0.036	-0.015	-0.037	-0.041	-0.019
	(0.020)	(0.028)	(0.020)	(0.028)	(0.034)	(0.046)
SAS	0.029	0.019	0.029	0.019	0.025	0.013
	(0.020)	(0.027)	(0.020)	(0.027)	(0.032)	(0.045)
ALB	0.011	-0.013	0.011	-0.014	-0.003	-0.023
	(0.015)	(0.021)	(0.015)	(0.021)	(0.024)	(0.037)
BC	-0.019	-0.047**	-0.020	-0.048**	-0.055*	-0.037
	(0.016)	(0.023)	(0.016)	(0.023)	(0.029)	(0.037)
N	20107	20107	20107	20107	11908	8199
Groups (n)	4956	4956	4956	4956	2744	2212
Rho (ICC)		0.39		0.39	0.39	0.40
Predicted Probability	0.61	0.67	0.61	0.67	0.72	0.58

Data from the National Population Health Survey (1998 to 2010). Sample sizes refer to periods 4 to T. Pooled probit and random effects probit with robust standard errors specification are used and average marginal effects are reported above. Standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

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Table 2.7: The effect of reporting UHC (in either the previous cycle UHC (-1) or at any time in the past (PUHC)) on the number of medications used

Variables	Pooled Poisson: IRR	Random effects Poisson: IRR	Pooled Poisson: IRR	Random effects Poisson: IRR	Random effects Poisson: IRR Females	Random effects Poisson: IRR Males
UHC (-1)	1.154***	1.110***				
	(0.050)	(0.032)				
PUHC			1.166***	1.209***	1.187***	1.245***
			(0.034)	(0.033)	(0.042)	(0.054)
Age4059	1.603***	1.467***	1.600***	1.457***	1.423***	1.516***
	(0.048)	(0.038)	(0.048)	(0.039)	(0.042)	(0.081)
Age6079	2.472***	2.097***	2.479***	2.081***	1.966***	2.285***
	(0.089)	(0.068)	(0.089)	(0.069)	(0.081)	(0.134)
Age80+	2.861***	2.678***	2.864***	2.651***	2.409***	2.989***
	(0.148)	(0.115)	(0.148)	(0.114)	(0.131)	(0.216)
Female	1.094***	1.132***	1.091***	1.130***		
	(0.025)	(0.030)	(0.025)	(0.029)		
Married	0.809***	0.897***	0.807***	0.893***	0.875***	0.920
	(0.033)	(0.031)	(0.033)	(0.031)	(0.037)	(0.054)
WSD	0.854***	0.902***	0.849***	0.896***	0.942	0.844**
	(0.036)	(0.036)	(0.036)	(0.036)	(0.045)	(0.062)
Imm	0.824***	0.843***	0.825***	0.847***	0.852***	0.827***
	(0.025)	(0.034)	(0.025)	(0.034)	(0.043)	(0.054)
Sec grad	1.115***	1.082***	1.112***	1.076**	1.075*	1.062
	(0.041)	(0.033)	(0.041)	(0.033)	(0.040)	(0.054)
Some Post Sec	1.029	1.001	1.028	0.999	1.011	0.964
	(0.038)	(0.032)	(0.038)	(0.032)	(0.040)	(0.055)
Post-Sec	1.161***	1.113***	1.149***	1.099***	1.097**	1.088*
	(0.039)	(0.034)	(0.038)	(0.033)	(0.041)	(0.055)
IncDec1	1.115**	1.126***	1.108**	1.113***	1.105**	1.103
	(0.054)	(0.040)	(0.053)	(0.039)	(0.047)	(0.070)
IncDec2	0.994	1.118***	0.992	1.112***	1.090**	1.171***
	(0.043)	(0.036)	(0.043)	(0.035)	(0.041)	(0.067)
IncDec3	0.966	1.078**	0.966	1.075**	1.063	1.083*
	(0.039)	(0.032)	(0.039)	(0.032)	(0.040)	(0.051)
IncDec4	0.970	1.064**	0.968	1.059**	1.016	1.142**
	(0.036)	(0.031)	(0.036)	(0.030)	(0.032)	(0.065)
IncDec5	0.973	1.021	0.973	1.018	0.987	1.066
	(0.036)	(0.026)	(0.036)	(0.026)	(0.031)	(0.046)
IncDec6	0.940*	0.974	0.941*	0.974	0.953	1.010
	(0.033)	(0.023)	(0.033)	(0.023)	(0.028)	(0.041)
IncDec7	0.934*	0.982	0.934*	0.981	0.955	1.021
	(0.033)	(0.024)	(0.034)	(0.024)	(0.029)	(0.043)
IncDec8	0.995	0.989	0.996	0.987	1.007	0.967
	(0.037)	(0.027)	(0.038)	(0.026)	(0.035)	(0.042)
IncDec9	1.137***	1.100***	1.131***	1.094***	1.086**	1.104***
	(0.048)	(0.028)	(0.047)	(0.028)	(0.037)	(0.042)
Unemployed	0.950	0.966	0.954	0.971	0.927	1.044
	(0.063)	(0.038)	(0.063)	(0.038)	(0.046)	(0.068)

Nlabour force	1.343***	1.285***	1.349***	1.287***	1.198***	1.443***
	(0.041)	(0.030)	(0.041)	(0.030)	(0.033)	(0.061)
Condition	2.343***	1.987***	2.326***	1.973***	1.831***	2.178***
	(0.068)	(0.056)	(0.068)	(0.056)	(0.066)	(0.095)
DrinkReg	1.066	0.977	1.062	0.971	0.974	0.990
	(0.054)	(0.040)	(0.054)	(0.040)	(0.046)	(0.086)
DrinkOcc	1.103*	1.030	1.102*	1.028	1.020	1.065
	(0.059)	(0.042)	(0.059)	(0.042)	(0.047)	(0.101)
DrinkForm	1.190***	1.130***	1.188***	1.127***	1.116**	1.171*
	(0.067)	(0.047)	(0.066)	(0.047)	(0.052)	(0.111)
SmkDaily	0.985	0.939*	0.985	0.938*	0.920**	0.947
	(0.034)	(0.031)	(0.034)	(0.031)	(0.036)	(0.057)
SmkOcc	1.056**	1.088***	1.054**	1.082***	1.057*	1.089**
	(0.024)	(0.025)	(0.023)	(0.025)	(0.030)	(0.041)
Physically	0.857***	0.912***	0.856***	0.911***	0.890***	0.926**
Active	(0.023)	(0.018)	(0.023)	(0.018)	(0.023)	(0.030)
Physically M	0.942**	0.957***	0.943**	0.957***	0.941***	0.975
Active	(0.023)	(0.016)	(0.022)	(0.016)	(0.020)	(0.028)
M_Socio	1.349***	1.236***	1.330***	1.208***	1.143**	1.271***
	(0.136)	(0.061)	(0.130)	(0.060)	(0.070)	(0.106)
Urban	1.013	1.019	1.015	1.020	0.999	1.041
	(0.029)	(0.024)	(0.029)	(0.024)	(0.029)	(0.040)
NFLD	1.019	0.969	1.020	0.973	0.991	0.941
	(0.040)	(0.048)	(0.040)	(0.049)	(0.060)	(0.083)
PEI	1.062*	1.037	1.062*	1.042	1.047	0.991
	(0.036)	(0.050)	(0.036)	(0.051)	(0.060)	(0.086)
NS	1.116***	1.102*	1.112***	1.095*	1.118*	1.003
	(0.039)	(0.058)	(0.038)	(0.058)	(0.069)	(0.095)
NB	0.890***	0.899**	0.887***	0.897**	0.890*	0.900
	(0.038)	(0.048)	(0.038)	(0.047)	(0.059)	(0.077)
QC	0.944**	0.953	0.940**	0.947	0.926*	0.961
	(0.028)	(0.037)	(0.027)	(0.037)	(0.041)	(0.064)
MAN	0.857***	0.857***	0.853***	0.853***	0.823***	0.890
	(0.036)	(0.044)	(0.036)	(0.044)	(0.055)	(0.072)
SAS	0.966	0.987	0.963	0.981	1.001	0.955
	(0.038)	(0.051)	(0.038)	(0.050)	(0.061)	(0.086)
ALB	0.951	0.931*	0.947*	0.928*	0.951	0.918
	(0.030)	(0.037)	(0.030)	(0.037)	(0.047)	(0.064)
BC	0.913***	0.895**	0.909***	0.891**	0.828***	0.968
	(0.032)	(0.042)	(0.032)	(0.042)	(0.053)	(0.064)
N	20038	20038	20038	20038	11865	8173
Groups (n)	4953	4953	4953	4953	2744	2209
Rho (ICC)		0.40		0.40	0.34	0.49

Data from the National Population Health Survey (1998 to 2010). Sample sizes refer to periods 4 to T. Pooled and random effects Poisson is used to estimate the number of medications. Robust standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. IRR (incidence rate ratios) = exponential (coefficient.). Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table 2.8: The effect of reporting UHC at least once in the past (PUHC) on health outcomes by age group- Random effects approach

Variables	Prob. of reporting Ex./V. good health	Prob. of reporting good mental health	HUI3 score	Prob. of using medication	Number of medications used: IRR
	(1)	(2)	(3)	(4)	(5)
PUHC	-0.088***	-0.015***	-0.035***	0.089***	1.265***
	(0.021)	(0.005)	(0.006)	(0.022)	(0.064)
Age4059	-0.030***	0.006***	-0.019***	0.122***	1.461***
	(0.009)	(0.002)	(0.002)	(0.013)	(0.043)
Age6079	-0.038***	0.014***	-0.016***	0.297***	2.107***
	(0.013)	(0.002)	(0.004)	(0.013)	(0.075)
Age80+	-0.069***	0.012***	-0.115***	0.306***	2.718***
	(0.025)	(0.001)	(0.012)	(0.013)	(0.125)
PUHC X Age4059	0.004	0.001	-0.004	-0.047	0.974
	(0.020)	(0.003)	(0.007)	(0.031)	(0.057)
PUHC X Age6079	-0.006	0.003	-0.022	-0.018	0.916
	(0.027)	(0.004)	(0.014)	(0.050)	(0.062)
PUHC X Age80+	0.013	-0.000	0.008	-0.035	0.835**
	(0.048)	(0.012)	(0.034)	(0.116)	(0.067)
N	24569	24569	24569	20107	20038
Individuals (n)	5221	5221	5221	4956	4953
Rho	0.43	0.32	0.32	0.39	0.40
Predicted probability/ predicted mean	0.86	0.99	0.92	0.67	

Data from the National Population Health Survey (1998 to 2010). Sample sizes refer to periods 4 to T. Results come from the A2.4. Controls for all variables previously described, but suppressed for brevity. Standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. Random effects probit with robust standard errors specification is used to estimate the probability of reporting Ex/Vg health (1), GMH (2) and using medications (4). Random effect linear model is used to estimate HUI3 score (3) and random effects Poisson with robust standard errors specification is used to estimate the number of medications used (5). Average marginal effects are reported above and for number of medications: exponentiated coefficients (incidence rate ratios) are reported above. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table 2.9: The effect of UHC in the previous cycle and when attributed to accessibility barriers, on health outcomes: Random effects approach						
	Variables	**Prob. of reporting Ex./Very good health**	**Prob. of reporting good mental health**	**HUI3 score**	**Probability of using medication**	**Total number of medications used (IRR)**
Data from (1998-2010). The sample is restricted to those 18 and older in the first cycle, with Exc./Very good health in the first two cycles and No UHC in the first cycle.	**Accessibility barriers (-1)**	-0.097***	-0.013***	-0.032***	0.066***	1.151***
	N	22,969	22,969	22,969	18,842	18,796
	Rho	0.44	0.32	0.33	0.39	0.40
	Predicted probability/ mean	0.87	0.99	0.92	0.66	
	UHC (-1)	-0.081***	-0.012***	0.029***	-0.055***	1.11***
	N	24,569	24,569	24,569	20,107	20,038
	Rho	0.44	0.33	0.32	0.39	0.40
	Predicted probability/ mean	0.86	0.99	0.92	0.67	

Note: Results come from the table A2.5 and tables 2.3-2.7. Sample sizes refer to periods 4 to T. Controls for all variables previously described, but suppressed for brevity. Standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. Random effects probit with robust standard errors specification is used to estimate the probability of reporting Ex/Vg health, GMH and using medications. Random effect linear model with robust standard errors specification is used to estimate HUI3 score and random effects Poisson with robust standard errors specification is used to estimate the number of medications. Average marginal effects are reported above and for number of medications: exponentiated coefficients (incidence rate ratios) are reported above. Accessibility =1 if (UHC is due to accessibility reasons) and 0= if UHC=0. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate

Table 2.10: The effect of UHC in the previous cycle when attributed to accessibility barriers, on the probability of reporting being in excellent or very good general health for different groups: Random effects approach

Variables	Rural	Urban	Low Income	High Income	No regular family doctor	Has regular family doctor
Accessibility barriers (-1)	-0.166***	-0.092***	-0.173***	-0.083***	-0.100*	-0.100***
	(0.051)	(0.020)	(0.039)	(0.021)	(0.052)	(0.021)
N	3922	19047	7256	15713	2649	20320
Rho	0.46	0.45	0.43	0.47	0.48	0.45
Predicted probability	0.85	0.87	0.80	0.90	0.90	0.86

Data from the National Population Health Survey (1998 to 2010). Sample sizes refer to periods 4 to T. Results come from the Appendix table A2.6. Controls for all variables previously described, but suppressed for brevity. Standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. Random effects probit with robust standard errors specification is used to estimate the probability of reporting excellent or very good health. Accessibility =1 if (UHC is due to accessibility reasons) and 0= if UHC=0. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table 2.11: The effect of UHC on the health outcomes- for the full sample (1994-2010) Random effects approach						
	Variables	**Prob. of reporting Ex./Very good health**	**Prob. of reporting good mental health**	**HUI3 score**	**Probability of using medication**	**Total number of medications used (IRR)**
(1)	**UHC (-1)**	-0.071***	-0.015***	-0.038***	0.019***	1.072***
	N	62,178	62,178	62,178	62,178	52,500
	rho	0.51	0.38	0.43	0.42	0.43
	Predicted probability	0.59	0.95	0.88	0.83	
(2)	**For individuals with age 18 - 64**					
	UHC (-1)	-0.072***	-0.017***	-0.033***	0.018***	1.076***
	N	48,087	48,087	48,087	48,087	39,937
	Rho	0.50	0.39	0.42	0.41	0.54
	Predicted probability	0.63	0.94	0.89	0.78	
(3)	**Accessibility barriers (-1)**	-0.072***	-0.015***	-0.042***	0.020***	1.085***
	N	61,312	61,312	61,312	61,312	51,790
	Rho	0.51	0.38	0.43	0.42	0.43
	Predicted probability	0.59	0.95	0.88	0.83	
(4)	**Availability (-1)**	-0.057***	-0.012***	-0.028***	0.025***	1.050**
	Others (-1)	-0.074**	-0.011*	-0.022**	0.005	1.048
	N	62,178	62,178	62,178	62,178	52,500
	Rho	0.51	0.38	0.43	0.42	0.43
	Predicted probability	0.59	0.95	0.88	0.83	
(5)	**Changes in UHC between (t-1, t)**					
	Remain No UHC (Ref)					
	Remains having UHC	-0.214***	-0.036***	-0.103***	0.045***	1.187***

	Goes into UHC	-0.153***	-0.029***	-0.069***	0.038***	1.107***
	Comes out of UHC	-0.077***	-0.015***	-0.041***	0.019***	1.076***
	N	62,178	62,178	62,178	62,178	52,500
	Rho	0.50	0.37	0.41	0.42	0.43
	Predicted probability	0.59	0.95	0.88	0.83	0.88
	From the balanced sample					
	UHC (-1)	-0.059***	-0.011***	-0.034***	0.018**	1.076***
(6)	N	30,840	30,840	30,840	30,840	30,624
	rho	0.52	0.37	0.34	0.43	0.44
	Predicted probability	0.60	0.95	0.89	0.83	

Data from the National Population Health Survey (1994 to 2010). Random effects ordered probit is used when the health outcome is self-reported health status, a random effects probit is used when the health outcome is GMH or the use of medications, and a random effects Poisson is used when the outcome is the number of medications. All regressions adjusted for age, age square, gender, marital status, immigrant status, chronic condition, income, residence area (urban or rural), province, smoking, drinking, physical activity, province and year dummies. Part (1) for the all persons, part (2) only for individuals between the ages of 18 and 64, part (3) present the results when controlled for Accessibility =1 if (UHC is due to accessibility reasons) and 0= if UHC=0. Part (4) shows the results when controlled for availability reasons (un available services in the area, un available services when required or waiting too long) and other reasons. Part (5) shows the impact of a change in UHC on health outcomes. Finally, to explore the sensitivity of my results to the attritions in the data set, the sample is restricted to the balanced panel and the results are presented in part (6). Selected full results are available in Appendix tables A2.10 to A2.13. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Appendix 2

Table A2.1: The effect of UHC (using contemporaneous values of UHC) and health outcome on health outcomes - Random effects approach

Variables	Prob. of reporting Ex./V. good health	Prob. of reporting good mental health	HUI3 score	Total number of medications used
UHC	-0.127***	-0.025***	-0.048***	1.108***
	(0.015)	(0.005)	(0.005)	(0.029)
Age4059	-0.034***	0.006***	-0.021***	1.469***
	(0.008)	(0.001)	(0.002)	(0.039)
Age6079	-0.046***	0.014***	-0.022***	2.101***
	(0.013)	(0.002)	(0.004)	(0.069)
Age80+	-0.078***	0.012***	-0.119***	2.686***
	(0.025)	(0.001)	(0.011)	(0.115)
Female	0.042***	-0.006***	0.008***	1.132***
	(0.008)	(0.001)	(0.003)	(0.030)
Married	0.005	0.008***	0.004	0.898***
	(0.011)	(0.002)	(0.003)	(0.031)
WSD	0.000	-0.004	-0.006	0.903**
	(0.014)	(0.003)	(0.005)	(0.036)
Imm	-0.050***	0.002	-0.001	0.842***
	(0.015)	(0.002)	(0.005)	(0.034)
Sec grad	0.027**	-0.003	-0.004	1.084***
	(0.011)	(0.003)	(0.005)	(0.033)
Some Post Sec	0.048***	-0.004	0.009*	1.003
	(0.010)	(0.003)	(0.005)	(0.032)
Post-Sec	0.057***	-0.004*	0.002	1.115***
	(0.011)	(0.002)	(0.005)	(0.034)
IncDec1	-0.075***	-0.004	-0.036***	1.126***
	(0.017)	(0.003)	(0.006)	(0.040)
IncDec2	-0.069***	0.000	-0.014***	1.117***
	(0.015)	(0.002)	(0.005)	(0.036)
IncDec3	-0.035***	-0.000	-0.005	1.077**
	(0.013)	(0.002)	(0.004)	(0.032)
IncDec4	-0.028**	-0.005*	-0.009**	1.065**
	(0.012)	(0.003)	(0.004)	(0.030)
IncDec5	-0.015	0.003	-0.001	1.020
	(0.011)	(0.002)	(0.003)	(0.026)
IncDec6	-0.011	0.002	0.002	0.974
	(0.010)	(0.002)	(0.003)	(0.023)
IncDec7	-0.014	0.001	-0.002	0.980
	(0.010)	(0.002)	(0.003)	(0.024)
IncDec8	-0.007	-0.002	-0.001	0.989
	(0.010)	(0.002)	(0.003)	(0.027)
IncDec9	-0.013	-0.000	-0.003	1.099***
	(0.012)	(0.002)	(0.003)	(0.028)
Unemployed	0.002	0.001	-0.009*	0.965
	(0.016)	(0.003)	(0.005)	(0.038)

Nlabour force	-0.055***	-0.008***	-0.041***	1.284***
	(0.010)	(0.002)	(0.004)	(0.030)
Condition	-0.094***	-0.008***	-0.028***	1.982***
	(0.006)	(0.001)	(0.002)	(0.056)
DrinkReg	0.054***	-0.004	0.005	0.973
	(0.017)	(0.003)	(0.006)	(0.040)
DrinkOcc	0.024	-0.004	0.000	1.027
	(0.015)	(0.004)	(0.006)	(0.042)
DrinkForm	-0.005	-0.007	-0.013*	1.125***
	(0.017)	(0.005)	(0.007)	(0.047)
SmkDaily	-0.066***	-0.008***	-0.009**	0.938*
	(0.012)	(0.003)	(0.004)	(0.031)
SmkOcc	-0.031***	-0.001	-0.010***	1.088***
	(0.008)	(0.001)	(0.003)	(0.025)
Physically Active	0.087***	0.001	0.021***	0.915***
	(0.006)	(0.001)	(0.003)	(0.018)
Physically M Active	0.058***	0.001	0.015***	0.958**
	(0.006)	(0.001)	(0.002)	(0.016)
M_Socio	-0.104***	-0.004	-0.040***	1.237***
	(0.026)	(0.006)	(0.010)	(0.061)
Urban	0.017*	0.000	0.000	1.019
	(0.009)	(0.002)	(0.003)	(0.024)
NFLD	0.015	-0.000	0.015**	0.969
	(0.016)	(0.003)	(0.006)	(0.048)
PEI	0.008	0.007***	0.018***	1.037
	(0.017)	(0.002)	(0.005)	(0.050)
NS	-0.003	-0.002	0.006	1.102*
	(0.018)	(0.003)	(0.007)	(0.058)
NB	-0.055***	-0.000	0.012**	0.899**
	(0.021)	(0.003)	(0.006)	(0.048)
QC	-0.027**	-0.000	0.018***	0.951
	(0.013)	(0.002)	(0.004)	(0.037)
MAN	-0.027	0.001	-0.002	0.856***
	(0.019)	(0.003)	(0.007)	(0.044)
SAS	-0.034	0.004*	-0.006	0.987
	(0.021)	(0.002)	(0.006)	(0.051)
ALB	-0.001	-0.001	-0.002	0.931*
	(0.014)	(0.002)	(0.005)	(0.037)
BC	-0.017	-0.005	0.003	0.895**
	(0.016)	(0.003)	(0.005)	(0.042)
Predicted probability/ mean	0.86	0.99	0.92	

Data from the National Population Health Survey (1998 to 2002). Robust standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. Compared to the effect (UHC (-1) on health outcomes, the effect of UHC (current value) is larger on all the health outcomes but it has the same impact on the number of medications.

Table A2.2: Health status for the full sample and by UHC over the years (1994 - 2010)										
		94/95	**96/97**	**98/99**	**2000/01**	**2002/03**	**2004/05**	**2006/07**	**2008/09**	**2010/11**
Full sample	Ex/V.Good	0.621	0.637	0.654	0.599	0.560	0.565	0.568	0.573	0.555
	Good	0.271	0.276	0.262	0.285	0.325	0.319	0.320	0.321	0.339
	Fair/Poor	0.108	0.087	0.084	0.116	0.115	0.116	0.112	0.106	0.106
	Average age	44	46	47	49	51	52	54	56	57
UHC=1	Ex/V.Good	0.426	0.376	0.441	0.401	0.392	0.377	0.448	0.408	0.331
	Good	0.340	0.369	0.316	0.371	0.379	0.373	0.349	0.376	0.418
	Fair/Poor	0.234	0.255	0.243	0.228	0.229	0.250	0.203	0.216	0.251
	Average age	40	43	44	45	46	49	50	53	54
UHC=0	Ex/V.Good	0.630	0.651	0.667	0.616	0.579	0.586	0.581	0.590	0.576
	Good	0.268	0.271	0.258	0.277	0.319	0.312	0.317	0.315	0.332
	Fair/Poor	0.103	0.078	0.075	0.106	0.101	0.102	0.102	0.095	0.092
	Average age	44	46	47	49	51	52	53	55	56
Percentage of individuals with good mental health, mean HUI score, medication use for the full sample and by UHC over the years (1994- 2010)										
		94/95	**96/97**	**98/99**	**2000/01**	**2002/03**	**2004/05**	**2006/07**	**2008/09**	**2010/11**
Full sample	GMH	0.932	0.947	0.949	0.946	0.942	0.941	0.948	0.948	0.946
	HUI score	0.860	0.899	0.898	0.892	0.876	0.871	0.863	0.847	0.848
	At least one medication	0.820	0.825	0.830	0.860	0.881	0.878	0.890	0.895	0.780
	Number of medications	1.151	1.136	1.321	1.400	1.685	1.812	1.932	2.231	2.618
UHC=1	GMH	0.819	0.814	0.835	0.841	0.844	0.838	0.858	0.877	0.839
	HUI score	0.737	0.774	0.787	0.790	0.771	0.776	0.776	0.737	0.729
	At least one medication	0.893	0.912	0.902	0.927	0.925	0.924	0.943	0.899	0.827
	Number of medications	1.461	1.608	1.831	1.752	1.954	2.222	2.119	2.489	2.779
UHC=0	GMH	0.937	0.954	0.956	0.955	0.954	0.952	0.958	0.955	0.956
	HUI score	0.866	0.906	0.905	0.902	0.888	0.881	0.872	0.858	0.860
	At least one medication	0.784	0.800	0.816	0.844	0.861	0.861	0.880	0.891	0.762
	Number of medications	1.126	1.117	1.215	1.389	1.638	1.741	1.892	2.116	2.501

Table A2.3: Means of all variables of the "healthy" cohort: 1998 - 2010							
Variables	**1998/99**	**2000/01**	**2002/03**	**2004/05**	**2006/07**	**2008/09**	**2010/11**
Age1839	0.437	0.37	0.303	0.246	0.196	0.148	0.111
Age4059	0.407	0.457	0.501	0.524	0.549	0.557	0.555
Age6079	0.137	0.153	0.173	0.198	0.219	0.258	0.294
Age80+	0.019	0.02	0.023	0.032	0.036	0.037	0.040
Female	0.507	0.517	0.521	0.524	0.523	0.521	0.520
Married	0.698	0.715	0.73	0.748	0.762	0.767	0.773
WSD	0.127	0.138	0.145	0.146	0.142	0.146	0.14
Single	0.175	0.147	0.125	0.106	0.096	0.087	0.087
Imm	0.167	0.163	0.160	0.161	0.157	0.156	0.155
Canadian born	0.833	0.837	0.840	0.839	0.843	0.844	0.845
Less than Sec	0.069	0.13	0.121	0.068	0.051	0.046	0.052
Sec grad	0.08	0.14	0.134	0.144	0.154	0.139	0.129
Some Post Sec	0.248	0.270	0.266	0.147	0.096	0.095	0.081
Post-Sec	0.603	0.46	0.479	0.641	0.699	0.72	0.738
IncDec1	0.052	0.043	0.044	0.047	0.045	0.05	0.062
IncDec2	0.063	0.066	0.064	0.065	0.073	0.068	0.071
IncDec3	0.083	0.078	0.085	0.079	0.079	0.08	0.087
IncDec4	0.093	0.076	0.084	0.088	0.088	0.101	0.092
IncDec5	0.101	0.108	0.100	0.099	0.106	0.101	0.116
IncDec6	0.107	0.114	0.115	0.100	0.114	0.108	0.105
IncDec7	0.109	0.119	0.110	0.119	0.104	0.106	0.107
IncDec8	0.132	0.134	0.116	0.122	0.115	0.123	0.106
IncDec9	0.132	0.143	0.135	0.133	0.123	0.13	0.123
IncDec10	0.128	0.119	0.147	0.148	0.153	0.133	0.131
Employed	0.751	0.757	0.749	0.734	0.726	0.709	0.682
Unemployed	0.032	0.032	0.028	0.024	0.023	0.02	0.025

Nlabour force	0.217	0.211	0.223	0.242	0.251	0.271	0.293
Condition	0.531	0.567	0.643	0.65	0.71	0.728	0.745
DrinkReg	0.667	0.674	0.697	0.691	0.734	0.75	0.735
DrinkOcc	0.192	0.182	0.165	0.165	0.129	0.123	0.135
DrinkForm	0.091	0.087	0.089	0.099	0.091	0.093	0.093
DrinkNever	0.05	0.057	0.049	0.045	0.046	0.034	0.037
SmkDaily	0.213	0.189	0.155	0.149	0.137	0.132	0.116
SmkOcc	0.402	0.441	0.479	0.494	0.499	0.515	0.542
SmkNever	0.385	0.37	0.366	0.357	0.364	0.353	0.342
Physically Active	0.238	0.206	0.247	0.242	0.286	0.293	0.317
Physically M Active	0.279	0.273	0.312	0.286	0.295	0.292	0.31
Physically Inactive	0.483	0.521	0.441	0.472	0.419	0.415	0.373
Urban	0.885	0.879	0.877	0.886	0.848	0.827	0.826
NFLD	0.022	0.021	0.021	0.021	0.023	0.023	0.022
PEI	0.006	0.006	0.005	0.006	0.006	0.006	0.005
NS	0.032	0.034	0.034	0.033	0.035	0.036	0.035
NB	0.023	0.023	0.024	0.024	0.025	0.022	0.023
QC	0.256	0.255	0.257	0.244	0.254	0.27	0.281
MAN	0.035	0.033	0.032	0.031	0.028	0.031	0.031
SAS	0.029	0.028	0.029	0.03	0.028	0.027	0.028
ALB	0.101	0.101	0.104	0.106	0.101	0.102	0.111
BC	0.123	0.123	0.122	0.123	0.119	0.116	0.12
ON	0.373	0.376	0.372	0.382	0.381	0.367	0.344
Individuals	5221	5011	4754	4098	3836	3800	3070

Data from the National Population Health Survey (1998-2010)

Table A2.4: The effect of reporting UHC at least once in the past (PUHC) on health outcomes by age group: Random effects approach

Variables	Prob. of reporting Ex./V. good health	Prob. of reporting good mental health	HUI3 score	Probability of using medication	Number of medications used: IRR
PUHC	-0.088***	-0.015***	-0.035***	0.089***	1.265***
	(0.021)	(0.005)	(0.006)	(0.022)	(0.064)
Age4059	-0.030***	0.006***	-0.019***	0.122***	1.461***
	(0.009)	(0.002)	(0.002)	(0.013)	(0.043)
Age6079	-0.038***	0.014***	-0.016***	0.297***	2.107***
	(0.013)	(0.002)	(0.004)	(0.013)	(0.075)
Age80+	-0.069***	0.012***	-0.115***	0.306***	2.718***
	(0.025)	(0.001)	(0.012)	(0.013)	(0.125)
PUHC X Age4059	0.004	0.001	-0.004	-0.047	0.974
	(0.020)	(0.003)	(0.007)	(0.031)	(0.057)
PUHC X Age6079	-0.006	0.003	-0.022	-0.018	0.916
	(0.027)	(0.004)	(0.014)	(0.050)	(0.062)
PUHC X Age80+	0.013	-0.000	0.008	-0.035	0.835**
	(0.048)	(0.012)	(0.034)	(0.116)	(0.067)
Female	0.043***	-0.006***	0.009***	0.114***	1.130***
	(0.008)	(0.001)	(0.003)	(0.013)	(0.029)
Married	0.007	0.009***	0.004	-0.056***	0.892***
	(0.011)	(0.002)	(0.003)	(0.017)	(0.031)
WSD	0.002	-0.004	-0.005	-0.037	0.896***
	(0.013)	(0.003)	(0.005)	(0.023)	(0.036)
Imm	-0.052***	0.002	-0.002	-0.062***	0.848***
	(0.015)	(0.002)	(0.005)	(0.021)	(0.034)
Sec grad	0.030***	-0.003	-0.002	0.012	1.078**
	(0.011)	(0.003)	(0.005)	(0.022)	(0.033)
Some Post Sec	0.049***	-0.004	0.010**	-0.029	1.000
	(0.010)	(0.003)	(0.005)	(0.022)	(0.032)
Post-Sec	0.063***	-0.003	0.005	0.013	1.100***
	(0.012)	(0.002)	(0.005)	(0.020)	(0.033)
IncDec1	-0.071***	-0.003	-0.034***	0.010	1.114***
	(0.017)	(0.003)	(0.006)	(0.024)	(0.039)
IncDec2	-0.068***	0.000	-0.013***	-0.000	1.112***
	(0.015)	(0.002)	(0.005)	(0.021)	(0.035)
IncDec3	-0.035***	-0.000	-0.005	-0.024	1.074**
	(0.013)	(0.002)	(0.004)	(0.019)	(0.032)
IncDec4	-0.026**	-0.005*	-0.008**	0.025	1.059**
	(0.012)	(0.003)	(0.004)	(0.018)	(0.030)
IncDec5	-0.014	0.003	-0.001	-0.023	1.018
	(0.010)	(0.002)	(0.003)	(0.016)	(0.026)
IncDec6	-0.011	0.002	0.002	-0.016	0.973
	(0.010)	(0.002)	(0.003)	(0.016)	(0.023)
IncDec7	-0.015	0.001	-0.002	-0.009	0.981
	(0.010)	(0.002)	(0.003)	(0.015)	(0.024)
IncDec8	-0.006	-0.002	0.000	-0.012	0.987
	(0.010)	(0.002)	(0.003)	(0.016)	(0.026)
IncDec9	-0.011	-0.000	-0.002	0.044***	1.093***
	(0.012)	(0.002)	(0.003)	(0.016)	(0.028)
Unemployed	-0.001	0.001	-0.010**	-0.013	0.971
	(0.016)	(0.003)	(0.005)	(0.025)	(0.038)

Nlabour force	-0.058***	-0.008***	-0.042***	0.099***	1.286***
	(0.010)	(0.002)	(0.004)	(0.014)	(0.030)
Condition	-0.094***	-0.008***	-0.028***	0.282***	1.971***
	(0.006)	(0.001)	(0.002)	(0.011)	(0.056)
DrinkReg	0.053***	-0.004	0.005	0.029	0.972
	(0.017)	(0.003)	(0.006)	(0.029)	(0.040)
DrinkOcc	0.022	-0.005	-0.000	0.036	1.029
	(0.015)	(0.005)	(0.006)	(0.028)	(0.042)
DrinkForm	-0.008	-0.008	-0.013**	0.071**	1.128***
	(0.017)	(0.006)	(0.006)	(0.028)	(0.047)
SmkDaily	-0.065***	-0.008***	-0.009**	-0.061***	0.938*
	(0.012)	(0.003)	(0.004)	(0.018)	(0.031)
SmkOcc	-0.030***	-0.001	-0.010***	-0.004	1.082***
	(0.008)	(0.001)	(0.003)	(0.013)	(0.025)
Physically Active	0.089***	0.001	0.022***	-0.026**	0.910***
	(0.006)	(0.001)	(0.003)	(0.012)	(0.018)
Physically M Active	0.060***	0.002	0.015***	-0.011	0.958**
	(0.006)	(0.001)	(0.002)	(0.011)	(0.016)
M_Socio	-0.095***	-0.003	-0.036***	-0.014	1.211***
	(0.026)	(0.005)	(0.010)	(0.036)	(0.060)
Urban	0.017*	0.001	0.000	-0.007	1.019
	(0.009)	(0.002)	(0.003)	(0.014)	(0.024)
NFLD	0.013	-0.001	0.014**	0.025	0.973
	(0.016)	(0.003)	(0.006)	(0.025)	(0.049)
PEI	0.005	0.007***	0.017***	0.063**	1.043
	(0.017)	(0.002)	(0.005)	(0.025)	(0.051)
NS	-0.002	-0.002	0.006	0.009	1.097*
	(0.018)	(0.003)	(0.007)	(0.027)	(0.058)
NB	-0.055***	-0.000	0.012**	-0.005	0.897**
	(0.021)	(0.003)	(0.006)	(0.029)	(0.047)
QC	-0.028**	-0.001	0.018***	-0.039**	0.947
	(0.013)	(0.002)	(0.004)	(0.019)	(0.037)
MAN	-0.026	0.001	-0.001	-0.037	0.853***
	(0.019)	(0.003)	(0.007)	(0.028)	(0.044)
SAS	-0.033	0.004*	-0.005	0.019	0.982
	(0.021)	(0.002)	(0.006)	(0.027)	(0.050)
ALB	-0.001	-0.001	-0.002	-0.014	0.928*
	(0.014)	(0.002)	(0.005)	(0.021)	(0.037)
BC	-0.018	-0.005	0.003	-0.047**	0.892**
	(0.016)	(0.003)	(0.005)	(0.023)	(0.042)
N	24569	24569	24569	20107	20038
Individuals (n)	5221	5221	5221	4956	4953
Rho (fraction of variance due to ui)	0.43	0.32	0.32	0.39	0.40
Predicted probability/ predicted mean	0.86	0.99	0.92	0.67	

Data from the National Population Health Survey (1998 to 2010). Standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. Random effects probit with robust standard errors specification is used to estimate the probability of reporting Ex/Vg health, GMH and using medications. Random effect linear model with robust standard errors specification is used to estimate HUI3 score and random effects Poisson with robust standard errors specification is used to estimate the number of medications. Average marginal effects are reported above, and for number of medications: exponentiated coefficients (incidence rate ratios) are reported above. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table A2.5: The effect of UHC in the previous cycle when attributed to accessibility barriers, on health outcomes: Random effects approach

Variables	Prob. of reporting Ex./V. good health	Prob. of reporting good mental health	HUI3 score	Probability of using medication	Total number of medications used
Accessibility barriers (-1)	-0.097***	-0.013***	-0.032***	0.066***	1.151***
	(0.019)	(0.005)	(0.007)	(0.022)	(0.043)
Age4059	-0.023***	0.007***	-0.020***	0.115***	1.462***
	(0.008)	(0.002)	(0.002)	(0.012)	(0.040)
Age6079	-0.032**	0.014***	-0.020***	0.297***	2.069***
	(0.013)	(0.002)	(0.004)	(0.013)	(0.071)
Age80+	-0.063**	0.012***	-0.111***	0.303***	2.635***
	(0.024)	(0.001)	(0.012)	(0.013)	(0.119)
Female	0.040***	-0.006***	0.007**	0.119***	1.138***
	(0.008)	(0.002)	(0.003)	(0.013)	(0.031)
Married	0.005	0.008***	0.005	-0.056***	0.899***
	(0.011)	(0.002)	(0.003)	(0.017)	(0.033)
WSD	-0.005	-0.005*	-0.008*	-0.034	0.917**
	(0.014)	(0.003)	(0.005)	(0.023)	(0.038)
Imm	-0.049***	0.002	-0.001	-0.066***	0.831***
	(0.015)	(0.002)	(0.005)	(0.022)	(0.034)
Sec grad	0.028***	-0.004	-0.008	0.012	1.082**
	(0.011)	(0.003)	(0.006)	(0.022)	(0.034)
Some Post Sec	0.048***	-0.005	0.006	-0.028	1.006
	(0.010)	(0.003)	(0.005)	(0.022)	(0.033)
Post-Sec	0.059***	-0.005*	-0.001	0.016	1.116***
	(0.011)	(0.002)	(0.005)	(0.021)	(0.036)
IncDec1	-0.065***	-0.004	-0.032***	0.019	1.122***
	(0.017)	(0.003)	(0.007)	(0.025)	(0.043)
IncDec2	-0.060***	0.000	-0.013**	0.000	1.115***
	(0.015)	(0.002)	(0.005)	(0.022)	(0.038)
IncDec3	-0.031**	-0.000	-0.005	-0.024	1.060*
	(0.013)	(0.002)	(0.004)	(0.020)	(0.032)
IncDec4	-0.022*	-0.006*	-0.008**	0.019	1.060*
	(0.012)	(0.003)	(0.004)	(0.018)	(0.032)
IncDec5	-0.018*	0.002	-0.002	-0.025	1.018
	(0.011)	(0.002)	(0.003)	(0.017)	(0.027)
IncDec6	-0.009	0.002	0.002	-0.020	0.969
	(0.010)	(0.002)	(0.003)	(0.016)	(0.024)
IncDec7	-0.017	0.001	-0.003	-0.005	0.980
	(0.010)	(0.002)	(0.003)	(0.016)	(0.025)
IncDec8	-0.003	-0.001	-0.001	-0.010	0.994
	(0.010)	(0.002)	(0.003)	(0.016)	(0.026)
IncDec9	-0.011	-0.001	-0.005	0.045***	1.100***
	(0.011)	(0.002)	(0.003)	(0.017)	(0.029)
Unemployed	-0.000	0.002	-0.009*	-0.005	0.990
	(0.016)	(0.003)	(0.005)	(0.025)	(0.040)
Nlabour force	-0.052***	-0.006***	-0.038***	0.098***	1.285***
	(0.010)	(0.002)	(0.004)	(0.015)	(0.031)
Condition	-0.087***	-0.009***	-0.029***	0.284***	1.988***
	(0.006)	(0.001)	(0.002)	(0.012)	(0.058)
DrinkReg	0.053***	-0.003	0.004	0.035	0.977

	(0.017)	(0.003)	(0.006)	(0.029)	(0.042)
DrinkOcc	0.024	-0.004	-0.000	0.033	1.028
	(0.015)	(0.004)	(0.006)	(0.029)	(0.044)
DrinkForm	-0.003	-0.008	-0.012*	0.069**	1.110**
	(0.016)	(0.006)	(0.006)	(0.029)	(0.046)
SmkDaily	-0.060***	-0.009***	-0.008**	-0.069***	0.932**
	(0.012)	(0.003)	(0.004)	(0.018)	(0.032)
SmkOcc	-0.031***	-0.001	-0.010***	-0.004	1.082***
	(0.008)	(0.002)	(0.003)	(0.013)	(0.026)
Physically Active	0.084***	0.000	0.022***	-0.025*	0.913***
	(0.006)	(0.001)	(0.003)	(0.013)	(0.019)
Physically M Active	0.057***	0.001	0.015***	-0.012	0.961**
	(0.006)	(0.001)	(0.002)	(0.011)	(0.017)
M_Socio	-0.059**	-0.001	-0.036***	-0.057	1.158**
	(0.029)	(0.007)	(0.013)	(0.044)	(0.068)
Urban	0.017*	0.001	-0.000	-0.007	1.023
	(0.009)	(0.002)	(0.003)	(0.014)	(0.025)
NFLD	0.007	-0.001	0.013**	0.031	0.979
	(0.017)	(0.003)	(0.006)	(0.025)	(0.050)
PEI	0.010	0.007***	0.017***	0.071***	1.044
	(0.017)	(0.002)	(0.006)	(0.025)	(0.052)
NS	-0.006	-0.002	0.005	0.013	1.120**
	(0.018)	(0.003)	(0.007)	(0.027)	(0.060)
NB	-0.050**	-0.001	0.009	-0.012	0.887**
	(0.021)	(0.003)	(0.006)	(0.030)	(0.048)
QC	-0.030**	-0.000	0.016***	-0.038*	0.954
	(0.013)	(0.002)	(0.004)	(0.020)	(0.038)
MAN	-0.026	0.000	-0.006	-0.037	0.853***
	(0.019)	(0.003)	(0.007)	(0.029)	(0.045)
SAS	-0.038*	0.003	-0.007	0.025	1.000
	(0.021)	(0.003)	(0.006)	(0.027)	(0.053)
ALB	-0.006	-0.001	-0.003	-0.007	0.925*
	(0.015)	(0.002)	(0.005)	(0.022)	(0.037)
BC	-0.019	-0.004	0.001	-0.045*	0.883***
	(0.016)	(0.003)	(0.006)	(0.024)	(0.043)
N	22969	22969	22969	18842	18796
Individuals (n)	5137	5137	5137	4849	4845
Rho	0.44	0.32	0.33	0.39	0.40
Predicted probability/ mean	0.87	0.99	0.92	0.66	

Data from the National Population Health Survey (1998 to 2010). Standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. Random effects probit with robust standard errors specification is used to estimate the probability of reporting Ex/Vg health, GMH and using medications. Random effect linear model with robust standard errors specification is used to estimate HUI3 score and random effects Poisson with robust standard errors specification is used to estimate the number of medications. Average marginal effects are reported above and for number of medications: exponentiated coefficients (incidence rate ratios) are reported above. Accessibility =1 if (UHC is due to accessibility reasons) and 0= if UHC=0. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table A2.6: The effects of UHC in the previous cycle when attributed to accessibility barriers on the probability of reporting being in excellent or very good general health for different groups- Random effects approach

Variables	Rural	Urban	Low Income	High Income	No regular family doctor	Has regular family doctor
Accessibility barriers (-1)	-0.166***	-0.092***	-0.173***	-0.083***	-0.100*	-0.100***
	(0.051)	(0.020)	(0.039)	(0.021)	(0.052)	(0.021)
Age4059	-0.042**	-0.019**	-0.058***	-0.008	-0.029*	-0.022**
	(0.021)	(0.009)	(0.018)	(0.008)	(0.017)	(0.009)
Age6079	-0.048	-0.027**	-0.043*	-0.018	-0.069	-0.026**
	(0.033)	(0.013)	(0.024)	(0.013)	(0.042)	(0.013)
Age80+	0.003	-0.070***	-0.072*	-0.068*	-0.080	-0.056**
	(0.054)	(0.026)	(0.037)	(0.036)	(0.098)	(0.025)
Female	0.055***	0.038***	0.073***	0.033***	0.026	0.043***
	(0.020)	(0.009)	(0.018)	(0.008)	(0.017)	(0.009)
Married	0.048	0.001	0.015	0.008	0.012	0.007
	(0.031)	(0.012)	(0.021)	(0.012)	(0.020)	(0.012)
WSD	0.013	-0.007	0.008	-0.008	0.026	-0.005
	(0.034)	(0.014)	(0.024)	(0.015)	(0.024)	(0.015)
Imm	-0.029	-0.049***	-0.053**	-0.051***	-0.037	-0.050***
	(0.046)	(0.015)	(0.025)	(0.017)	(0.031)	(0.016)
Sec grad	0.048**	0.021*	0.039**	0.019	0.023	0.027**
	(0.022)	(0.012)	(0.019)	(0.014)	(0.026)	(0.012)
Some Post Sec	0.071***	0.040***	0.072***	0.040***	0.028	0.047***
	(0.021)	(0.011)	(0.019)	(0.012)	(0.026)	(0.011)
Post-Sec	0.088***	0.053***	0.069***	0.057***	0.017	0.064***
	(0.025)	(0.013)	(0.019)	(0.016)	(0.027)	(0.012)
IncDec1	-0.068	-0.064***			-0.046	-0.067***
	(0.049)	(0.018)			(0.040)	(0.019)
IncDec2	-0.045	-0.066***			-0.034	-0.064***
	(0.036)	(0.016)			(0.037)	(0.016)
IncDec3	-0.041	-0.028**			-0.009	-0.037***
	(0.033)	(0.014)			(0.029)	(0.014)
IncDec4	0.006	-0.028**			-0.020	-0.023*
	(0.028)	(0.013)			(0.030)	(0.013)
IncDec5	-0.009	-0.017			-0.049	-0.013
	(0.027)	(0.011)			(0.031)	(0.011)
IncDec6	-0.026	-0.006			0.013	-0.012
	(0.027)	(0.011)			(0.022)	(0.011)
IncDec7	-0.060**	-0.007			-0.023	-0.016
	(0.028)	(0.011)			(0.029)	(0.011)
IncDec8	-0.036	0.002			0.001	-0.005
	(0.029)	(0.011)			(0.026)	(0.011)
IncDec9	-0.025	-0.008			-0.010	-0.010
	(0.030)	(0.012)			(0.031)	(0.012)
Unemployed	0.010	-0.004	-0.010	-0.015	-0.011	-0.002
	(0.035)	(0.018)	(0.031)	(0.020)	(0.037)	(0.018)
Nlabour force	-0.085***	-0.047***	-0.077***	-0.052***	-0.014	-0.056***
	(0.026)	(0.011)	(0.019)	(0.013)	(0.026)	(0.011)
Condition	-0.100***	-0.085***	-0.133***	-0.069***	-0.063***	-0.089***
	(0.016)	(0.007)	(0.013)	(0.007)	(0.016)	(0.007)
DrinkReg	0.011	0.059***	0.069**	0.070***	0.012	0.056***
	(0.038)	(0.019)	(0.027)	(0.024)	(0.049)	(0.018)
DrinkOcc	0.004	0.026	0.026	0.041**	-0.029	0.028*

	(0.039)	(0.016)	(0.027)	(0.016)	(0.056)	(0.016)
DrinkForm	-0.024	0.002	-0.022	0.027	-0.042	0.002
	(0.041)	(0.018)	(0.028)	(0.018)	(0.063)	(0.017)
SmkDaily	-0.131***	-0.049***	-0.104***	-0.044***	-0.080***	-0.061***
	(0.033)	(0.013)	(0.024)	(0.013)	(0.029)	(0.013)
SmkOcc	-0.048**	-0.027***	-0.060***	-0.020**	-0.056***	-0.026***
	(0.020)	(0.009)	(0.018)	(0.008)	(0.020)	(0.009)
Physically Active	0.096***	0.082***	0.116***	0.069***	0.060***	0.088***
	(0.016)	(0.007)	(0.014)	(0.007)	(0.014)	(0.007)
Physically M Active	0.045***	0.059***	0.087***	0.038***	0.049***	0.058***
	(0.015)	(0.006)	(0.013)	(0.006)	(0.014)	(0.006)
M_Socio	0.020	-0.074**	-0.113***	0.014	0.093***	-0.083**
	(0.061)	(0.032)	(0.035)	(0.009)	(0.015)	(0.032)
Urban			-0.019	0.019**	0.044*	0.013
			(0.019)	(0.009)	(0.025)	(0.010)
NFLD	-0.009	0.011	0.038	-0.007	0.061***	-0.007
	(0.038)	(0.017)	(0.030)	(0.019)	(0.022)	(0.018)
PEI	0.001	0.012	0.060**	-0.008	-0.007	0.009
	(0.038)	(0.018)	(0.029)	(0.019)	(0.045)	(0.018)
NS	0.027	-0.016	-0.008	-0.018	0.074***	-0.016
	(0.034)	(0.020)	(0.036)	(0.019)	(0.019)	(0.020)
NB	-0.097**	-0.034	-0.099**	-0.021	0.014	-0.055**
	(0.049)	(0.022)	(0.045)	(0.020)	(0.040)	(0.023)
QC	-0.015	-0.032**	-0.018	-0.041***	0.013	-0.039***
	(0.033)	(0.014)	(0.025)	(0.014)	(0.024)	(0.014)
MAN	-0.034	-0.025	-0.022	-0.034	-0.020	-0.020
	(0.045)	(0.020)	(0.035)	(0.022)	(0.041)	(0.020)
SAS	-0.051	-0.029	0.022	-0.059**	0.036	-0.053**
	(0.051)	(0.022)	(0.036)	(0.025)	(0.030)	(0.024)
ALB	0.012	-0.009	0.029	-0.032*	-0.006	-0.007
	(0.048)	(0.015)	(0.026)	(0.017)	(0.029)	(0.016)
BC	0.027	-0.024	0.005	-0.035**	-0.016	-0.022
	(0.042)	(0.016)	(0.027)	(0.017)	(0.037)	(0.016)
N	3922	19047	7256	15713	2649	20320
Rho	0.46	0.45	0.43	0.47	0.48	0.45
Predicted probability	0.85	0.87	0.80	0.90	0.90	0.86

Data from the National Population Health Survey (1998 to 2010). Standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. Random effects probit with robust standard errors specification is used to estimate the probability of reporting Ex./Vg health. Average marginal effects are reported above. Accessibility =1 if (UHC is due to accessibility reasons) and 0= if UHC=0. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table A2.7: The effect of reporting UHC on health outcomes- Mixed effects model

Variables	Prob. of reporting being in excellent or very good general health (GSAHS = 1)		Prob. of being in good mental health (GMH = 1)		Health utility index (HUI3) score		Prob. of using medications:		Number of medications	
	Mixed effects logit: odds ratio	Mixed effects logit: odds ratio	Mixed effects logit: odds ratio	Mixed effects logit: odds ratio	Mixed effects linear	Mixed effects linear	Mixed effects logit: odds ratio	Mixed effects logit: odds ratio	Mixed effects Poisson: IRR	Mixed effects Poisson: IRR
UHC (-1)	0.599***		0.666		-0.025***		1.329***		1.105***	
	(0.073)		(0.210)		(0.005)		(0.124)		(0.031)	
PUHC		0.624***		0.563***		-0.041***		1.410***		1.207***
		(0.051)		(0.067)		(0.005)		(0.107)		(0.032)
Age4059	0.773***	0.793***	1.586***	1.608***	-0.020***	-0.019***	1.730***	1.718***	1.451***	1.441***
	(0.048)	(0.048)	(0.148)	(0.153)	(0.003)	(0.003)	(0.094)	(0.094)	(0.038)	(0.038)
Age6079	0.728***	0.760***	4.678***	4.685***	-0.020***	-0.018***	5.274***	5.270***	2.109***	2.092***
	(0.065)	(0.067)	(0.758)	(0.778)	(0.004)	(0.004)	(0.471)	(0.473)	(0.066)	(0.066)
Age80+	0.611***	0.643***	11.018***	10.859***	-0.117***	-0.115***	9.299***	9.290***	2.706***	2.677***
	(0.089)	(0.092)	(3.952)	(3.973)	(0.007)	(0.007)	(1.781)	(1.784)	(0.116)	(0.116)
Female	1.379***	1.379***	0.675***	0.661***	0.008***	0.007**	1.703***	1.711***	1.169***	1.167***
	(0.088)	(0.086)	(0.065)	(0.066)	(0.003)	(0.003)	(0.099)	(0.100)	(0.030)	(0.030)
Married	1.036	1.064	1.705***	1.747***	0.004	0.005	0.768***	0.760***	0.904***	0.900***
	(0.087)	(0.088)	(0.201)	(0.213)	(0.004)	(0.004)	(0.059)	(0.059)	(0.031)	(0.031)
WSD	1.002	1.032	0.753**	0.775*	-0.006	-0.005	0.856	0.847*	0.909**	0.905**
	(0.104)	(0.105)	(0.108)	(0.116)	(0.005)	(0.004)	(0.084)	(0.084)	(0.037)	(0.036)
Imm	0.696***	0.694***	1.189	1.177	-0.002	-0.002	0.749***	0.755***	0.838***	0.842***
	(0.067)	(0.065)	(0.183)	(0.189)	(0.004)	(0.004)	(0.069)	(0.070)	(0.033)	(0.034)
Sec grad	1.243**	1.263***	0.812	0.840	-0.003	-0.003	1.060	1.058	1.079**	1.073**
	(0.111)	(0.112)	(0.150)	(0.159)	(0.004)	(0.004)	(0.106)	(0.106)	(0.033)	(0.032)
Some Post Sec	1.491***	1.493***	0.747	0.761	0.009**	0.009**	0.876	0.874	0.999	0.996
	(0.134)	(0.132)	(0.134)	(0.139)	(0.004)	(0.004)	(0.086)	(0.086)	(0.032)	(0.032)
Post-Sec	1.527***	1.572***	0.730*	0.777	0.002	0.004	1.083	1.067	1.108***	1.093***
	(0.126)	(0.128)	(0.123)	(0.134)	(0.004)	(0.004)	(0.099)	(0.098)	(0.034)	(0.033)
IncDec1	0.600***	0.609***	0.802	0.826	-0.034***	-0.033***	1.058	1.054	1.123***	1.111***
	(0.063)	(0.063)	(0.140)	(0.148)	(0.005)	(0.005)	(0.120)	(0.120)	(0.040)	(0.040)
IncDec2	0.616***	0.615***	1.014	1.025	-0.013***	-0.013***	0.997	0.995	1.120***	1.114***
	(0.056)	(0.056)	(0.172)	(0.177)	(0.004)	(0.004)	(0.097)	(0.097)	(0.035)	(0.035)
IncDec3	0.774***	0.775***	0.976	0.993	-0.004	-0.004	0.895	0.893	1.078**	1.075**

	(0.067)	(0.067)	(0.156)	(0.162)	(0.004)	(0.004)	(0.079)	(0.079)	(0.032)	(0.032)
IncDec4	0.815**	0.820**	0.742**	0.745**	-0.008**	-0.007*	1.134	1.133	1.066**	1.062**
	(0.067)	(0.068)	(0.107)	(0.110)	(0.004)	(0.004)	(0.094)	(0.094)	(0.030)	(0.030)
IncDec5	0.890	0.896	1.239	1.235	-0.001	-0.001	0.903	0.899	1.018	1.016
	(0.067)	(0.068)	(0.186)	(0.187)	(0.003)	(0.003)	(0.066)	(0.066)	(0.026)	(0.026)
IncDec6	0.917	0.914	1.144	1.160	0.001	0.001	0.924	0.927	0.980	0.979
	(0.068)	(0.067)	(0.163)	(0.168)	(0.003)	(0.003)	(0.066)	(0.066)	(0.023)	(0.023)
IncDec7	0.882*	0.889	1.055	1.069	-0.003	-0.002	0.962	0.963	0.986	0.986
	(0.067)	(0.067)	(0.147)	(0.152)	(0.003)	(0.003)	(0.068)	(0.069)	(0.025)	(0.024)
IncDec8	0.949	0.951	0.892	0.894	-0.001	0.001	0.947	0.948	0.991	0.989
	(0.073)	(0.073)	(0.119)	(0.121)	(0.003)	(0.003)	(0.067)	(0.067)	(0.027)	(0.027)
IncDec9	0.900	0.915	0.991	1.010	-0.004	-0.004	1.248***	1.241***	1.102***	1.096***
	(0.077)	(0.078)	(0.156)	(0.161)	(0.003)	(0.003)	(0.098)	(0.098)	(0.028)	(0.028)
Unemployed	1.006	0.996	1.100	1.100	-0.009*	-0.011**	0.939	0.944	0.967	0.972
	(0.120)	(0.119)	(0.235)	(0.238)	(0.005)	(0.005)	(0.106)	(0.107)	(0.038)	(0.038)
Nlabour force	0.665***	0.656***	0.617***	0.618***	-0.041***	-0.041***	1.602***	1.606***	1.285***	1.288***
	(0.046)	(0.045)	(0.072)	(0.074)	(0.003)	(0.003)	(0.113)	(0.114)	(0.030)	(0.029)
Condition	0.445***	0.455***	0.508***	0.526***	-0.030***	-0.028***	3.613***	3.587***	1.985***	1.971***
	(0.024)	(0.024)	(0.048)	(0.050)	(0.002)	(0.002)	(0.175)	(0.175)	(0.048)	(0.048)
DrinkReg	1.478***	1.491***	0.719	0.721	0.003	0.003	1.152	1.153	0.990	0.985
	(0.173)	(0.172)	(0.177)	(0.182)	(0.005)	(0.005)	(0.149)	(0.150)	(0.040)	(0.040)
DrinkOcc	1.194	1.191	0.706	0.705	-0.002	-0.001	1.193	1.195	1.040	1.038
	(0.144)	(0.141)	(0.179)	(0.183)	(0.005)	(0.005)	(0.159)	(0.160)	(0.042)	(0.042)
DrinkForm	0.947	0.941	0.609*	0.602*	-0.014***	-0.015***	1.415**	1.420**	1.140***	1.138***
	(0.114)	(0.112)	(0.158)	(0.160)	(0.005)	(0.005)	(0.195)	(0.197)	(0.048)	(0.048)
SmkDaily	0.630***	0.623***	0.630***	0.628***	-0.010***	-0.009**	0.758***	0.757***	0.920**	0.919**
	(0.051)	(0.050)	(0.076)	(0.079)	(0.004)	(0.004)	(0.059)	(0.059)	(0.031)	(0.031)
SmkOcc	0.780***	0.787***	0.914	0.920	-0.010***	-0.009***	0.987	0.978	1.079***	1.073***
	(0.049)	(0.049)	(0.091)	(0.096)	(0.003)	(0.003)	(0.058)	(0.058)	(0.025)	(0.024)
Physically	2.162***	2.192***	1.059	1.067	0.021***	0.022***	0.888**	0.886**	0.916***	0.914***
Active	(0.128)	(0.129)	(0.106)	(0.109)	(0.002)	(0.002)	(0.049)	(0.049)	(0.018)	(0.018)
Physically M	1.619***	1.629***	1.127	1.125	0.015***	0.015***	0.952	0.952	0.961**	0.961**
Active	(0.081)	(0.081)	(0.105)	(0.106)	(0.002)	(0.002)	(0.047)	(0.047)	(0.016)	(0.016)
M_Socio	0.510***	0.535***	0.756	0.813	-0.039***	-0.037***	0.969	0.953	1.241***	1.214***
	(0.074)	(0.079)	(0.208)	(0.228)	(0.007)	(0.007)	(0.167)	(0.166)	(0.061)	(0.061)
Urban	1.140**	1.140**	1.034	1.038	0.001	0.000	0.967	0.964	1.025	1.025
	(0.073)	(0.072)	(0.117)	(0.120)	(0.003)	(0.003)	(0.061)	(0.061)	(0.024)	(0.024)
NFLD	1.129	1.097	0.987	0.975	0.015**	0.014**	1.120	1.126	0.978	0.982
	(0.152)	(0.144)	(0.195)	(0.201)	(0.006)	(0.006)	(0.138)	(0.139)	(0.047)	(0.048)

PEI	1.062	1.049	1.942***	1.908***	0.017***	0.015***	1.351**	1.367**	1.055	1.060
	(0.143)	(0.137)	(0.459)	(0.468)	(0.006)	(0.006)	(0.170)	(0.172)	(0.051)	(0.051)
NS	0.971	0.984	0.857	0.857	0.006	0.005	1.052	1.047	1.093*	1.090
	(0.131)	(0.130)	(0.159)	(0.166)	(0.006)	(0.006)	(0.128)	(0.129)	(0.059)	(0.058)
NB	0.682***	0.699***	0.967	0.965	0.012*	0.013**	0.976	0.974	0.915	0.915
	(0.096)	(0.095)	(0.200)	(0.208)	(0.006)	(0.006)	(0.128)	(0.128)	(0.050)	(0.050)
QC	0.809**	0.808**	0.951	0.965	0.017***	0.017***	0.841**	0.835**	0.943	0.938*
	(0.076)	(0.074)	(0.130)	(0.138)	(0.004)	(0.004)	(0.073)	(0.073)	(0.035)	(0.035)
MAN	0.822	0.838	1.020	1.041	-0.003	-0.004	0.853	0.853	0.861***	0.858***
	(0.110)	(0.109)	(0.204)	(0.218)	(0.006)	(0.006)	(0.105)	(0.106)	(0.044)	(0.044)
SAS	0.784*	0.794*	1.370	1.385	-0.006	-0.004	1.103	1.100	0.995	0.993
	(0.110)	(0.109)	(0.307)	(0.324)	(0.006)	(0.006)	(0.143)	(0.143)	(0.053)	(0.052)
ALB	0.995	1.004	0.916	0.936	-0.003	-0.002	0.947	0.944	0.942	0.939
	(0.109)	(0.108)	(0.141)	(0.151)	(0.005)	(0.005)	(0.093)	(0.093)	(0.038)	(0.038)
BC	0.875	0.869	0.751*	0.754*	0.001	0.001	0.806**	0.803**	0.888***	0.885***
	(0.099)	(0.096)	(0.119)	(0.125)	(0.005)	(0.005)	(0.084)	(0.084)	(0.040)	(0.040)
N	24569	24569	24569	24569	24569	24569	20107	20107	20038	20038
Groups (n)	5221	5221	5221	5221	5221	5221	4956	4956	4953	4953

Data from the National Population Health Survey (1998 to 2010). Robust standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. For mixed effects logit model, exponentiated coefficients (odds ratio) are reported above.

Table A2.8: The effect of UHC (-1) on number of medications used: controlling for self assed health status and the presence of family doctor- Random effect Poisson.

Variables	Controlling for Health Status: irr	Controlling for the presence of family doctor: irr
UHC (-1)	**1.075*** **	**1.108*** **
	(0.030)	**(0.032)**
HG	0.732***	
	(0.026)	
Hex. /V.good	0.562***	
	(0.019)	
Family Dr.		1.307***
		(0.052)
Age4059	1.447***	1.453***
	(0.037)	(0.037)
Age6079	2.081***	2.062***
	(0.066)	(0.066)
Age80+	2.604***	2.637***
	(0.109)	(0.113)
Female	1.159***	1.117***
	(0.029)	(0.029)
Married	0.892***	0.882***
	(0.030)	(0.030)
WSD	0.898***	0.891***
	(0.035)	(0.035)
Imm	0.831***	0.844***
	(0.033)	(0.034)
Sec grad	1.088***	1.081**
	(0.033)	(0.033)
Some Post Sec	1.017	1.003
	(0.033)	(0.032)
Post-Sec	1.123***	1.115***
	(0.034)	(0.034)
IncDec1	1.080**	1.126***
	(0.039)	(0.040)
IncDec2	1.074**	1.115***
	(0.034)	(0.036)
IncDec3	1.060**	1.079**
	(0.031)	(0.033)
IncDec4	1.052*	1.065**
	(0.031)	(0.031)
IncDec5	1.014	1.020
	(0.026)	(0.026)
IncDec6	0.973	0.971
	(0.023)	(0.023)
IncDec7	0.984	0.981
	(0.024)	(0.024)
IncDec8	0.993	0.989
	(0.026)	(0.026)
IncDec9	1.094***	1.097***

	(0.027)	(0.028)
Unemployed	0.960	0.969
	(0.037)	(0.038)
Nlabour force	1.231***	1.282***
	(0.027)	(0.030)
Condition	1.910***	1.963***
	(0.053)	(0.055)
DrinkReg	1.008	0.974
	(0.040)	(0.040)
DrinkOcc	1.053	1.028
	(0.041)	(0.042)
DrinkForm	1.120***	1.127***
	(0.045)	(0.046)
SmkDaily	0.922**	0.942*
	(0.030)	(0.032)
SmkOcc	1.066***	1.088***
	(0.024)	(0.025)
Physically Active	0.954**	0.912***
	(0.019)	(0.018)
Physically M Active	0.983	0.955***
	(0.016)	(0.016)
M_Socio	1.206***	1.233***
	(0.059)	(0.060)
Urban	1.020	1.023
	(0.023)	(0.024)
NFLD	0.959	0.979
	(0.046)	(0.049)
PEI	1.038	1.033
	(0.048)	(0.050)
NS	1.083	1.100*
	(0.054)	(0.058)
NB	0.887**	0.896**
	(0.045)	(0.047)
QC	0.940*	0.974
	(0.035)	(0.037)
MAN	0.850***	0.864***
	(0.042)	(0.044)
SAS	0.973	0.997
	(0.048)	(0.052)
ALB	0.932*	0.943
	(0.036)	(0.038)
BC	0.893**	0.897**
	(0.041)	(0.042)
N	20038	20038
Individuals	4953	4953
Rho	0.37	0.37
The effect of UHC in %	7.5%	11%

Data from the National Population Health Survey (1998 to 2002). Robust standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. IRR (incidence rate ratios) = exponential (coefficients). Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table A2.9: The effect of UHC (-1) on health outcomes: controlling for the number of medications used - Random effects approach

Variables	Prob. of reporting Ex./V. good health	Prob. of reporting good mental health	HUI3 score
UHC (-1)	-0.076***	-0.012***	-0.031***
	(0.016)	(0.004)	(0.006)
Num of Med.	-0.049***	-0.003***	-0.017***
	(0.003)	(0.001)	(0.001)
Age4059	-0.017*	0.009***	-0.014***
	(0.009)	(0.002)	(0.002)
Age6079	0.011	0.018***	-0.000
	(0.013)	(0.002)	(0.005)
Age80+	0.018	0.014***	-0.083***
	(0.021)	(0.002)	(0.012)
Female	0.060***	-0.005***	0.011***
	(0.010)	(0.002)	(0.003)
Married	0.007	0.010***	0.002
	(0.013)	(0.003)	(0.004)
WSD	-0.004	-0.005	-0.008
	(0.016)	(0.003)	(0.005)
Imm	-0.069***	0.001	-0.006
	(0.018)	(0.002)	(0.005)
Sec grad	0.034***	-0.003	-0.004
	(0.013)	(0.004)	(0.006)
Some Post Sec	0.044***	-0.004	0.007
	(0.012)	(0.004)	(0.006)
Post-Sec	0.063***	-0.004	0.001
	(0.013)	(0.003)	(0.005)
IncDec1	-0.072***	-0.003	-0.036***
	(0.020)	(0.004)	(0.007)
IncDec2	-0.062***	0.001	-0.015***
	(0.017)	(0.003)	(0.006)
IncDec3	-0.040***	-0.001	-0.007
	(0.015)	(0.003)	(0.004)
IncDec4	-0.026*	-0.004	-0.009**
	(0.014)	(0.003)	(0.004)
IncDec5	-0.021*	0.004**	-0.002
	(0.012)	(0.002)	(0.003)
IncDec6	-0.005	0.003	0.001
	(0.012)	(0.002)	(0.003)
IncDec7	-0.019	0.001	-0.004
	(0.012)	(0.002)	(0.003)
IncDec8	-0.007	-0.001	-0.001
	(0.012)	(0.002)	(0.003)
IncDec9	-0.013	0.001	-0.004
	(0.013)	(0.003)	(0.004)
Unemployed	-0.013	0.001	-0.012**
	(0.019)	(0.004)	(0.006)
Nlabour force	-0.042***	-0.006**	-0.039***
	(0.011)	(0.003)	(0.004)
Condition	-0.073***	-0.006***	-0.020***
	(0.007)	(0.002)	(0.002)
DrinkReg	0.059***	-0.005	0.007
	(0.020)	(0.004)	(0.007)

DrinkOcc	0.026	-0.006	0.004
	(0.018)	(0.006)	(0.007)
DrinkForm	0.001	-0.010	-0.007
	(0.019)	(0.007)	(0.008)
SmkDaily	-0.075***	-0.009***	-0.016***
	(0.015)	(0.003)	(0.004)
SmkOcc	-0.026***	-0.000	-0.009***
	(0.010)	(0.002)	(0.003)
Physically Active	0.093***	0.001	0.022***
	(0.007)	(0.002)	(0.003)
Physically M Active	0.065***	0.001	0.017***
	(0.007)	(0.002)	(0.002)
M_Socio	-0.051*	0.002	-0.035***
	(0.030)	(0.006)	(0.012)
Urban	0.021**	0.001	0.002
	(0.011)	(0.002)	(0.003)
NFLD	0.016	-0.000	0.014**
	(0.018)	(0.003)	(0.006)
PEI	0.008	0.009***	0.018***
	(0.019)	(0.002)	(0.006)
NS	0.009	-0.002	0.009
	(0.019)	(0.003)	(0.007)
NB	-0.067***	-0.002	0.007
	(0.024)	(0.004)	(0.007)
QC	-0.034**	-0.000	0.017***
	(0.015)	(0.002)	(0.004)
MAN	-0.044**	-0.001	-0.008
	(0.022)	(0.004)	(0.007)
SAS	-0.041*	0.004	-0.007
	(0.024)	(0.003)	(0.007)
ALB	-0.008	-0.002	-0.002
	(0.017)	(0.003)	(0.006)
BC	-0.023	-0.007*	-0.003
	(0.018)	(0.004)	(0.006)
N	20038	20038	20038
Groups	4953	4953	4953
Rho	0.43	0.33	0.28
Predicted probability	0.84	0.99	0.91

Data from the National Population Health Survey (1998 to 2002). Robust standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. Average marginal effects are reported above. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Appendix 2

Using the full sample (1994- 2010)

Note: Pooled and random effects ordered probits are used when the health outcome is self-reported health status, a pooled and a random effects ptobit when the health outcome is GMH or the use of medications, and a pooled and a random effects Poisson when the outcome is the number of medications. All regressions adjusted for age, age square, gender, marital status, immigrant status, chronic condition, income, residence area (urban or rural), province, smoking, drinking, physical activity, province and year dummies.

Table A2.10: The effect of UHC (-1) on self-reported health status, HUI and GMH- Full sample - pooled and random effects approach

Variables	Fair/Poor	Good	Ex/V.Good	Ex/V.Good	HUI		GMH	
	Pooled ordered probit			Random effects ordered probit	Pooled OLS	Random effects OLS	Pooled probit	Random effects probit
UHC (-1)	0.072***	0.070***	-0.142***	-0.071***	-0.094***	-0.038***	-0.039***	-0.015***
	(0.003)	(0.003)	(0.006)	(0.007)	(0.004)	(0.003)	(0.003)	(0.002)
Age	0.004***	0.004***	-0.009***	-0.007***	0.001***	0.005***	-0.003***	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(3.71e-04)	(0.001)	(4.41e-04)	(3.31e-04)
Age Sq	-3.62e-05***	-3.52e-05***	7.14e-05***	0.000**	-1.68e-05***	-5.91e-05***	4.87e-05***	2.82e-05***
	(3.34e-06)	(3.24e-06)	(6.56e-06)	(0.000)	(3.80e-06)	(5.26e-06)	(4.41e-06)	(3.37e-06)
Female	-0.024***	-0.024***	0.048***	0.039***	0.008***	-0.002	-0.020***	-0.014***
	(0.002)	(0.002)	(0.004)	(0.008)	(0.002)	(0.003)	(0.002)	(0.002)
Married	-0.016***	-0.015***	0.031***	0.031***	0.011***	0.010***	0.022***	0.013***
	(0.003)	(0.003)	(0.005)	(0.010)	(0.002)	(0.003)	(0.003)	(0.002)
WSD	-0.002	-0.002	0.005	0.005	-0.016***	-0.012***	-0.008***	-0.005**
	(0.003)	(0.003)	(0.006)	(0.011)	(0.003)	(0.004)	(0.003)	(0.002)
Imm	0.016***	0.015***	-0.031***	-0.038***	-0.000	-0.001	0.007**	0.005*
	(0.003)	(0.003)	(0.005)	(0.012)	(0.003)	(0.005)	(0.003)	(0.003)
Sec grad	-0.022***	-0.021***	0.044***	0.028***	0.009***	0.004	-0.008**	-0.003
	(0.003)	(0.003)	(0.006)	(0.009)	(0.003)	(0.004)	(0.003)	(0.002)
Some Post Sec	-0.030***	-0.030***	0.060***	0.051***	0.007**	0.009**	-0.009***	-0.004*
	(0.003)	(0.003)	(0.006)	(0.009)	(0.003)	(0.004)	(0.003)	(0.002)
Post-Sec	-0.041***	-0.040***	0.081***	0.072***	0.014***	0.015***	-0.011***	-0.004
	(0.003)	(0.003)	(0.005)	(0.008)	(0.003)	(0.004)	(0.003)	(0.002)
IncDec1	0.078***	0.076***	-0.154***	-0.132***	-0.060***	-0.039***	-0.020***	-0.012***
	(0.004)	(0.004)	(0.008)	(0.011)	(0.004)	(0.004)	(0.004)	(0.003)

IncDec2	0.054***	0.053***	-0.107***	-0.099***	-0.026***	-0.017***	-0.008*	-0.005**
	(0.004)	(0.004)	(0.007)	(0.010)	(0.004)	(0.004)	(0.004)	(0.003)
IncDec3	0.039***	0.038***	-0.078***	-0.063***	-0.008**	-0.006*	-0.010***	-0.006**
	(0.004)	(0.004)	(0.007)	(0.010)	(0.003)	(0.003)	(0.004)	(0.003)
IncDec4	0.029***	0.028***	-0.057***	-0.037***	-0.005	-0.002	-0.010**	-0.006**
	(0.004)	(0.004)	(0.007)	(0.010)	(0.003)	(0.003)	(0.004)	(0.003)
IncDec5	0.021***	0.020***	-0.041***	-0.033***	-0.003	0.000	-0.006	-0.003
	(0.004)	(0.004)	(0.007)	(0.010)	(0.003)	(0.003)	(0.004)	(0.003)
IncDec6	0.021***	0.020***	-0.041***	-0.028***	-0.001	0.000	0.000	0.001
	(0.004)	(0.004)	(0.007)	(0.010)	(0.003)	(0.003)	(0.004)	(0.003)
IncDec7	0.015***	0.014***	-0.029***	-0.021**	0.000	-0.000	-0.002	-0.001
	(0.004)	(0.004)	(0.007)	(0.009)	(0.003)	(0.003)	(0.004)	(0.003)
IncDec8	0.011***	0.011***	-0.021***	-0.014	-0.001	0.000	-0.002	-0.001
	(0.004)	(0.004)	(0.007)	(0.009)	(0.003)	(0.002)	(0.004)	(0.003)
IncDec9	-0.005	-0.005	0.010	0.008	0.003	0.000	0.000	-0.001
	(0.004)	(0.003)	(0.007)	(0.009)	(0.002)	(0.002)	(0.004)	(0.002)
Inc Missing	0.039***	0.038***	-0.076***	-0.064***	-0.018***	-0.014***	0.001	0.001
	(0.004)	(0.004)	(0.007)	(0.009)	(0.003)	(0.003)	(0.004)	(0.003)
Unemployed	0.021***	0.020***	-0.041***	-0.033***	-0.016***	-0.013***	-0.016***	-0.010***
	(0.005)	(0.004)	(0.009)	(0.011)	(0.004)	(0.004)	(0.004)	(0.003)
Nlabour force	0.064***	0.063***	-0.127***	-0.116***	-0.072***	-0.042***	-0.027***	-0.016***
	(0.003)	(0.002)	(0.005)	(0.007)	(0.003)	(0.003)	(0.002)	(0.002)
Condition	0.101***	0.098***	-0.199***	-0.176***	-0.061***	-0.033***	-0.035***	-0.018***
	(0.002)	(0.002)	(0.004)	(0.006)	(0.001)	(0.002)	(0.002)	(0.002)
DrinkReg	-0.036***	-0.035***	0.071***	0.097***	0.029***	0.026***	-0.002	-0.001
	(0.004)	(0.004)	(0.007)	(0.011)	(0.004)	(0.005)	(0.004)	(0.003)
DrinkOcc	-0.012***	-0.012***	0.024***	0.055***	0.011**	0.011**	-0.007	-0.004
	(0.004)	(0.004)	(0.008)	(0.011)	(0.004)	(0.005)	(0.005)	(0.003)
DrinkForm	0.015***	0.015***	-0.030***	-0.007	-0.018***	-0.007	-0.014***	-0.006**
	(0.004)	(0.004)	(0.008)	(0.011)	(0.005)	(0.005)	(0.005)	(0.003)
SmkDaily	0.051***	0.050***	-0.101***	-0.115***	-0.033***	-0.028***	-0.026***	-0.017***
	(0.002)	(0.002)	(0.005)	(0.009)	(0.002)	(0.003)	(0.002)	(0.002)
SmkOcc	0.022***	0.021***	-0.043***	-0.062***	-0.017***	-0.020***	-0.005**	-0.004**
	(0.002)	(0.002)	(0.004)	(0.007)	(0.002)	(0.002)	(0.002)	(0.002)
Physically Active	-0.079***	-0.077***	0.156***	0.138***	0.053***	0.033***	0.010***	0.005***
	(0.002)	(0.002)	(0.004)	(0.006)	(0.002)	(0.002)	(0.002)	(0.002)
Physically M	-0.050***	-0.048***	0.098***	0.084***	0.045***	0.025***	0.013***	0.007***
Active	(0.002)	(0.002)	(0.004)	(0.005)	(0.002)	(0.002)	(0.002)	(0.001)
Urban	-0.005**	-0.004**	0.009**	0.011*	-0.001	0.001	-0.001	0.000
	(0.002)	(0.002)	(0.004)	(0.006)	(0.002)	(0.002)	(0.002)	(0.002)

NFLD	-0.038***	-0.037***	0.076***	0.076***	0.028***	0.026***	0.013***	0.008**
	(0.004)	(0.004)	(0.009)	(0.018)	(0.004)	(0.006)	(0.004)	(0.004)
PEI	-0.015***	-0.015***	0.030***	0.012	0.015***	0.012**	0.027***	0.017***
	(0.004)	(0.004)	(0.008)	(0.018)	(0.004)	(0.006)	(0.005)	(0.004)
NS	0.002	0.002	-0.005	-0.021	-0.003	-0.004	-0.001	0.001
	(0.004)	(0.004)	(0.007)	(0.017)	(0.004)	(0.007)	(0.004)	(0.003)
NB	0.024***	0.023***	-0.046***	-0.073***	0.006*	0.007	0.002	0.001
	(0.004)	(0.004)	(0.007)	(0.016)	(0.004)	(0.006)	(0.004)	(0.003)
QC	-0.002	-0.002	0.005	-0.011	0.030***	0.028***	0.002	0.002
	(0.003)	(0.003)	(0.005)	(0.011)	(0.002)	(0.004)	(0.003)	(0.002)
MAN	0.011***	0.011***	-0.021***	-0.044***	-0.003	-0.002	-0.001	0.003
	(0.004)	(0.003)	(0.007)	(0.016)	(0.004)	(0.006)	(0.004)	(0.003)
SAS	0.018***	0.018***	-0.036***	-0.050***	-0.002	-0.001	0.002	0.002
	(0.004)	(0.004)	(0.007)	(0.015)	(0.004)	(0.006)	(0.004)	(0.003)
ALB	0.004	0.003	-0.007	-0.013	-0.001	-0.005	-0.002	-0.001
	(0.003)	(0.003)	(0.006)	(0.013)	(0.003)	(0.005)	(0.003)	(0.003)
BC	0.016***	0.016***	-0.032***	-0.034**	-0.011***	-0.006	-0.013***	-0.008***
	(0.003)	(0.003)	(0.006)	(0.014)	(0.003)	(0.005)	(0.003)	(0.003)
Year: 1998/99	0.002	0.002	-0.004	-0.003	-0.006**	-0.007***	-0.001	-0.001
	(0.003)	(0.003)	(0.006)	(0.007)	(0.003)	(0.002)	(0.003)	(0.002)
Year: 2000/01	0.021***	0.022***	-0.042***	-0.057***	-0.004*	-0.006***	-0.010***	-0.006***
	(0.003)	(0.003)	(0.006)	(0.007)	(0.003)	(0.002)	(0.003)	(0.002)
Year: 2002/03	0.026***	0.027***	-0.053***	-0.076***	-0.015***	-0.019***	-0.009**	-0.005***
	(0.003)	(0.003)	(0.006)	(0.007)	(0.003)	(0.002)	(0.003)	(0.002)
Year: 2004/05	0.022***	0.023***	-0.045***	-0.067***	-0.020***	-0.026***	-0.012***	-0.008***
	(0.003)	(0.003)	(0.007)	(0.008)	(0.003)	(0.003)	(0.003)	(0.002)
Year: 2006/07	0.026***	0.027***	-0.053***	-0.078***	-0.028***	-0.034***	-0.006*	-0.005**
	(0.003)	(0.003)	(0.007)	(0.008)	(0.003)	(0.003)	(0.004)	(0.002)
Year: 2008/09	0.020***	0.021***	-0.041***	-0.065***	-0.039***	-0.046***	-0.009**	-0.006***
	(0.003)	(0.003)	(0.007)	(0.008)	(0.003)	(0.003)	(0.004)	(0.002)
Year: 2010/11	0.029***	0.029***	-0.058***	-0.083***	-0.042***	-0.046***	-0.007*	-0.005**
	(0.003)	(0.003)	(0.007)	(0.009)	(0.003)	(0.003)	(0.004)	(0.002)
N	62178	62178	62178	62178	62178	62178	62178	62178

Data from the National Population Health Survey (1994 to 2010). Robust standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. The sample is restricted to those 18 and older in the first cycle, no missing information on health outcomes and UHC. Average marginal effects are reported above.

Table A2.11: The effect of UHC (-1) on medication use-Full sample - pooled and random effects approach				
Variables	**Prob. of using medication in the last month**		**Total number of medications used**	
	Pooled probit	**Random effects probit**	**Pooled Poisson**	**Random effects Poisson**
UHC (-1)	0.032***	0.019***	1.203***	1.072***
	(0.006)	(0.005)	(0.020)	(0.015)
Age	-0.003***	-0.001	1.058***	1.034***
	(0.001)	(0.001)	(0.002)	(0.003)
Age Sq	3.57e-05***	1.79e-05***	1.000***	1.000***
	(5.61e-06)	(6.30e-06)	(1.72e-05)	(2.69e-05)
Female	0.090***	0.087***	1.098***	1.188***
	(0.003)	(0.004)	(0.011)	(0.021)
Married	0.014***	0.007	0.898***	0.879***
	(0.004)	(0.005)	(0.014)	(0.020)
WSD	0.003	0.000	0.927***	0.878***
	(0.005)	(0.006)	(0.016)	(0.023)
Imm	-0.040***	-0.037***	0.836***	0.837***
	(0.004)	(0.006)	(0.012)	(0.021)
Sec grad	0.003	-0.002	1.009	1.008
	(0.005)	(0.005)	(0.016)	(0.015)
Some Post Sec	0.014***	0.007	1.055***	1.030*
	(0.005)	(0.005)	(0.016)	(0.016)
Post-Sec	0.011**	0.006	1.032**	0.998
	(0.005)	(0.005)	(0.014)	(0.015)
IncDec1	-0.024***	-0.012*	1.076***	1.048**
	(0.007)	(0.006)	(0.024)	(0.023)
IncDec2	-0.014**	-0.003	1.000	1.029
	(0.006)	(0.006)	(0.021)	(0.021)
IncDec3	-0.025***	-0.013**	0.975	0.990
	(0.006)	(0.006)	(0.020)	(0.019)
IncDec4	-0.015***	-0.006	0.976	0.994
	(0.006)	(0.006)	(0.020)	(0.019)
IncDec5	-0.009	-0.003	0.994	0.997
	(0.006)	(0.006)	(0.021)	(0.019)
IncDec6	-0.004	-0.002	0.964*	0.978
	(0.006)	(0.005)	(0.020)	(0.018)
IncDec7	-0.004	-0.000	0.940***	0.962**
	(0.006)	(0.005)	(0.019)	(0.017)
IncDec8	-0.002	-0.001	0.971	0.977
	(0.006)	(0.005)	(0.020)	(0.017)
IncDec9	-0.000	0.002	0.992	1.009
	(0.005)	(0.005)	(0.020)	(0.016)
Inc Missing	-0.038***	-0.023***	0.956**	0.989
	(0.006)	(0.005)	(0.020)	(0.019)
Unemployed	0.001	0.003	1.036	1.026
	(0.007)	(0.007)	(0.028)	(0.023)
Nlabour force	0.021***	0.016***	1.436***	1.230***
	(0.004)	(0.004)	(0.020)	(0.019)
Condition	0.149***	0.103***	2.508***	1.897***
	(0.003)	(0.003)	(0.037)	(0.041)

DrinkReg	0.044***	0.035***	0.893***	0.925***
	(0.006)	(0.006)	(0.018)	(0.019)
DrinkOcc	0.041***	0.033***	1.008	1.007
	(0.006)	(0.007)	(0.020)	(0.020)
DrinkForm	0.032***	0.024***	1.096***	1.053***
	(0.007)	(0.007)	(0.022)	(0.020)
SmkDaily	0.004	0.005	1.050***	1.022
	(0.004)	(0.005)	(0.015)	(0.021)
SmkOcc	0.026***	0.022***	1.116***	1.093***
	(0.003)	(0.004)	(0.011)	(0.016)
Physically Active	-0.023***	-0.009***	0.803***	0.911***
	(0.003)	(0.003)	(0.010)	(0.012)
Physically M Active	-0.007**	-0.003	0.868***	0.946***
	(0.003)	(0.003)	(0.009)	(0.009)
Urban	0.009**	0.003	1.047***	1.016
	(0.003)	(0.004)	(0.012)	(0.013)
NFLD	-0.004	-0.008	0.860***	0.901***
	(0.006)	(0.008)	(0.017)	(0.031)
PEI	-0.007	-0.010	0.950**	0.966
	(0.006)	(0.008)	(0.019)	(0.033)
NS	0.022***	0.017**	0.995	1.000
	(0.006)	(0.008)	(0.018)	(0.032)
NB	-0.021***	-0.021***	0.953**	1.008
	(0.006)	(0.008)	(0.018)	(0.036)
QC	-0.023***	-0.026***	0.921***	0.910***
	(0.004)	(0.005)	(0.014)	(0.023)
MAN	0.010	0.007	0.883***	0.876***
	(0.006)	(0.008)	(0.017)	(0.030)
SAS	-0.017***	-0.019**	0.889***	0.920**
	(0.006)	(0.008)	(0.017)	(0.030)
ALB	0.003	0.001	0.902***	0.914***
	(0.005)	(0.007)	(0.015)	(0.025)
BC	-0.015***	-0.008	0.880***	0.874***
	(0.005)	(0.007)	(0.015)	(0.026)
Year: 1998/99	-0.002	0.001	1.045**	1.054***
	(0.005)	(0.004)	(0.019)	(0.013)
Year: 2000/01	0.020***	0.022***	1.175***	1.184***
	(0.005)	(0.004)	(0.021)	(0.016)
Year: 2002/03	0.024***	0.025***	1.245***	1.263***
	(0.005)	(0.004)	(0.021)	(0.017)
Year: 2004/05	0.026***	0.027***	1.297***	1.313***
	(0.005)	(0.004)	(0.023)	(0.019)
Year: 2006/07	0.033***	0.032***	1.392***	1.409***
	(0.005)	(0.005)	(0.025)	(0.021)
Year: 2008/09	0.035***	0.035***	1.454***	1.474***
	(0.005)	(0.005)	(0.026)	(0.022)
Year: 2010/11	-0.099***	-0.098***	1.643***	1.612***
	(0.007)	(0.007)	(0.031)	(0.027)
N	62178	62178	52500	52500

Data from the National Population Health Survey (1994 to 2010). Robust standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. The sample is restricted to those 18 and older in the first cycle, no missing information on health outcomes and UHC. Exponentiated coefficients are reported in the last two columns.

Table A2.12: The effect of UHC (-1) on health outcomes for the full sample parsed by gender - pooled and random effects approach

	Females		Males	
Health outcome	**Pooled ordered probit**	**Random effects ordered probit**	**Pooled ordered probit**	**Random effects ordered probit**
Health status:				
Ex/V.Good	-0.146***	-0.066***	-0.133***	-0.077***
Good	0.067***	0.045***	0.071***	0.055***
Fair/Poor	0.079***	0.021***	0.061***	0.022***
Rho		0.53		0.48
N	35,678	35,678	26,500	26,500
	Pooled probit	**Random effects probit**	**Pooled probit**	**Random effects probit**
GMH	-0.046***	-0.019***	-0.029***	-0.009***
Rho		0.37		0.40
	35,678	35,678	26,500	26,500
	Pooled OLS	**Random effects OLS**	**Pooled OLS**	**Random effects OLS**
HUI	-0.095***	-0.037***	-0.071***	-0.039***
Rho		0.42		0.43
	35,678	35,678	26,500	26,500
	Pooled probit	**Random effects probit**	**Pooled probit**	**Random effects probit**
Has Med	0.019***	0.008	0.052***	0.039***
Rho		0.41		0.42
N	35,678	35,678	26,500	26,500
	Pooled Poisson	**Random effects Poisson**	**Pooled Poisson**	**Random effects Poisson**
Num MED	1.220***	1.069***	1.174***	1.072***
Rho		0.39		0.49
N	31,881	31,881	20,169	20,169

Data from the National Population Health Survey (1994 to 2010). Robust standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. The sample is restricted to those 18 and older in the first cycle, no missing information on health outcomes and UHC. All regressions adjusted for age, age square, gender, marital status, immigrant status, chronic condition, income, residence area (urban or rural), province, smoking, drinking, physical activity, province and year dummies. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table A2.13: The effect of UHC in the previous cycle when attributed to accessibility barriers, on the probability of reporting being in excellent or very good general health for the full sample and different groups- a random effects ordered probit

	All	Rural	Urban	Low Income	High Income	No regular family doctor	Has regular family doctor
Accessibility barriers (-1)	**-0.072*** **	**-0.092*** **	**-0.076*** **	**-0.105*** **	**-0.080*** **	**-0.110*** **	**-0.075*** **
N	61,312	12,578	48,734	24,266	37,046	6,563	54,749
Rho	0.51	0.50	0.51	0.50	0.52	0.50	0.50
Predicted probability	0.59	0.57	0.59	0.46	0.66	0.61	0.59

Data from the National Population Health Survey (1994 to 2010). Robust standard errors are in parentheses. * indicates significant at 10% level. ** at 5% level. *** at 1% level. The sample is restricted to those 18 and older in the first cycle, no missing information on health outcomes and UHC. All regressions adjusted for age, age square, gender, marital status, immigrant status, chronic condition, income, residence area (urban or rural), province, smoking, drinking, physical activity, province and year dummies. Accessibility =1 if (UHC is due to accessibility reasons) and 0= if UHC=0. Average marginal effects are reported above. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate

Table A2.14: Descriptive statistics for the entire sample at the base year (1994)

Variable	All Persons at 1994	Observed in less than 8 cycles after the base year	Observed in all cycles after the base year
Age	43.96	45.34	41.09
Female	0.528	0.519	0.546
Male	0.472	0.481	0.454
Married	0.658	0.618	0.740
WSD	0.141	0.161	0.098
Single	0.201	0.221	0.162
imm	0.191	0.214	0.142
Canadian born	0.809	0.786	0.858
Less than Sec	0.136	0.170	0.066
Sec	0.110	0.117	0.097
Some Post Sec	0.270	0.276	0.256
Post-Sec	0.484	0.437	0.581
IncDec1	0.090	0.109	0.051
IncDec2	0.095	0.109	0.065
IncDec3	0.092	0.108	0.061
IncDec4	0.096	0.105	0.078
IncDec5	0.093	0.092	0.096
IncDec6	0.097	0.091	0.110
IncDec7	0.098	0.089	0.117
IncDec8	0.099	0.094	0.109
IncDec9	0.104	0.086	0.141
Inc Missing	0.040	0.042	0.036
Employed	0.619	0.557	0.749
Unemployed	0.049	0.054	0.037
Nlabour force	0.332	0.389	0.214
Condition	0.566	0.578	0.542
DrinkReg	0.598	0.571	0.655
DrinkOcc	0.199	0.196	0.205
DrinkForm	0.125	0.140	0.093
DrinkNever	0.078	0.093	0.047
SmkDaily	0.264	0.286	0.217
SmkOcc	0.361	0.355	0.376
SmkNever	0.375	0.359	0.407
Physically Active	0.171	0.174	0.165
Physically M Active	0.219	0.210	0.239
Physical Inactive	0.610	0.616	0.596
urban	0.745	0.754	0.725
NFLD	0.019	0.019	0.021
PEI	0.005	0.004	0.005
NS	0.032	0.029	0.038
NB	0.026	0.026	0.026
QC	0.257	0.245	0.282
MAN	0.038	0.039	0.035

SAS	0.032	0.032	0.034
ALB	0.092	0.089	0.099
BC	0.125	0.132	0.109
ON	0.374	0.385	0.351
HEXG	0.621	0.576	0.714
HG	0.271	0.292	0.227
HFP	0.108	0.132	0.059
GMH	0.932	0.929	0.939
HUI	0.860	0.843	0.895
Individuals	11,178	7,323	3,855

The table above shows descriptive statistics for the entire sample at the base year (1994), as well as disaggregated for two different subsamples: the sample of those observed in all eight subsequent cycles after the base cycle, and the sample of those who are observed later but in fewer than eight cycles after the base cycle

Comparison between the first three columns shows that the sample of those who are observed in all the subsequent eight cycles contains marginally more younger individuals, who are married, have college or university degree and high household income. Individuals observed in every cycle are also somewhat more likely than the population as a whole to be females, Canadian born, and to be initially in very good or excellent health and have high HUI scores.

Table A2.15: Summary statistics-for total sample and subgroups by UHC (1994-2010)

Variable	All Persons	UHC=0	UHC=1
Age	50.47	50.71	47.80
Female	0.535	0.531	0.589
Male	0.465	0.469	0.411
Married	0.699	0.704	0.639
WSD	0.174	0.170	0.216
Single	0.127	0.126	0.145
imm	0.168	0.172	0.127
Canadian born	0.832	0.828	0.873
Less than Sec	0.127	0.129	0.112
Sec	0.143	0.145	0.126
Some Post Sec	0.194	0.192	0.209
Post-Sec	0.536	0.534	0.553
IncDec1	0.076	0.072	0.122
IncDec2	0.088	0.087	0.095
IncDec3	0.088	0.0884	0.092
IncDec4	0.091	0.092	0.088
IncDec5	0.092	0.093	0.083
IncDec6	0.095	0.096	0.088
IncDec7	0.095	0.095	0.093
IncDec8	0.098	0.099	0.085
IncDec9	0.101	0.101	0.095
Inc Missing	0.084	0.085	0.075
Employed	0.652	0.652	0.652
Unemployed	0.031	0.029	0.046
Nlabour force	0.317	0.319	0.302
Condition	0.710	0.698	0.846
DrinkReg	0.638	0.638	0.636
DrinkOcc	0.183	0.181	0.198
DrinkForm	0.124	0.124	0.126
DrinkNever	0.055	0.057	0.040
SmkDaily	0.195	0.191	0.240
SmkOcc	0.468	0.467	0.477
SmkNever	0.337	0.342	0.283
Physically Active	0.217	0.216	0.219
Physically M Active	0.266	0.269	0.240
Physical Inactive	0.517	0.515	0.541
urban	0.841	0.840	0.852
NFLD	0.019	0.019	0.015
PEI	0.005	0.005	0.006
NS	0.034	0.033	0.036
NB	0.026	0.026	0.026
QC	0.261	0.260	0.282
MAN	0.035	0.035	0.041
SAS	0.033	0.033	0.031
ALB	0.100	0.099	0.106

BC	0.120	0.119	0.134
ON	0.366	0.371	0.323
HEXG	0.592	0.610	0.396
HG	0.303	0.297	0.372
HFP	0.105	0.093	0.232
GMH	0.946	0.955	0.844
HUI	0.877	0.886	0.768
RegMD	0.891	0.895	0.850
Observations	62,178	56,999	5,179

The above table presents some descriptive statistics for the whole sample and by UHC subsamples. It shows a comparison of demographic, socioeconomic, health status, chronic condition and lifestyle indicators between these sub-groups of Canadian aged 18 and above. The descriptive statistics reveal that females are more likely to have UHC than males. Individuals with UHC are younger on average than individuals with no UHC; married people are less likely to report UHC than not, and so too are immigrants. There is a little higher risk of UHC among lower income groups compared to higher income ones. The increase in reporting UHC for individuals with poorer health status is noteworthy (23% vs. 9% for individuals with no UHC).

Chapter Three: Social Capital and Access to a Regular Family Doctor: Evidence from the Canadian NPHS

3.1 Introduction[32]

For many Canadians, the first point of contact with the health care system is their family doctor. Much of the evidence indicates that having a regular care provider (such as a family doctor) improves the quality of care received (Tsai et al., 2010) and results in improved health status (Gulliford, 2002; Gravelle et al., 2007). In contrast, lack of access to a regular medical doctor has been shown to be associated with difficulties in accessing routine care (Sanmartin et al., 2006), and decreased use of health care services (Laporte et al., 2008). Moreover, those without regular doctors are less likely to use preventive services, such as blood pressure checks (McIsaac et al. 2001), which is of concern as the use of these preventive services can result in significant reductions in overall health care spending (Deri, 2005).

It may therefore be of concern that a significant proportion of Canadians do not have a regular family doctor. For instance, in 2014, approximately 15 percent of the Canadian population aged 12 years and older, representing 4.5 million individuals, reported that they did not have a regular family doctor. Those aged 20 to 34 are the least likely to report having a regular family

[32] The analysis presented in this chapter was conducted at the COOL RDC which is part of the Canadian Research Data Centre Network (CRDCN). The services and activities provided by the COOL RDC are made possible by the financial or in-kind support of the SSHRC - Social Sciences and Humanities. Research Council of Canada, the CIHR - Canadian Institutes of Health Research, the CFI - Canada Foundation for Innovation, Statistics Canada, Carleton University, the University of Ottawa and the Université du Québec en Outaouais. The views expressed in this chapter do not necessarily represent the CRDCN's or that of its partners.

doctor, whereas those aged 65 and older are the most likely to indicate that they have a regular care provider (Statistics Canada, 2014). Because of the well-established link between primary care and health, understanding the determinants of access to, and use of, a regular family doctor is important.

According to Anderson's (1995) health behaviour model, the determinants of access to health care can be organized into three main categories: pre-disposing factors, enabling factors, and need. Pre-disposing factors include determinants such as the individual's age, gender, and their beliefs about the benefits of using health care. Enabling factors include the availability of services, income, and transportation. Finally, need factors - which are considered to be the most important determinant of access to health care - include health status and health needs. The literature on access to health care has traditionally focused on pre-disposing and need factors, although considerable attention has been paid to the role of socio-economic status as an enabling factor (e.g., Van Doorslaer et al., 2006).

Social capital is also thought to be an enabling factor that may facilitate or hinder health care utilization. Despite a large and ever-growing literature which points to the importance of social capital for many different sorts of outcomes, there is a little consensus around either how it should be defined or how it should be measured (Durlauf, 2002; Kawachi and Kim, 2007). However, social capital can be measured either at the community level or at the individual level. To measure social capital at the community level, researchers have used the Petris Social Capital Index (PSCI), which measures employment per capita in a range of community and social services organizations. At the individual level, social capital has been measured in terms of the number or presence of relatives and friends (Rose, 2000), family structure (Putnam, 2000; Folland, 2006), membership in formal or informal groups (Rose, 2000) and trust (Barefoot et al., 1998; Veenstra,

2000). Much evidence exists on the effect of social capital on physical and mental health (e.g., Kawachi et al., 1999; Hawe and Schiell, 2000; Subramanian et al., 2002); as suggested by Scheffler (2008), one of the mechanisms through which social capital affects health is through health care utilization. In the context of access to health care, it has been shown that individual social capital in the form of family, friends and community may improve knowledge about available health care, increase awareness that treatment is needed, facilitate transportation to health care facility, enhance information about health care, and be a source of financial and other resources to the individual (Deri, 2005; Laporte et al., 2008).

The literature specifically examining the link between social capital and access to health care is relatively limited and largely focused on specific populations such as immigrants (e.g., Devillanova, 2008), or those with chronic conditions (Ramaswamy et al., 2013). Most of this literature relies on cross sectional data and standard models that estimate the relationship between social capital and access to health care based on observed characteristics. However, access to health care may also depend on unobserved characteristics such as preferences and attitudes with respect to health care, time preferences and the opportunity cost of time that are not well captured by standard survey questions.

Devlin and Rudolph-Zbarsky (2014) examine the relationship between social support and one important aspect of health care access, the presence of a regular family doctor, using a cross - section data set from five cycles of the Canadian Community Health Survey. Their results show a positive link between social support and having a regular family doctor. However, the use of cross sectional data makes it difficult to establish causality. There have been calls for more studies using longitudinal data to provide more conclusive evidence about the impact of social capital and

other inputs of the demand for medical care on access to health care (e.g., Laporte et al., 2008; Samek et al., 2012; Devlin and Rudolph-Zbarsky, 2014).

This chapter is the first to study the relationship between social capital and other factors on access to a regular family doctor using a large scale longitudinal data set (National Population Health Survey (NPHS)). In addition to observed individual characteristics, such as health status, the panel data set allows for control of individual time-invariant unobserved effects, which may be due to personal preferences, or to differences in individual preferences and attitudes towards health care. Access to a regular family doctor is modeled using a dynamic model, which makes it possible to explore whether past access status to a family doctor is an important predictor of current access. In particular, I use two dynamic random effects probit models which control for unobserved heterogeneity, but differ in the way in which the initial conditions are handled: the first approach assumes the exogeneity of the initial conditions and the second approach (Wooldridge model) deals with possible endogeneity of the initial conditions. In addition, the analysis in this chapter uses lagged measures of social support in order to control for possible reverse causality that is, access to a regular family doctor might cause individuals to have more social support. Using lagged social capital also allows me to account for the possibility that social capital may affect access to health care only with delay.

I find robust evidence of a highly statistically significant link between social capital and the likelihood of having a regular family doctor. Although the marginal effects are modest in magnitude, there is clear evidence that individuals with high level of social capital are more likely to have a regular family doctor. A relationship that is observed for all model specifications. The results also show that past access to a family doctor is an important determinant of current and future access, unobserved heterogeneity explains about 25% of the variation in access to a family

doctor; this unobserved heterogeneity is significantly correlated with access to a family doctor over time. Further analysis by sub-groups reveals stronger effects of social capital for those individuals who lacked access to a family doctor in the previous period as compared to those who already had one, for males as compared to females, and for younger adults as compared to older adults.

The remainder of the chapter is organized as follows. The next section reviews the relevant literature. Section 3 describes the methodology. The data and the variables used in my analysis are described in section 4. Results are described in section 5 as well as several robustness checks. Brief conclusions follow in section 7.

3.2 Related literature

There is an extensive literature studying the determinants of health care utilization. However, only a small number of studies examine the possibility that social capital may impact the decision to seek out health care. Below I first briefly discuss the literature on health care utilization before reviewing the work that has been done on social capital and access to health care.

3.2.1 Heath care utilization

Within the context of Anderson's model (1995), a number of studies have found that a variety of predisposing, enabling and need factors are important predictors of individual health care utilization. For example, females have been found to use medical care more frequent than males (e.g., Bertakis et al., 2000), and individuals with long work hours (more than 45 hours/week) have been found to make fewer visits to general practitioners (GP) as compared to full time workers (Fell et al., 2006).

The impact of socio-economic status on the use of publicly-insured health care was examined by Dunlop et al. (2000) using data from the 1994 cycle of the National Population health

survey (NPHS). They find that individuals with lower household income are more likely to be frequent users of primary health care physicians as compared to those with high household income. However, individuals with lower income and fewer years of schooling make fewer visits to specialists as compared to those with moderate or high incomes and higher levels of education. Their results also show that being married, divorced, widowed or living in a common-law relation increases health care utilization.

There is a well-established body of evidence that suggests that having a regular family physician is an important determinant of access to health care services (Dunlop et al., 2000; Sanmartin et al., 2004). It is associated with more use of preventive care (Lambrew et al., 1996; McIssac et al., 2001; Morales et., 2004) and fewer emergency visits (Orr et al., 1991). Individuals without a regular family doctor may access walk-in clinics for health care, despite the lack of quality and continuing care (Freeman et al., 2013). One strategy to improve access, and mitigate the rising costs in health care, is by promoting affiliation with a regular family doctor. Social capital may be a factor in enabling individuals to find a regular doctor.

3.2.2 Social capital and health care utilization

Social capital is a broad notion. Although there is no single widely accepted definition, it can be thought of as a resource created as a result of interactions between individuals that can be used to better achieve common goals (Kawachi et al., 1999). The importance of social capital in shaping individual's behaviour has been long emphasized by sociologists (for example, Bourdieu, 1986; Portes and Sensenbrenne, 1993; Portes, 1995; Menjivar, 2000; Enchautegui, 2002). Insights from the sociological literature on social capital have been applied by economists to areas of research such as donations of time and money (Apinunmahakul and Devlin, 2008), unemployment (Topa, 2001), social assistance participation (Bertrand et al., 2000; Aizer and Currie, 2004), job

search (Ioannides and Loury, 2004) and health care utilization decisions (Deri, 2005). Social capital is thought to affect health care utilization decisions through two main channels: by providing information on, for instance, the availability of services, their location, eligibility conditions (the "information" channel) and by creating a peer effect that can alter the demand for services (the "norm" channel) (Deri, 2005; Miltiades and Wu, 2008; Devillanova; 2008; Laporte et al., 2008).

Deri (2005) is the first to examine the effect of social networks on health care utilization decisions. Using data from three cycles from the Canadian National Population Health Survey (1994, 1996 and 1998), Deri (2005) focuses on networks based on a common language other than English or French. In order to measure the strength of individual's network, she constructs a variable that captures characteristics that affect both the quantity and quality of an individual's network. The quantity characteristic is measured by the number of people in the local area who speak the same language: the more people in a given geographical area who speak the same language as the individual being observed, the more potential contacts that individual has. The quality measure is defined as the average utilization of the health care system by members of the individual's language group: individuals who belong to language groups which make, on average, heavier use of the health care system are more likely to have access to useful guidance on how to access and navigate the health care system. Deri finds that networks affect health care utilization behavior. Living in areas with high numbers of people who belongs to the same language group who themselves are heavy users of the health care system is shown to increase access health care for individuals in that linguistic network; this can be interpreted as reflecting the role of the information channel in social networks. In contrast, an individual living in areas with high number of people who belongs to the same language group but who are, on average, low users of the health

care system is found to decrease health care access for individuals in that linguistic network; this can be interpreted as reflecting the influence of norms – for example, a preference for non-Western medicine.

In order to understand factors associated with the under-utilization of health care by Chinese elders who reside in the United States, and to determine how health care utilization is affected by immigration status, Miltiades and Wu (2008) use a cross sectional dataset to identify predictors of health care use for two distinct groups of elderly Chinese individuals. The first group of elderly Chinese reside in Shanghai, whereas the second group is made up of Chinese immigrants residing in the United States. The authors measure each individual's social network is measured by the number of times that they see their children or other close relatives, and by how frequently the individual meets or talks with friends. Their results indicate that the individual's social network is an important predictor of the frequency of physician visits for the elderly Chinese immigrant community, but has no significant impact on the frequency of physician visits for elderly Chinese living in Shanghai.

Devillanova (2008) examines the extent to which information networks affect immigrants' access to health care in Italy. The time to access primary care is estimated using a linear regression using data on undocumented immigrants in Milan (2001). This data set contains information on new patients such as their first use of health care services after arriving in Italy, and whether they become aware of health care services though a friend or relative (information networks). The results show that relying on friends or relatives significantly accelerates use of the health care system by reducing the time before the first visit.

The role of both community and individual social capital is also highlighted by three Canadians studies: Laporte et al. (2008), Samek et al. (2012) and Devlin and Rudolph-Zbarsky

(2014). Laporte et al. (2008), investigate the relationships between aging, social capital and health care utilization. They use the 2001 cycle of the Canadian Community Health Survey and Canadian census to estimate a two-part model for both general practitioner's visits (GP) and hospitalization use. In their study, community social capital is measured by the Petris Social Capital Index (PSCI) which is based on employment levels in religious and community based organization whereas individual social capital is based on the sense of belonging to the local community. The relationship between individual social capital, community social capital and visits to GP and hospital visit is estimated using a two-part model with Heckman selection. The authors show that higher community or lower individual social capital is associated with a lower probability for GP visits and with a higher probability of hospital utilization by seniors.

Samek et al. (2012) study the difference in the impact of social capital on the use of general practitioners (GP) between immigrants and non-immigrants residing in the province of Ontario. They use data from the 2001 cycle of the Canadian Community Health Survey (CCHS) along with information on primary care GP visits obtained from the Ontario insurance program (OHIP). They use several different measures of individual social capital, and like Laporte et al. (2008), measure community social capital using the Petris Capital Index (PSCI), Samek et al. (2012) also use a two-part model with Heckman selection to estimate the relationship between individual social capital, community social capital and GP use. Surprisingly, their results show that community social capital does not have any significant effect on visits to GPs. However, a strong sense of belonging to the local community tends to decrease the number of doctor visits made by immigrants, even though it has no significant effect on the number of doctor visits made by non-immigrants. While tangible support is associated with more general practitioner visits by non-immigrants, affection support is found to be associated with fewer visits made by non-immigrants.

Devlin and Rudolph-Zbarsky (2014) are the first to examine the link between social support and the likelihood of having a regular family doctor. They use cross-sectional data from five cycles (2001 to 2010) of the Canadian Community Health Survey (CCHS). Social support is measured by the sense of belonging to the local community, the number of relatives and friends, and how often the individual has someone to confide in. They estimate a probit model and find a positive link between social capital, and in particular the sense of belonging to the local community, and the likelihood of having a regular family doctor.

What emerges from the limited empirical research on the link between social capital and use of the health care system is that direct comparisons between studies are difficult due to differences in the measures of social capital, study population, and methods. Although the results from cross-sectional studies interesting, concern has been expressed about the endogeneity of social capital (Laporte et al., 2008): does social capital in fact have a causal effect on access to health care? Does the relationship between social capital and access to health care persist once the usual models are extended to take account of both the unobserved heterogeneity of consumers and the extent to which access to a regular family doctor at a given point in time is affected by (lack of) access in the past? Will short term policy intervention designed to improve access to family physicians also have long term impact? These are the questions which my study seeks to address.

3.3 Methodology

In order to examine the relationship between different forms of individual social capital and having a regular family doctor, one can first begin with a simplified regression model as:

$$y_{it} = \alpha + \delta(Sc)_{it-1} + \beta(X)_{it} + u_i + \mu_{it} \qquad (1)$$

where *i* is the index for the individual and *t* is the index for time; y_{it} is a dichotomous variable and is equal to one when individual *i* has a regular family doctor in period *t* and zero otherwise ; Sc_{it} is an indicator of the social capital; X_{it} is a vector of observable characteristics; u_i is an individual-specific unobserved effects term that represents all other individual-specific determinants of access to a family doctor that are not captured by the vector *X*, and μ_{it} is the error term.

A first challenge is to measure social capital. Below, I consider several different measures of individual social capital including: the number of close friends and relatives, living arrangements or family structure (as a proxy for the availability of immediate care), and two indices that assess the level and the strength of affection and tangible support.[33] I use lagged measures of social capital to account for possible reverse causality between access to regular family doctor and social capital; using lagged measures of social capital also accounts for the possibility that social capital may require time to affect access to health care. The vector X_{it} of observable characteristics includes socio-demographic variables (gender, age, education level and immigrant status), as well as variables such as total household annual income, the number of

[33] I use information on other types of support (emotional and informational) as well as measures of positive social interactions as robustness checks.

chronic conditions, life style indicators (smoking, alcohol drinking and physical activity), geographic location (urban or rural, and the province of residence) and a time trend.

If there are no unobserved individual factors, the pooled probit or logit estimates will be consistent and efficient (Wooldridge, 2010). However, if the outcome of interest is the predicted likelihood of having access to family doctor, there are good reasons to expect that there will be unobservable individual factors which will have impact on the probability that particular individual has a family doctor. These unobserved factors may reflect differences in personal preferences, time preference, and preferences and attitudes to health care. An advantage of having a longitudinal data set is that it is then possible to control for these unobserved factors.

A static random effects model is a good starting point. The random effects approach helps to determine the extent to which an individual's characteristics, both observed and unobserved, affect the likelihood of that having access to a regular family doctor. But a static model ignores possible dynamic effects, including the fact that past access may be an important predictor of current access status, other things being equal. Incorporating both dynamic elements and unobserved heterogeneity into a model is ideal, allowing me to examine whether there is persistence in accessing family doctors and to separate the effects of observed and unobserved characteristics on the likelihood of accessing a family doctor.

In order to capture the dynamic effect of past access to a family doctor on current access status, a lagged dependent variable (dynamic random effects model) approach can be used. This approach has been used to study the dynamics of unemployment (for example, Arulampalam et al., 2000; Stewart, 2007), poverty (Biewen, 2004), low pay persistence (Clark and Kanellopoulos, 2013), social assistance (Hanson et al., 2006), persistence in medical care use (Kohn and Liu,

2013) and the dynamics of health in a British health household panel survey (Contoyannis et al., 2004).

The dynamic random effects model can be written as:

$$y_{it} = \beta_1(y)_{it-1} + \beta_2(Sc)_{it-1} + \beta_3(X)_{it} + u_i + \mu_{it} \quad (2)$$

where y_{it} is a is a dichotomous variable and is equal to one when individual *i* has a regular family doctor in period *t* and zero otherwise; y_{it-1} is the status of access to a family doctor for individual *i* in the previous cycle, and *Sc, X, u* and μ have the same interpretations as above. State dependence, that is, the effect of having a family doctor in the previous period on the likelihood that a given individual has access to a family doctor in the current period, is measured through the coefficient on the lagged dependent variable y_{it-1}: the larger the value β_1, the greater the degree of state dependence or persistence in accessing a family doctor. One could estimate equation (2) directly using a fixed effects model capable of eliminating all time invariant differences among individuals. However, in non-linear panel data models, the use of fixed effects may result in dynamic panel bias due to the incidental parameters problem (Greene and Hensher, 2010) and this complicates the application of fixed effects methods (Nickell, 1981).[34] The estimation of this model is further complicated by the "initial conditions" problem (i.e., what happened prior to the sample information being collected), which requires an additional assumption about the relationship between the initial observations $y_{i\,Init}$ and the unobserved heterogeneity (ui_i). If $y_{i\,Init}$ is independent of u_i, equation (2) can be estimated using a standard random effects probit (Stewart, 2006). If, however, the initial conditions are correlated with u_i - as is likely the case in

[34] The incidence parameter problem does not arise when using linear regression models, A typical example is the logit/probit model. These models yield consistent estimators, which means that as the ratio of the number of observations to the number of parameters increases, the parameter estimates converge to their true values since the standard errors become small. The problem with non-linear fixed effects models is that the number of parameters grows quickly with the number of observations, hence, the parameter estimates may not ever converge to their true values as the sample size increases.

this context – then this will induce correlation between the error term and the lagged dependent variable in equation (2); using the standard random effects procedure may lead to over stating β_1, which measures the degree of state dependence (persistence) (e.g., Heckman, 1981; Chay and Hyslop, 2000; Wooldridge, 2005; Stewart, 2006).

Wooldridge (2005) proposes a simple solution to the 'initial conditions' problem in dynamic, nonlinear panel data with unobserved heterogeneity. He suggests using a Conditional Maximum Likelihood (CML) estimator that considers the distribution conditional on the initial period value. This approach models the density of ($y_{i2,} \quad \ldots, y_{iT}$) conditional on ($y_{i\,Init}\,, x_i$) so that the dynamic random effect model that accounts for the initial conditions becomes:

$$y^*_{it} = \beta_1(y)_{it-1} + \beta_2(Sc)_{it-1} + \beta_3(y_{i\,Init}) + \beta_4(X)_{it} + u_i + \mu_{it} \quad (3)$$

where $y_{i\,Init}$ is the initial status of access to a regular family doctor (in my analysis the initial period is cycle 3, and t = 4,..T, i = 1,..N). Equation (3) is an appropriate specification if there is no correlation between individual time-invariant unobserved factors and the vector of x-variables. But, I follow Mundlak (1978), Chamberlain (1984) and Wooldridge (2005) and specify a relationship between the unobserved effects and the means of all time varying explanatory variables; this implies that $u_i = \beta_5 \bar{x}_i + \alpha_i$ where α_i is distributed $(0, \sigma 2_\alpha)$ and assumed to be independent of X_{it} and μ_{it} for all *i, t.* Substituting into equation (3) gives:

$$y^*_{it} = \beta_1(y)_{it-1} + \beta_2(Sc)_{it-1} + \beta_3\,(y_{i\,Init}) + \beta_4(X)_{it} + \beta_5(\bar{x}_i) + \alpha_i + \mu_{it} \quad (4)$$

The $\bar{x}_i$ vector can be defined in different ways, but is typically considered as the longitudinal average for each individual of each characteristic in the vector X_{it} (with the exception of intrinsically time-variant variables such as age). This specification addresses the initial conditions and provides estimates of β_3 to test the significance of the correlation between unobserved effects and access to a family doctor.

Therefore, in this chapter I use two different models, adding additional restrictions in sequence. The first, using equation (2), is dynamic random effects (Dynamic RE) model that accounts for unobserved heterogeneity but assumes the exogeneity of the initial conditions; the second, using equation 4, is the dynamic random effects model that accounts for both unobserved heterogeneity and the endogeneity of initial conditions, and allows for possible correlations between individual unobserved characteristics and x-variables (Wooldridge model). Also, as we expect to observe a noticeable gender difference in the demand for health care, separate models are estimated for females and males.

3.4 The NPHS dataset

3.4.1 Sample and variables

This study draws on the longitudinal household component of the National Population Health Survey (NPHS) conducted by Statistics Canada. The NPHS collects detailed information about the health of Canadians, their health care use and socio-demographic factors. The NPHS targets individuals aged 12 and older in all ten provinces, but excludes persons living on Indian reserves, on Canadian Force bases, and in some remote areas. Starting in 1994/1995, the survey was conducted every two years until 2010/2011, after which it was discontinued. The longitudinal sample includes 17, 276 persons in 1994/1995 of all ages who were followed for up to nine cycles.

The 1994/95 and 1996/97 cycles do not contain information on the same indictors of social support and hence were not used. The analysis is restricted to cycles 3 to 9 (seven cycles: 1998/99 to 2010/2011). I also restrict the sample to respondents aged 18 or older in cycle three (losing 2,189 person) and to observations with complete information: regarding access a regular medical doctor (loss of 36,216 observations), social support indicators (loss of 7,371 person-year observations), and all the variables used in this analysis (loss of 4,997 person-year observations).

To implement the dynamic model, I also needed respondents to have participated in at least two consecutive cycles, leading to a further loss of 3,399 person-year observations. The final sample is an unbalanced panel of 10,403 individuals, consisting of 41,022 person-year observations; 3,356 individuals, or about 30 percent of the sample, are observed in every cycle.

The dependent variable is whether the individual has a regular medical doctor and is constructed from responses to the question "Do you have a regular medical doctor?" It is a dichotomous variable, taking the value 1 for the affirmative and zero for no.

I use several different indicators of social capital. The first reflects the living arrangements of the individual: living unattached alone, living with partner/spouse only, living with partner/spouse and children, single parent living with children, or living with others. Family status has been used by other researchers to reflect the potential for immediately available care (e.g., Folland, 2008). Living arrangements may affect access to medical care by influencing both the availability of information and the decision to seek health care. Those who live alone may lack access to informal care, information about available care, and may not be prompted to seek medical care, ultimately leading to poorer health and heavier subsequent use of health care services.

The second indicator of social capital is the number of close relatives and friends. This is based on the response to the question "about how many close friends and relatives do you have, that is, people you feel at ease with and can talk to about what is on your mind?" and answers are coded as a positive integer ranging from 0 to 99. The number of close relatives and friends may be used as a proxy for the measurement of social isolation, which is the term used to describe an objective reality of having few connections and network with people.

Nonetheless, the fact that an individual has close friends and relatives with whom they may talk does not necessarily imply that the individual feels connected to other people: loneliness

may be felt even if people are not socially isolated (Bernard, 2013). Consequently, four different indices are employed to capture individuals' feelings or the quality of their social support. The first index measures the level of affection-support (Affection) the respondent received. The following questions were asked: How often do you have someone who shows you love and affection? How often do you have someone who hugs you? How often do you have someone to love you and make you feel wanted? Each of the three questions were scored on a scale of 1-5, ranging from none of the time, a little of the time, some of the time, most of the time or all of the time. A composite score was then derived from the three questions and available in the survey, generating an overall score that could potentially range from 0 to 12.

The second index measures the level of emotional or informational support (Emotional) received by the respondent. The questions asked were: How often do you have someone you can count on to listen to you when you need to talk? How often do you have someone to give you advice about a crisis? How often do you have someone to give you information in order to help you understand a situation? How often do you have someone to confide in or talk to about yourself or your problems? How often do you have someone whose advice you really want? How often do you have someone to share your most private worries and fears with? How often do you have someone to turn to for suggestions about how to deal with a personal problem? How often do you have someone who understands your problems? Each of the eight questions were scored on a scale of 1-5, ranging from none of the time, a little of the time, some of the time, most of the time or all the time. A composite score was then derived from the eight questions and overall scores had a potential range from 0 to 32.

To assess the level of positive social interaction (Social Participation), I rely on the responses to four questions: How often do you have someone to have a good time with? How

often do you have someone to get together with for relaxation? How often do you have someone to do things with to help you get your mind off things? How often do you have someone to do something enjoyable with? Each of the four questions were scored on a scale of 1-5, ranging from none of the time, a little of the time, some of the time, most of the time or all of the time. A composite score was then derived from the four questions, the potential range for the overall scores was from 0 to 16.

Finally, the fourth index measures tangible support (Tangible) using the responses to a series of questions which asked about support for performing key tasks: How often do you have someone to help you if you were confined to bed? How often do you have someone to take you to the doctor if you needed it? How often do you have someone to prepare your meals if you were unable to do it yourself? How often do you have someone to help you with daily chores if sick? Each of the 4 questions were scored on a scale of 1-5, ranging from none of the time, a little of the time, some of the time, most of the time or all of the time. A composite score was constructed with a potential range for the overall score from 0 to 16. A simple correlation test (results shown in table A3.1) between these four indicators of social capital (affection, tangible, social participation, and emotional) shows a high correlation between them; consequently, only one indicator is used in any given estimation.

In addition to the measures of social capital, I include a large array of explanatory variables that are commonly used in the empirical literature on access to health care (see, for example, Deri, 2005; Devlin and Rudolph-Zbarsky, 2014). Table 3.1 defines these variables, which include sex, age, immigrant status, household income, education, number of chronic conditions, self-rated health status, health risk factors (smoking, alcohol intake and physical activity), urban and rural settings, and provincial dummy variables. The data set provides a measure of household income

that is adjusted for the number of household members. Consequently, as described in table 3.1, four measures of income adequacy are used. A calendar 'time' variable measured in years since 1998 is also included in the analysis to account for the longitudinal changes over the 12 year' follow-up period.

3.4.2 Descriptive statistics

Table 3.2 presents descriptive statistics for the entire sample for the base year (1998), as well as disaggregated for two different subsamples: the sample of those observed in all six subsequent cycles after the base cycle, and the sample of those who are observed later but in fewer than six cycles after the base cycle. In order to better understand the subsample of those who are observed few than six times, this subsample is further disaggregated to distinguish between those who partially dropped out between cycles but are then observed in a later cycle (second last column), and for those who dropped out completely (last column).

Comparison between the first three columns shows that the sample of those who are observed in all the subsequent six cycles contains marginally fewer individuals who have a regular family doctor, marginally more individuals who live with partners and child (ren), with higher levels of affection, emotional and social participation support, have a college or university degree and high household income. Individuals observed in every cycle are also somewhat more likely than the population as a whole to be females, Canadian born, and to be initially in very good or excellent health and with no activity limitations.

The differences in means between the sample of those who partially dropped out between cycles but are then observed in a later cycle and those who dropped out completely from the sample is presented in the last two columns. Overall, differences in means are relatively small but the sample of individuals who partially dropped out contains slightly fewer individuals who have a

regular family doctor and who live alone, but slightly more individuals who have a college or university degree, have high household income, who receive higher levels of tangible and interaction social support, are young, and have an initial health status that is very good with no activity limitations.

Table 3.3 also presents summary statistics for the sample averaged over the years, and disaggregated by number of cycles: those observed in all six cycles after the initial cycle (1998), and those who are subsequently observed in fewer than six cycles after the base cycle. Comparison of the two samples (in tables 3.2 and 3.3) shows the impact of attrition on the means of the observed characteristics whether at the base year (1998 as in table 2) or over all the cycles (table 3.3). The comparison between the last two columns in table 3 shows that differences are relatively small, but the balanced sample contains marginally more individuals in very good health, who are Canadian born, with no activity limitations, with higher affection and emotional social support, live with partner and children, have a college or university degree and have high household income.

One of the main focuses in this chapter is on the dynamics of access: how does past access to a regular family doctor affect the probability that an individually currently has such access? The raw probabilities of being with and without a family doctor are shown in tables 3.4 A and B. Over the sample period the raw probability of having a family doctor, reported in the first row, is 0.89 reflecting the fact that, on average, about 11 percent of Canadians are estimated to be without a family doctor (as shown in table B). However, these are raw probabilities, which do not account for the access status in the previous period. The next two rows report the conditional probabilities of having family doctor as a function of having had access to a regular family doctor in the past. The second row shows the probability of having access to a family doctor for any two consecutive

periods; this probability is much higher than the probability of having access to a regular family doctor in any given period, reported in row one, and is much higher than the probability of having the access to a family doctor in a particular period if there was no regular family doctor reported in the previous cycle. In particular, the probability that individuals who already have access to a family doctor maintain that access in the next cycle is between 0.94 (in 1998) and 0.96 (2010). In contrast, the likelihood of reporting access to a family doctor in any given cycle given that individuals reported not having access to a regular family doctor in the preceding cycle is between 0.40 and 0.50. The last two rows in table 3.4 A report two measures of persistence (stability) in the likelihood of accessing a family doctor in the raw data. The first is the *difference* between the probability of maintaining access to a family doctor versus the probability of having access to a regular family doctor in a given cycle given that no such access was reported in the preceding cycle. The last row reports the *ratio* of these two probability measures. Both measures indicate that individuals who report having access to a regular family doctor at *t*-1 are more likely to have a regular family doctor in period *t* than those who report that they do not have a regular family doctor in *t*-1. The raw data indicates that there is a strong persistence in the access status to family doctor - on average it is about 48 percentage points.[35]

Table 3.4B is complementary to table 3.4A, but focuses on persistence in the likelihood of *not* having access to a regular family doctor. The first row reports the probability that any individual included in the sample will report that they do not have access to a regular family doctor in any given year; on average, this is 11% of the sample population. The second row shows that the probability that individuals report that they do not have a family doctor, conditional on the fact

[35] The same exercise is done for the subsamples of females and males. The persistence in the raw data on average is 41 percentage points for females and 51 percentage points for males. For the balance sample, persistence is about 42 percentage points, as shown in table A3.2

that they reported not having a doctor in the previous cycle, and is between 0.50 and 0.60. The probability that individuals report that they do not have a family doctor conditional on the fact that they reported having a family doctor in the previous cycle, is presented in the third row, and is much lower than the result in row two.

Tables 3.4 A and B are jointly summarized by the transition matrix presented in table 3.5. Here the rows indicate the access state in the preceding period, while the columns indicate the access state in the current period. Persistence (or stability) in access and in lack of access to a regular family doctor is reflected by the relative magnitudes of the diagonal elements as compared to those values off the diagonal. Of those individuals who report having access to a family doctor in period t, approximately 84 percent of these had access to a doctor in both periods (34,413 out of 41,022) and about 6 percent did not have access to a family doctor in either period (2,516 out of 41,022). Consequently, approximately only 10 percent of the population transitions between access states during successive cycles.

All of the measures in tables 3.4 and 3.5 indicate that there is strong stability in an individual's access – or lack thereof - to a family doctor. The fact that only a relatively small proportion of the population transitions between having a doctor and not having one, or between not having a doctor and having one, is a key feature of this data set and is critical to the selection of the methodology for this analysis. A crucial question is the extent to which this observed persistence is driven by state dependence (past access status) and unobserved heterogeneity versus other potential determinants.

Table 3.6 provides some insight into how the likelihood that an individual has access to a family doctor might be affected by living arrangements, levels of social capital and other characteristics; this table reports the means for all of these explanatory variables for the all survey

years combined. [36] Column (1) shows this information for the full sample, column (2) shows this information for those who report having a family doctor, and column (3) shows this information for those who report not having a regular family doctor. The descriptive statistics show that, over the period 1998 to 2010, individuals who report having a regular family doctor tend to be living in multi-person households, and have higher levels of social capital than those without regular family doctor.

The descriptive statistics reveal that individuals who report that they have a regular family doctor tend to also report that they have a worse health state than do those who report that they do not have a family doctor; this points to the fact that individuals with health concerns may make additional effort to get access to a family doctor. It is particularly striking that the proportion of individuals reporting both that they have a family doctor and that they are in fair or poor health is double the proportion of those without a family doctor who report that their health status is poor or fair. Not surprisingly, a similar pattern is observed for the number of chronic conditions and for activity limitations.

From the descriptive statistics, it can be seen that individuals reporting having a family doctor are more likely to be older, female, and immigrant. There are also differences across provinces: residents of Ontario and British Columbia are more likely to report that they have a family doctor than are residents of other provinces. In particular, only 26% of those reporting having a regular family doctor live in Quebec whereas 44% of those who report not having such access are Quebec residents

There also appears to be a link between a number of key health behaviours and having a family doctor. Individuals who have a regular family doctor are less likely to be smokers (on

[36] Summary statistics for each survey year, and for those who report having a regular family doctor and for those who report not having a regular family doctor are presented in table A3.3 in Appendix.3.

average 18%) than are those without one (on average 26%). Moreover, those with a regular family doctor are less likely to be regular drinkers (on average 67%) than those without one (on average 75%), and slightly more likely to be moderately active (on average 28%) than those without a family doctor (26%). [37]

3.5 Results

The estimated average marginal impacts of the independent variables on the probability of having a regular family doctor obtained using the static random effects model are reported in table 3.7.[38] Two different measures of social support are employed (in addition to living arrangements and number of relatives and friends): affection (column (1)) and tangible (column (2)). The corresponding marginal impacts when the sample is parsed by gender are presented in columns (3) and (4) (when affection is used) and columns (5), and (6) (when tangible support is used).[39]

As was discussed above, there is a high degree of persistence in the data: 84% of the observations represent continuations of having a regular doctor. It is therefore not surprising that the results reported in table 3.7 show only a modest impact – although a high degree of statistical significance – of social capital and living arrangements on the likelihood that an individual has

[37] To identify the changes in social capital between cycles, the transition matrix for living arrangements and other two indicators of social capital for the pooled sample is provided in table A3.4. Also, a description of the pooled sample and subsamples by living arrangements (individuals in single-person household and individuals in multi-person households) is reported in the first two column of table A3.5 and the pooled sample divided by the level of social capital is also presented in column s (4) to (6) of tables A3.5.

[38] The average marginal effect is the marginal effect evaluated at own values of X for each person in the estimation sample and then an average is taken over all of the effects (AME) so they are the average of the marginal effects. For a binary independent variable X, the average marginal effect is the difference between the predicted probability of the outcome when that X set to 1 with the predicted probability when that X set to 0, holding everything else constant. And for a continuous variable X, the average marginal effect estimates the change in the predicted probability of the outcome that is associated with small change in X. For example, the average marginal effect of -0.015 for living alone on having a regular family doctor is the average marginal effect of moving from being living with others to being living alone, holding everything else constant.

[39] As discussed above, a simple correlation test (results shown in table A3.1) between these four indicators of social capital (affection, tangible, social participation, and emotional) shows a high correlation between them; consequently, only one indicator is used in any given estimation.

access to a regular family doctor. The static random effects approach reveals that a one standard deviation increase (2.44 points) in Affection support leads to a 0.49 percentage point increase in the likelihood of having a regular family doctor; a one standard deviation increase (3.19 points) in Tangible support increases the probability of having regular family doctor by 0.32 percentage point. Living arrangements also matter: living alone tends to decrease the probability of having a regular family doctor by 1.8 percentage points, whereas living with a spouse only or living with a spouse and children increases this likelihood by 1 percentage point and 1.8 percentage points, respectively.

It is worth noting that the effects of social capital (affection or tangible) and living arrangement are larger in magnitude for males than for females and, in most cases, they are statistically significant only for males. Despite the fact that males are always significantly less likely to have a regular doctor than females, the results for males indicate that a one standard deviation increase (2.44 points) in the Affection index leads to a 0.73 percentage point increase in the predicted probability of having a regular family doctor; similarly, a one standard deviation increase (3.15 points) in the Tangible index leads to a 0.95 percentage point increase in the probability of having a regular family doctor. Males living alone are 3.6 percentage points less likely to have a regular family doctor relative to those living with others, whereas males living with spouse only, or living with spouse and children are, respectively, 2.1 percentage points and 2.4 percentage points more likely to have a family doctor. In contrast, the results for the females show that a one standard deviation increase (2.18) in Affection index leads to only 0.22 percentage point increase in the probability of having a regular family doctor and the magnitude of the estimated marginal effects of Tangible and living alone are smaller and insignificant for females.

As discussed above in section 3.3, the static random effects model ignores possible dynamic effects in determining access to a regular family doctor. The random effects model (Dynamic RE) therefore includes lagged access to a family doctor "(L) Reg Family Doc" as an explanatory variable; the results are reported in table 3.8 for the total sample as well as for the subsample divided by gender, for each indicator of social capital. The key challenge when estimating the dynamic model is the potential endogeneity of the initial conditions. Hence, for purposes of comparison, the dynamic random effects results are presented twice for each full sample: columns (1) and (3) of table 3.8 are the results for the Dynamic RE probit, which assumes the exogeneity of the initial conditions; columns (2) and (4) report the results for the Wooldridge model, which accounts for the endogeneity of the initial conditions and for possible correlation between unobserved factors and both access to a family doctor and other observed characteristics; columns (5) to (8) report results from the Woolridge model for the subsamples.

The results from the dynamic RE probit estimations show that the single most important determinant of access to a family doctor in the current period is access to a family doctor (L) in the previous cycle; the estimated coefficient is large in magnitude (0.29), positive and statistically significant at the 1% level for both the total sample and the gender subsamples. The estimates obtained from the Wooldridge model follow a similar pattern: although the estimated average marginal effect is smaller in the Woolridge model, it is still an order of magnitude larger than the estimated coefficients for other determinants, and is still statistically significant at the 1% level for both the full sample and both subsamples. The results from the Woolridge model clearly indicate, however, that unobserved heterogeneity accounts for about 25% of the unexplained variation in the likelihood of having a regular doctor.

Comparison of the estimated average marginal effects for the dynamic RE model and Wooldridge models suggests that ignoring the endogeneity of initial conditions may result in overstating the magnitude of persistence (stability) in health care access. The estimated marginal impact of previous access to a family doctor declines markedly as I control for progressively more factors: after controlling for both observed and unobserved characteristics (dynamic RE model column (1)), there is a reduction in persistence of 40% (from 0.48 in the raw data to 0.29) on average; taking account of both heterogeneity and the initial conditions (Wooldridge model) leads to an additional 23% reduction, relative to the initial estimate. Overall, the extent of persistence in accessing family doctor using Woolridge's model is 63% lower (from 0.48 to 0.18) on average than is suggested by the raw data. It is therefore critical to control for both heterogeneity and initial conditions when trying to estimate the level of true persistence (state dependence) in access to a family doctor.

Regarding the effects of social capital and living arrangements on the probability of having regular family doctor, the results from the dynamic random effects models are similar in most instances to those obtained from estimating the static models. After accounting for both observed and unobserved factors, and for the dynamics in accessing family doctors (the dynamic RE model), and after additionally accounting for the correlation between unobserved factors and health care use and other observed factors (Wooldridge model), the results remain stable and similar to those from the static models. For instance, the results from Wooldridge model show that a one standard deviation increase (2.44 points) in the Affection index or increase (3.19 points) in the Tangible index leads to a 0.49 percentage point and 0.32 percentage point in the probability of having a regular family doctor, respectively. Individuals living alone are 1.5 percentage points less likely to have a regular family doctor relative to those who live with others, while the probability of

having a regular family doctor is higher for those living with family members: with a spouse only, with spouse and children (by 1 percentage point and 1.4 percentage points, respectively).

Similarly, to the static model, the effect of living arrangements and social capital are both larger in magnitude and in statistical significance for males, whereas generally not statistically significant for females. A one standard deviation increase (2.44 points) in the Affection index or in the Tangible index (3.15 points) leads to a 0.49 and a 0.63 percentage point increases in the predicted probability of having a regular family doctor. Compared to males living with others, those living alone are 2.7 percentage points less likely to have a family doctor, whereas those living with spouse only or with spouse and kids are 2.2 percentage points and 1.7 percentage points more likely to have a family doctor. Only the Affection index and one measure of living arrangements (living with spouse and kids) have a statically significant impact on the likelihood of having regular access to a family doctor in the female sample. Consistent with Devlin and Rudolph-Zbarsky (2014), the number of relatives and friends has no significant impact on the likelihood of having regular family doctor in all specifications, for the full sample or the subsamples of females and males.

In order to examine whether the effect of social capital and living arrangements vary by age, I re-estimate the dynamic model (Wooldridge model) on two subsamples: those with age below 40 and those 40 or older. The results are reported in table 3.8 (columns (9) and (10)), and show that the effect of Tangible and living arrangements are both larger in magnitude and typically statistically significant only for those younger than 40. For instance, for individuals younger than 40, a one standard deviation change in the Tangible index (3.28 points) leads to a 0.65 percentage point increase in the likelihood of having a regular family doctor; the likelihood of having a regular family doctor is lower by 2.8 percentage points for those living alone, whereas it is 2.9 percentage

points and 4.6 percentage points larger for those living with spouse only or living with spouse and kids, respectively. In contrast, for those aged 40 and more, a one standard deviation increase (3.35 points) in the Tangible index leads to only a 0.34 percentage point increase in the probability of having a family doctor, and living with spouse only is associated with a 1.1 percentage points increase in the probability of having a family doctor. Hence, although younger individuals on average are less likely to have a regular family doctor, they seem to benefit more from access to social capital.

Whereas the results from all of the specifications discussed above consistently show that both social capital and living arrangements have a strong statistically significant effect on the likelihood of having a regular family doctor, the coefficients are relatively modest in terms of magnitude and the mechanism by which they influence access is unclear: does access to social capital increase the probability that a given individual find a regular family doctor or does it instead, help individuals to maintain their affiliation with a regular doctor? To get more insight into the actual mechanism I divide the full sample into two subsamples, which reflect access status in the previous cycle (t-1): those who had no family doctor in t-1, and those who had one. As one can see from the results in table 3.9, the marginal effects of the Tangible index and of living arrangements are markedly higher in magnitude for those who lacked access to a family doctor in the previous period as compared to those who already had one.

For instance, among those who previously had no family doctor, a one standard deviation change in the Tangible index (3.40 points) leads to a 1.7 percentage points increase in the likelihood of having a regular family doctor; and compared to individuals living with others, those living alone are 4.4 percentage points less likely to have a family doctor, while those living with spouse only or with spouse and kids are 8.2 percentage points and 7.4 percentage points more

likely to have a regular family doctor. These are much larger impacts than in any of the previous specifications.

However, for those who previously (t-1) had a regular family doctor, a one standard deviation change in Tangible (3.16 points) leads to only a 0.32 percentage point percent increase in the likelihood of remain having a regular family doctor. Those living alone are 1.2 percentage points less likely to continue to have a regular doctor; and those living with spouse and kids are 0.90 percentage point more likely to remain still have a regular doctor. These results clearly indicate that having high levels of social capital matters most for those who lack access to a family doctor, and suggest that the mechanism of influence is by helping individuals find a doctor, rather than influencing the likelihood of remaining attached to a physician, which seems sensible.

3.6 Robustness checks

In this section I investigate the extent to which my results are robust to different specifications. First, to check on whether the results are sensitive to the choice of social capital indicator, I re-estimate the dynamic random effects model (Wooldridge model) using emotional or informational social capital, and using social participation measures of social capital. My results are not sensitive to this change in specification as is shown in the first two columns of tables A3.6.

The high correlation between living arrangements and marital status meant that I was not able to use both of these variables as right-hand side variables in the same regression. Therefore, for robustness I re-estimated the dynamic random effects model (Woolridge model) while controlling for marital status and living alone. The results are presented in the third column of table A3.6 and show that including marital status rather than indicators of living arrangements has no noticeable impact on the estimated relationship between the indicators of social capital and the likelihood of having a regular family doctor.

I also re-estimated the Wooldridge model to compare the effect of living alone (in a one person households) with living in a multiple-person households, that is by combining all other living arrangements in one category (reference group), the results are presented in column (4) of table A3.6 and show that, as compared to individuals living in multi-person households, those living in a one person households are 2.2 percentage points less likely to have a regular family doctor; the relationship between the tangible support index and the likelihood of having a regular doctor is largely unaffected.

3.6.1 Attrition bias

Tables 3.2 and 3.3 show evidence of systematic patterns of attrition by socioeconomic characteristics and previous levels of health. To further test whether this attrition of individuals in the data set biases my findings, I use the "variable additions tests" proposed by Verbeek and Nijman (1992, p.688) and suggested by Contoyannis et al. (2004). The test variables I use are 1) an indicator for whether the individual responds in all seven cycles, 2) a count of the number of cycles that are observed for the individual, and 3) an indicator of whether the individual responds in the subsequent cycle. Each of these indicators is added to the dynamic Woolridge model given by equation (4), resulting in three separate tests for attrition bias. Table 3.10 (A and B) presents the variable addition tests for attrition bias estimated using Wooldridge model; table 3.10A includes the variable addition tests when affection social support is used, and table 3.10B includes the variable addition tests when tangible social support is used.

These tests indicate that there is no evidence that attrition is leading to biased estimates. The positive coefficients of the test variables are insignificant, indicating that the response rates are not associated with access to a regular family doctor. Furthermore, as mentioned in Contoyannis et al. (2004), while adding these test variables is not intended to correct for attrition,

it is informative to compare the estimates with the baseline model, which does not include any of these test variables. Unsurprisingly, given the lack of significant coefficients in table 3.10 (A and B), lagged access status ((L) Reg Family Doc) and all the variables used in my analysis have very similar estimated coefficients in both models.[40] This provides further indications that attrition in the data is not biasing the estimates of these effects, suggesting that the relationship between access to a family doctor and leaving the sample is negligible.

To further investigate the importance of attrition in the sample, I adopt the longitudinal sampling weights provided by Statistics Canada and apply them in the ML estimation of the pooled version of the dynamic model.[41][42] Table A3.8, reports the results from both the weighted and unweighted estimations for the full sample, for both measures of social capital. A comparison of the estimates between the weighted and unweighted results does not reveal substantive differences in the average marginal effects of the variables of interest. So, while there is evidence that socioeconomic factors and health status systematically affect the likelihood of attrition from the sample, the influence of this attrition on the likelihood of having a regular family doctor appears to be negligible.

3.7 Conclusions

This chapter investigates the determinants of access to a regular family doctor using seven cycles of Canada's National Population Health Survey. Previous analyses of access to health care services (such as to a regular family doctor) were based on cross sectional data sets and used simple empirical models. The analysis conducted here had two main goals: to examine the effects of measures of social capital on access to a regular family doctor, and to estimate the relative

[40] The full results are reported in table A3.7.

[41] Pooled version : $y^*_{it} = \beta_1(y)_{it-1} + \beta_2(Sc)_{it-1} + +\beta_3\,(y_{i\,Init}) + \beta_4(X)_{it} + \beta_5(\bar{x}_i) + \mu_{it}$

[42] This estimator is implemented using the pweight option in Stata, this option cannot be applied to the log-likelihood function for the random effects specification.

contributions of state dependence and unobserved heterogeneity in explaining the dynamics of access to a regular family doctor. It is the first study to use longitudinal data to examine the effects of social capital on the likelihood of having a regular family doctor. The paper considers a number of different empirical specifications; regardless of the specification, there is robust empirical evidence of a highly statistically significant link between social capital and the likelihood that an individual has access to a regular family doctor.

Although the estimated coefficients are modest in magnitude, for all specifications there is clear evidence that individuals who have a high level of social capital, live with a spouse, or with a spouse and children, are more likely to have a regular family doctor, whereas males, young individuals or those living alone, are less likely to have access to a family doctor. What is also clear from my analysis is that past access to a family doctor is an important determinant for both current and future access, and that there is considerable unobserved heterogeneity. Thus, the preferred specification (the Woolridge model) controls for state dependence (persistence), and unobserved heterogeneity as well the endogeneity of the initial conditions. I find that unobserved heterogeneity explains about 25% of the variations in access to a regular family doctor, and is significantly correlated with the access to a family doctor over the twelve years of the panel. Controlling for heterogeneity and initial conditions is thus very important when trying to examine the stability in access to health care.

How should we interpret these results? The estimated marginal effects of social capital and living arrangements on the likelihood of having a family doctor are markedly higher for those who lacked access in the previous cycle as compared to those who already had a regular family doctor. Among those who previously had no family doctor, a one standard deviation change in the Tangible index (3.40 points) leads to a 1.7 percentage points increase in the likelihood of having

a regular family doctor; as compared to individuals living with others, those living alone are 4.4 percentage points less likely to have a family doctor, while those living with spouse only or with spouse and kids are 8.2% and 7.4 percentage points more likely to have a regular family doctor. This suggests that the mechanism by which social capital and living arrangements influence the likelihood of having a regular family doctor is by making it easier to find a doctor when one is needed. However, once an individual has been accepted into a family doctor's practice, social capital does not have an important impact on the likelihood of ongoing access.

There are clearly some limitations to this study which should be addressed in future research. First, the fact that my data on social capital are self-reported may introduce a bias into these variables: it would have been useful to have less subjective measures of social networks in order to judge the extent to which this bias existed. Second, information on the sense of belonging to a community is not available in the NPHS, which is unfortunate as incorporating this sort of information may help in better understanding the way in which relationship between social capital and access to health care evolves over time.

Although the positive effect of social capital is relatively small, the overall benefits of having a regular family doctor are numerous, including a better quality of care received (Tsai et al., 2010) and improved health status (Gulliford, 2002; Gravelle et al., 2007). A key policy implication would seem to be that particular attention needs to be given to strengthening pathways to access to a family doctor for those living alone, particularly below the age of 40, who do not have a doctor. If these individuals can get earlier access to regular care, this would be beneficial over both the short and long term.

References 3

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Table 3.1: Variable definitions

Reg Family Doc.	1= has regular medical doc, 0 = otherwise.
(L) Reg Family Doc.	1= had regular medical doc in the previous cycle, 0 = otherwise.
(I) Reg Family Doc.	1= had regular medical doc in the initial cycle, 0 = otherwise.
Proxy measures of social capital: Living Arrangement	
(L) indicates the living arrangement status in the previous cycle	
(L) Alone	1 = living alone, 0 = otherwise.
(L) WSpouse only	1 = living with spouse or partner, 0 = otherwise.
(L) WSpouse and kid(s)	1 = living with spouse or partner and kid (s), 0 = otherwise.
(L) Single parent and kid(s)	1 = single parent and kid (s), 0 = otherwise.
(L) Living w others	1= living with others, 0 = otherwise.
Direct measures of social capital	
(L) indicate the level of social capital in the previous cycle	
(L) Affection	affection index: 0-12.
(L) Tangible	tangible index :0-16.
(L) Num RF	Number of relatives and close friends: 0-99.
Independent variables	
Male	1 = male, 0 = female.
Age	age in completed years.
AgeSq	age squared.
Less than Sec	1 = less than secondary, 0 = otherwise: Reference
Sec grad	1 = secondary school diploma, 0 = otherwise.
Some Post Sec	1 = some post- secondary diploma, 0 = otherwise.
Post-Sec	1 = post-secondary diploma, 0 = otherwise.
Income Adequacy	four income ratio dummy variables. The household income ratio represents the total household income in relation to the total number of members in the household. For more details see: Statistics Canada National Population Health Survey Household Component. 2009 [http://www.statcan.gc.ca/imdb-bmdi/document/ 3225_D10_T9_V3-eng.pdf].
Low Income	1= household income is in low income group, 0= otherwise.
Low Middle Income	1= household income is in middle low income group, 0 =otherwise.
High Middle Income	1= household income in high middle income group, 0 =otherwise.
High Income	1= household income in high income group, 0 =otherwise.
Imm <10	1= immigrant and years since immigration is less than 10 years.
Imm >=10	1= immigrant and years since immigration is equal or greater than 10 years.
Chronic Conditions	Individual is asked whether he/she has a long-term health conditions that only have been diagnosed by health professional., such as, asthma, arthritis, high blood pressure, diabetes, heart disease, cancer, effects of stroke, cataracts and Alzheimer's disease or dementia.
NumConds- 0	1= no chronic condition: Reference
NumConds- 1	1= only one chronic condition.
NumConds- 2 or 3	1= two or three chronic conditions.
NumConds- 4+	1= four or more chronic conditions.
HFP	1= health status is fair or poor, 0= otherwise.
HG	1= health status is good, 0= otherwise.
HVG	1= health status is very good, 0= otherwise.
HEX	1= if health status is excellent, 0= otherwise: Reference
DrinkNever	1= never drinks alcohol, 0= otherwise.
DrinkReg	1= drinks regularly, 0 = otherwise. Regular drinking means the consumption of at least one alcoholic beverage per month in the last 12 months.

DrinkOcc	1= drinks occasionally, 0 = otherwise. Occasional drinking means the consumption of an alcoholic beverage less than once per month (consume less than a bottle) in the last 12 months.
DrinkForm	1 = drinks formerly, where former drinkers are those who have previously consumed alcohol but did not do so in the previous twelve months, 0 = otherwise.
SmokeNever	1 = never smokes, 0 = otherwise: Reference
SmokeDaily	1 = smokes daily, 0 = otherwise.
SmokeOcc	1 = smokes occasionally, 0 = otherwise.
Physically Active	1 = physically active, 0 = otherwise: Reference
Physically Mod	1 = moderately active, 0 = otherwise.
Physically InActive	1 = physically inactive, 0 = otherwise.
Urban	1= living in urban area; 0 = rural area.
NFLD	1 = Newfoundland, 0 = otherwise.
PEI	1 = Prince Edward, 0 = otherwise.
NS	1 = Nova Scotia, 0 = otherwise.
NB	1 = New Brunswick, 0 = otherwise.
QC	1 = Quebec, 0 = otherwise.
MAN	1 = Manitoba, 0 = otherwise.
SAS	1 = Saskatchewan, 0 = otherwise.
ALB	1 = Alberta, 0 = otherwise.
BC	1 = British Columbia, 0 = otherwise.
ON	1 = Ontario, 0 = otherwise: Reference
Year: 1998/99	1= surveyed in 1998/1999, 0 otherwise.
Year: 2000/01	1= surveyed in 2000/2001, 0 otherwise.
Year: 2002/03	1= surveyed in 2002/2003, 0 otherwise.
Year: 2004/05	1= surveyed in 2004/2005, 0 otherwise.
Year: 2006/07	1= surveyed in 2006/2007, 0 otherwise.
Year: 2008/09	1= surveyed in 2008/2009, 0 otherwise.
Year: 2010/11	1= surveyed in 2010/2011, 0 otherwise.
Additional variables	
Activity- limit	1= restricted in ability to prepare meals, do housework, do heavy household chores, take personal care, shop for groceries or other necessities or move around the house.
Mar-Com	1= married or common law relationship, 0= otherwise.
SWD	1= single, widow, separated or divorced, 0= otherwise.
Emotional	emotional or informational index :0-32
Social Participation	social interaction index: 0-16
Next cycle	1= individual observed in the next cycle, 0 = otherwise.
Number of cycles	Number of cycles individual observed.
All cycles	1= individual observed in all cycles in the survey, 0 = otherwise.
Levels of Social capital: (Affection or Tangible) Low Medium High	Based on the overall score of social capital (Affection or Tangible), individuals are stratified into three different groups, based on their overall scores corresponding to low, medium and high levels of social capital.

Table 3.2: Descriptive statistics for the entire sample at the base year (1998), as well as disaggregated for two different subsamples: the sample of those observed in all six subsequent cycles after the base cycle, and the sample of those who are observed later but in fewer than six cycles after the base cycle

Variable	Total	Observed in all 6 cycles	Observed < 6 cycles		
			Total	Missing some cycles (s) then observed later	Completely Drop out
Reg Family Doc.	0.867	0.861	0.870	0.861	0.883
Alone	0.162	0.114	0.185	0.170	0.209
WSpouse only	0.246	0.216	0.261	0.248	0.280
WSpouse and Kid(s)	0.327	0.423	0.282	0.294	0.263
SnglParent and Kids(s)	0.049	0.041	0.053	0.055	0.048
Affection	10.437	10.725	10.291	10.439	10.179
Tangible	13.435	13.664	13.325	13.437	13.229
Emotional	26.637	27.39	26.276	26.544	26.045
Social Participation	13.436	13.824	13.251	13.455	13.075
Num RF	6.482	6.625	6.414	6.380	6.464
Age (years)	44.97	41.02	46.85	45.41	49.02
Male	0.482	0.466	0.490	0.508	0.462
Less Sec	0.112	0.037	0.148	0.125	0.182
Sec	0.100	0.082	0.108	0.099	0.121
Some Post	0.265	0.244	0.275	0.279	0.268
Post Sec	0.523	0.637	0.469	0.496	0.428
Low Income	0.119	0.060	0.148	0.135	0.167
Low Middle Income	0.258	0.203	0.284	0.273	0.301
High Middle Income	0.383	0.411	0.369	0.381	0.351
High Income	0.240	0.326	0.199	0.212	0.181
Imm <10	0.027	0.016	0.032	0.028	0.032
Imm >=10	0.149	0.124	0.161	0.141	0.179
NumConds- 0	0.372	0.394	0.361	0.373	0.341
NumConds- 1	0.268	0.287	0.259	0.260	0.258
Numconds- 2 or 3	0.257	0.244	0.264	0.263	0.265
Numconds- 4+	0.103	0.0755	0.116	0.104	0.135
Activity- limit	0.123	0.069	0.150	0.138	0.167
HFP	0.093	0.042	0.117	0.107	0.132
HG	0.265	0.222	0.285	0.275	0.302
HVG	0.402	0.451	0.378	0.393	0.355
HEX	0.240	0.285	0.220	0.225	0.211
DrinkReg	0.613	0.690	0.575	0.591	0.551
DrinkOcc	0.204	0.188	0.212	0.209	0.217
DrinkForm	0.120	0.088	0.136	0.131	0.143
DrinkNever	0.063	0.034	0.077	0.069	0.089
Physically Inactive	0.537	0.505	0.552	0.547	0.561
Physically Mod	0.253	0.271	0.244	0.248	0.238
Physically Active	0.210	0.223	0.204	0.206	0.201
SmokeDaily	0.245	0.211	0.261	0.254	0.273
SmokeOcc	0.037	0.035	0.039	0.042	0.033
SmokeNever	0.718	0.754	0.700	0.704	0.694

Urban	0.878	0.873	0.880	0.879	0.880
NFL	0.020	0.022	0.019	0.017	0.021
PEI	0.005	0.005	0.005	0.005	0.005
NS	0.032	0.035	0.031	0.032	0.031
NB	0.028	0.026	0.029	0.026	0.033
QUE	0.247	0.261	0.240	0.255	0.217
MAN	0.038	0.032	0.041	0.042	0.040
SAS	0.034	0.031	0.035	0.040	0.027
ALB	0.098	0.103	0.096	0.101	0.087
ON	0.380	0.375	0.382	0.364	0.409
BC	0.118	0.110	0.122	0.118	0.130
Observations	10,403	3,356	7,047	3,307	3,740

Mean values reported.

Table 3.3: Summary statistics for the sample averaged over the years, and disaggregated by number of cycles: those observed in all six cycles after the initial cycle (1998), and the sample of individuals who are subsequently observed in fewer than six cycles after the base cycle.

Variable	Total (pooled)	Observed in all 6 cycles after the base cycle	Observed in fewer than 6 cycles after the base cycle
Reg Family Doc.	0.889	0.894	0.884
Alone	0.153	0.128	0.178
WSpouse only	0.294	0.297	0.291
WSpouse and Kid(s)	0.376	0.433	0.321
SnglParent and Kid(s)	0.051	0.043	0.058
WOthers	0.136	0.109	0.152
Affection	10.571	10.747	10.391
Tangible	13.490	13.647	13.337
Emotional	27.181	27.634	26.735
Social Participation	13.629	13.835	13.425
Num RF	6.797	6.961	6.635
Age (years)	48.87	48.04	49.68
Male	0.472	0.466	0.478
Less Sec	0.108	0.057	0.158
Sec	0.153	0.139	0.167
Some Post	0.174	0.158	0.189
Post Sec	0.565	0.646	0.486
Low Income	0.058	0.031	0.089
Low Middle Income	0.157	0.110	0.200
High Middle Income	0.344	0.335	0.351
High Income	0.441	0.524	0.360
Imm<10	0.004	0.001	0.007
Imm>=10	0.154	0.139	0.168
NumConds- 0	0.280	0.277	0.282
NumConds- 1	0.270	0.281	0.260
Numconds- 2 or 3	0.304	0.308	0.300
Numconds- 4+	0.146	0.134	0.158
Activity- limit	0.141	0.107	0.174
HFP	0.096	0.066	0.126
HG	0.307	0.286	0.327
HVG	0.407	0.439	0.377
HEX	0.190	0.209	0.170
Drink Reg	0.676	0.726	0.626
Drink Occ	0.171	0.156	0.185
Drink Form	0.109	0.089	0.130
Drink Never	0.044	0.029	0.059
Physically Inactive	0.485	0.453	0.516
Physically Mod	0.279	0.297	0.262
Physically Active	0.236	0.250	0.222
Smoke Daily	0.181	0.157	0.204
Smoke Occ	0.042	0.038	0.047
Smoke Never	0.777	0.805	0.749
Urban	0.859	0.854	0.865
NFL	0.019	0.021	0.018
PEI	0.005	0.005	0.005
NS	0.031	0.036	0.033
NB	0.026	0.025	0.028
QUE	0.256	0.260	0.252

MAN	0.033	0.032	0.035
SAS	0.031	0.029	0.034
ALB	0.102	0.107	0.096
ON	0.376	0.378	0.374
BC	0.121	0.107	0.125
N	41,022	20,136	20,886

Table 3.4A: The raw probabilities of being with a regular family doctor (1998- 2010)

	1998/99	2000/01	2002/03	2004/05	2006/07	2008/09	2010/11	Total
$Pr\ (FDoc_{\ t} = 1)$	0.87	0.88	0.89	0.88	0.90	0.90	0.87	0.89
$Pr\ (FDoc_{\ t} = 1 \mid FDoc_{\ t-1} = 1)$		0.94	0.94	0.94	0.95	0.95	0.96	0.95
$Pr\ (FDoc_{\ t} = 1 \mid FDoc_{\ t-1} = 0)$		0.50	0.48	0.45	0.48	0.42	0.40	0.47
Persistence: Difference		**0.44**	**0.46**	**0.49**	**0.47**	**0.53**	**0.56**	**0.48**
Persistence: Ratio		**1.88**	**1.96**	**2.09**	**1.98**	**2.26**	**2.40**	**2.02**

Note: the table reports: [1] probability of having a regular family doc. [2] the probability of having a family doc in year t conditional on having a one in year t-1, [3] getting access to family Doc, the probability of having a family doc in year t conditional on not having a one in year t-1, [4] Persistence: Difference= $Pr\ (FDoc_{\ t} = 1 \mid FDoc_{\ t-1} = 1)$ - $Pr\ (FDoc_{\ t} = 1 \mid FDoc_{\ t-1} = 0)$

[5] Persistence: Ratio = $Pr\ (FDoc_{\ t} = 1 \mid FDoc_{\ t-1} = 1)$ / $Pr\ (FDoc_{\ t} = 1 \mid FDoc_{t-1} = 0)$

Table 3.4B: The raw probabilities of being without a regular family doctor (1998-2010)

	1998/99	2000/01	2002/03	2004/05	2006/07	2008/09	2010/11	Total
$Pr\ (FDoc_{\ t} = 0)$	0.13	0.12	0.11	0.12	0.10	0.10	0.13	0.11
$Pr\ (FDoc_{\ t} = 0 \mid FDoc_{\ t-1} = 0)$		0.50	0.52	0.55	0.52	0.58	0.60	0.53
$Pr\ (FDoc_{\ t} = 0 \mid FDoc_{\ t-1} = 1)$		0.06	0.06	0.06	0.05	0.05	0.04	0.05
Persistence: Difference		**0.44**	**0.46**	**0.49**	**0.47**	**0.53**	**0.56**	**0.48**
Persistence: Ratio		**8.33**	**8.67**	**9.17**	**10.4**	**11.6**	**15**	**10.6**

Note: the table reports: [1] probability of not having a regular family Doc. [2] the probability of not having family doc in year t conditional on not having a one in year t-1, [3] loosing access to a family doc, the probability of not having a family doc in year t conditional on having a one in year t-1, [4] Persistence: Difference= $Pr\ (FDoc_{\ t} = 0 \mid FDoc_{\ t-1} = 0)$ - $Pr\ (FDoc_{\ t} = 0 \mid FDoc_{\ t-1} = 1)$

[5] Persistence: Ratio = $Pr\ (FDoc_{\ t} = 0 \mid FDoc_{\ t-1} = 0)$ / $Pr\ (FDoc_{\ t} = 0 \mid FDoc_{\ t-1} = 1)$

Table 3.5: Transition matrix for the total sample (1998 - 2010)

From Having Reg. Family Doc. at time t	To (t +1)		
	Reg Family Doc=1	Reg Family Doc=0	N
Reg Family Doc=1	**0.95**	0.05	
	34,413	1,899	36,312
Reg Family Doc=0	0.47	**0.53**	
	2,194	2,516	4,710
	36,607	4,415	41,022

Note: Considering access status in periods *t* and *t*+2, approximately 84 percent of the observations represent continuations of having a family doctor (34,413 out of 41,022), and about 6 percent come from continuations of not having a family doctor (2,516 out of 41,022), leaving around 10 percent that present transitions between access states during the two-year period. In particular, there are about (1899) transitions from having regular family doctor to not which implies a transition rate of 5% and 2194 transitions from not having access to family doctor to having one and this implies a transition rate about 47%.

Table 3.6: Summary statistics for the total sample, and for subsamples by the presence of a regular family Doc.

	All persons	Reg Family Doc=1	Reg Family Doc=0
Alone	0.153	0.153	0.208
WSpouse only	0.294	0.295	0.235
WSpouse and Kid(s)	0.376	0.367	0.335
SnglParent and Kid(s)	0.051	0.052	0.048
WOthers	0.136	0.133	0.174
Affection	10.571	10.613	10.235
Tangible	13.490	13.535	13.139
Emotional	27.181	27.245	26.663
Social Participation	13.629	13.655	13.418
Num RF	6.797	6.797	6.287
Age (years)	48.87	48.87	41.29
Male	0.472	0.472	0.635
Les Sec	0.108	0.108	0.092
Sec	0.153	0.153	0.137
Some Post	0.174	0.174	0.193
Post Sec	0.565	0.565	0.578
Low Income	0.058	0.060	0.064
Low Middle Income	0.157	0.157	0.155
High Middle Income	0.344	0.343	0.337
High Income	0.441	0.440	0.444
Imm	0.158	0.166	0.092
NumConds- 0	0.280	0.280	0.465
NumConds- 1	0.270	0.271	0.262
NumConds- 2 or 3	0.304	0.304	0.210
Numconds- 4+	0.146	0.145	0.063
Activity- limit	0.141	0.141	0.064
HFP	0.096	0.096	0.055
HG	0.307	0.307	0.304
HVG	0.407	0.407	0.418
HEX	0.190	0.190	0.223
DrinkReg	0.676	0.666	0.751
DrinkOcc	0.171	0.171	0.143
DrinkForm	0.109	0.109	0.082
DrinkNever	0.044	0.044	0.023
Physically Inactive	0.485	0.485	0.502
Physically Mod	0.279	0.279	0.257
Physically Active	0.236	0.236	0.241
SmokeDaily	0.181	0.181	0.257
SmokeOcc	0.042	0.042	0.064
SmokeNever	0.777	0.777	0.679
Urban	0.859	0.859	0.874
NFL	0.019	0.020	0.021
PEI	0.005	0.005	0.003
NS	0.031	0.034	0.017
NB	0.026	0.027	0.015
QUE	0.256	0.256	0.439
MAN	0.033	0.033	0.038
SAS	0.031	0.032	0.036
ALB	0.102	0.102	0.123
BC	0.121	0.115	0.087
N	41,022	36,312	4,710

Table 3.7: The effect of social capital on the likelihood of having a regular family physician for the total sample and when the sample is parsed by gender-Static random effects probit model

Variables	Affection	Tangible	Affection		Tangible	
	All persons	All persons	Females	Males	Females	Males
(L) Social Capital	0.002***	0.001***	0.001*	0.003***	0.000	0.003***
	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)
(L) Alone	-0.018***	-0.018***	-0.005	-0.036***	-0.005	-0.035***
	(0.004)	(0.004)	(0.004)	(0.007)	(0.004)	(0.007)
(L) WSpouse only	0.010***	0.011***	0.003	0.022***	0.003	0.021***
	(0.004)	(0.003)	(0.003)	(0.007)	(0.003)	(0.007)
(L) WSpouse and Kid(s)	0.018***	0.018***	0.012***	0.025***	0.012***	0.024***
	(0.003)	(0.003)	(0.003)	(0.007)	(0.003)	(0.007)
(L) SnglParent and Kid(s)	0.009	0.009	0.006	0.002	0.006	0.002
	(0.006)	(0.006)	(0.004)	(0.016)	(0.004)	(0.016)
(L) Num RF	8.9e-05	9.2e-05	-5.9-05	2.0e-04	-5.9-05	2.0e-04
	(2.0e-05)	(1.8e-04)	(1.9e-04)	(3.4e-04)	(1.9e-04)	(3.4e-04)
Age	0.003***	0.003***	0.002***	0.005***	0.002***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age Sq	-7.9e-06	-7.8e-06	-5.89e-06	-9.92e-06	-5.9e-06	-1.1e-05
	(5.7e-06)	(5.7e-06)	(5.0e-06)	(1.3e-05)	(5.0e-6)	(1.3e-05)
Male	-0.038***	-0.039***				
	(0.003)	(0.003)				
Sec	0.003	0.003	0.003	0.001	0.003	0.001
	(0.004)	(0.004)	(0.004)	(0.009)	(0.004)	(0.009)
Some Post	0.004	0.004	0.004	-0.000	0.004	-0.000
	(0.004)	(0.004)	(0.004)	(0.009)	(0.004)	(0.009)
Post Sec	0.004	0.004	0.001	0.005	0.001	0.006
	(0.004)	(0.004)	(0.004)	(0.008)	(0.004)	(0.009)
Low Income	-0.003	-0.003	-0.004	-0.003	-0.004	-0.003
	(0.005)	(0.005)	(0.004)	(0.011)	(0.004)	(0.011)
Low Middle Income	-0.004	-0.004	-0.004	-0.006	-0.004	-0.006
	(0.004)	(0.004)	(0.003)	(0.008)	(0.003)	(0.008)
High Middle Income	-0.001	-0.001	-0.003	0.002	-0.003	0.002
	(0.003)	(0.003)	(0.002)	(0.006)	(0.002)	(0.006)
Imm <10	0.033	0.033	0.025	0.048	0.024	0.048
	(0.023)	(0.023)	(0.020)	(0.051)	(0.020)	(0.051)
Imm >=10	0.008	0.008	0.002	0.016	0.002	0.016
	(0.005)	(0.005)	(0.004)	(0.011)	(0.004)	(0.011)
NumConds- 1	0.026***	0.026***	0.015***	0.041***	0.015***	0.042***
	(0.003)	(0.003)	(0.003)	(0.006)	(0.003)	(0.006)
NumConds- 2 or 3	0.037***	0.038***	0.020***	0.064***	0.020***	0.064***
	(0.003)	(0.003)	(0.003)	(0.007)	(0.003)	(0.007)
NumConds- 4+	0.050***	0.050***	0.031***	0.076***	0.031***	0.077***
	(0.005)	(0.005)	(0.004)	(0.011)	(0.004)	(0.011)
HFP	0.007	0.006	0.000	0.019*	0.000	0.019*
	(0.005)	(0.005)	(0.004)	(0.011)	(0.004)	(0.011)
HG	-0.002	-0.002	0.001	-0.007	0.000	-0.007
	(0.003)	(0.003)	(0.003)	(0.007)	(0.003)	(0.007)
HVG	-0.001	-0.001	0.001	-0.003	0.001	-0.003
	(0.003)	(0.003)	(0.003)	(0.006)	(0.003)	(0.006)
DrinkReg	-0.004	-0.004	-0.004	-0.007	-0.004	-0.008
	(0.006)	(0.006)	(0.005)	(0.016)	(0.005)	(0.016)

DrinkOcc	-0.001	-0.001	-0.000	-0.009	-0.000	-0.009
	(0.007)	(0.007)	(0.005)	(0.017)	(0.005)	(0.017)
DrinkForm	-0.009	-0.009	-0.008	-0.009	-0.008	-0.009
	(0.007)	(0.007)	(0.005)	(0.017)	(0.005)	(0.017)
Physical Mod	0.007**	0.007**	0.005*	0.009	0.005*	0.009
	(0.003)	(0.003)	(0.003)	(0.006)	(0.003)	(0.006)
Physically Inactive	0.000	0.000	0.002	-0.005	0.002	-0.005
	(0.003)	(0.003)	(0.003)	(0.006)	(0.003)	(0.006)
SmokeDaily	-0.015***	-0.016***	-0.014***	-0.015**	-0.014***	-0.016**
	(0.003)	(0.003)	(0.003)	(0.007)	(0.003)	(0.007)
SmokeOcc	-0.013***	-0.013***	-0.005	-0.027***	-0.005	-0.027***
	(0.005)	(0.005)	(0.005)	(0.009)	(0.005)	(0.009)
Urban	-0.003	-0.003	-0.003	-0.001	-0.003	-0.001
	(0.003)	(0.003)	(0.003)	(0.007)	(0.003)	(0.007)
NFL	-0.021***	-0.021***	-0.014**	-0.029*	-0.014**	-0.030*
	(0.007)	(0.007)	(0.006)	(0.015)	(0.006)	(0.015)
PEI	0.009	0.008	0.003	0.015	0.003	0.014
	(0.007)	(0.007)	(0.006)	(0.015)	(0.006)	(0.015)
NS	0.013*	0.012*	0.004	0.027*	0.004	0.026
	(0.007)	(0.007)	(0.006)	(0.016)	(0.006)	(0.016)
NB	0.021***	0.020***	0.011*	0.037**	0.011	0.036**
	(0.007)	(0.007)	(0.006)	(0.016)	(0.006)	(0.016)
QUE	-0.060***	-0.060***	-0.037***	-0.093***	-0.037***	-0.094***
	(0.005)	(0.005)	(0.005)	(0.011)	(0.005)	(0.011)
MAN	-0.036***	-0.036***	-0.018***	-0.063***	-0.018***	-0.064***
	(0.007)	(0.007)	(0.006)	(0.014)	(0.006)	(0.014)
SAS	-0.031***	-0.031***	-0.012**	-0.062***	-0.012**	-0.062***
	(0.006)	(0.006)	(0.006)	(0.014)	(0.006)	(0.014)
ALB	-0.042***	-0.041***	-0.022***	-0.073***	-0.022***	-0.072***
	(0.005)	(0.005)	(0.005)	(0.012)	(0.005)	(0.011)
BC	-0.017***	-0.017***	-0.009*	-0.032***	-0.009*	-0.031**
	(0.006)	(0.006)	(0.005)	(0.012)	(0.005)	(0.012)
Year: 2002/03	-0.001	-0.001	0.001	-0.004	0.001	-0.004
	(0.002)	(0.002)	(0.002)	(0.005)	(0.002)	(0.005)
Year: 2004/05	-0.007**	-0.007**	-0.001	-0.016***	-0.001	-0.015**
	(0.003)	(0.003)	(0.003)	(0.006)	(0.003)	(0.006)
Year: 2006/07	-0.005	-0.005	-0.002	-0.010	-0.002	-0.009
	(0.003)	(0.003)	(0.003)	(0.007)	(0.003)	(0.007)
Year: 2008/09	-0.008**	-0.008**	-0.003	-0.016**	-0.003	-0.015**
	(0.004)	(0.004)	(0.003)	(0.007)	(0.003)	(0.007)
Year: 2010/11	-0.010***	-0.010**	-0.006	-0.017**	-0.006	-0.017**
	(0.004)	(0.004)	(0.004)	(0.008)	(0.004)	(0.008)
Rho	0.59	0.59	0.54	0.63	0.54	0.63
N	41,022	41,022	23,143	17,879	23,143	17,879

Note: Data from the NPHS. Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. (L) indicates a lagged variable. Sample sizes refer to periods 4 to T. The predicted probability= 0.89 for the total sample, 0.91 for females and 0.88 for males. The standard deviation for social capital indicators as follow: for Affection =2.44; Tangible = 3.19; Emotional= 5.902 and for Participation =3.017. For males: SD of Affection=2.44 and SD of Tangible=3.15. for females: SD of Affection=2.18 and SD of Tangible=3.36. Average marginal effects are reported above. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table 3.8: The effect of social capital on the likelihood of having a regular family physician for full sample and when the sample is parsed by gender and age- using dynamic random effects probit models

Variables	Affection		Tangible		Affection		Tangible		Tangible	
	All persons		All persons		Wooldridge model- By gender		Wooldridge model- By gender		Wooldridge model- By Age	
	Dynamic RE probit	Wooldridge model	Dynamic RE probit	Wooldridge model	Females	Males	Females	Males	Age<40	Age>=40
(L) Reg Family Doc	0.293***	0.177***	0.292***	0.176***	0.145***	0.211***	0.145***	0.209***	0.218***	0.195***
	(0.014)	(0.012)	(0.014)	(0.012)	(0.017)	(0.017)	(0.017)	(0.017)	(0.021)	(0.018)
(I) Reg Family Doc		0.065***		0.065***	0.056***	0.078***	0.057***	0.079***	0.091***	0.053***
		(0.004)		(0.004)	(0.005)	(0.007)	(0.005)	(0.007)	(0.010)	(0.004)
(L) Social capital	0.002***	0.002***	0.001***	0.001***	0.001*	0.002**	0.000	0.002***	0.002**	0.001**
	(0.001)	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)
(L) Alone	-0.018***	-0.015***	-0.018***	-0.015***	-0.004	-0.027***	-0.005	-0.026***	-0.028***	-0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.007)	(0.005)	(0.007)	(0.010)	(0.004)
(L) WSpouse only	0.011***	0.010**	0.012***	0.011***	0.002	0.022***	0.003	0.022***	0.029***	0.011**
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.007)	(0.005)	(0.007)	(0.010)	(0.004)
(L) WSpouse and Kid(s)	0.016***	0.014***	0.017***	0.015***	0.012***	0.017**	0.013***	0.017**	0.046***	0.001
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.007)	(0.004)	(0.007)	(0.008)	(0.004)
(L) SnglParent and Kid(s)	0.006	0.008	0.007	0.008	0.006	0.011	0.006	0.011	0.018	0.002
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.016)	(0.006)	(0.016)	(0.016)	(0.006)
(L) Num RF	03.05e-04	1.90e-04	3.33e-04	2.04e-04	-1.00e-04	4.0e-04	-5.64-05	3.86e-04	0.001	1.61e-04
	(2.12e-04)	(2.00e-04)	(2.21e-04)	(2.01e-04)	(2.47e-04)	(3.37e-04)	(2.51e-04)	(3.37e-04)	(0.001)	(1.86e-04)
Age	0.002***	0.002***	0.002***	0.002***	0.001*	0.003**	0.001*	0.003**		
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)		
Age Sq	-4.8e-06	-3.2e-06	-4.6e-06	-3.1e-06	-3.6e-06	-3.1e-06	-2.8e-06	-3.1e-06		
	(6.0e-06)	(6.1e-06)	(6.0e-06)	(6.03e-06)	(6.53e-06)	(1.1e-0-5)	(6.5e-06)	(1.1e-05)		
Male	-0.031***	-0.027***	-0.033***	-0.028***					-0.062***	-0.015***
	(0.003)	(0.003)	(0.003)	(0.003)					(0.008)	(0.003)
Sec	0.004	-0.009	0.004	-0.009	0.002	-0.024**	0.002	-0.025**	-0.005	-0.008
	(0.005)	(0.007)	(0.005)	(0.007)	(0.008)	(0.011)	(0.008)	(0.011)	(0.020)	(0.006)
Some Post	0.001	-0.005	0.001	-0.005	0.007	-0.023**	0.007	-0.024**	-0.011	-0.001
	(0.005)	(0.007)	(0.005)	(0.007)	(0.008)	(0.012)	(0.008)	(0.012)	(0.020)	(0.007)
Post Sec	0.005	-0.006	0.005	-0.006	0.004	-0.019*	0.004	-0.020*	0.006	-0.009
	(0.005)	(0.007)	(0.005)	(0.007)	(0.008)	(0.011)	(0.008)	(0.011)	(0.020)	(0.006)
Low Income	-0.004	0.013	-0.004	0.013	0.012	0.009	0.012	0.008	0.007	0.018**
	(0.006)	(0.008)	(0.006)	(0.008)	(0.009)	(0.016)	(0.009)	(0.016)	(0.020)	(0.009)
Low Middle Income	-0.007*	0.003	-0.007*	0.003	-0.002	0.012	-0.002	0.012	-0.014	0.011*
	(0.004)	(0.006)	(0.004)	(0.006)	(0.006)	(0.011)	(0.006)	(0.011)	(0.014)	(0.006)

High Middle Income	-0.001	-0.001	-0.002	-0.001	-0.006	0.006	-0.006	0.006	-0.019*	0.007
	(0.003)	(0.004)	(0.003)	(0.004)	(0.005)	(0.007)	(0.005)	(0.007)	(0.010)	(0.004)
Imm <10	0.048*	0.051*	0.048*	0.051*	0.027	0.079	0.026	0.078	0.133**	0.016
	(0.029)	(0.028)	(0.029)	(0.028)	(0.030)	(0.049)	(0.030)	(0.049)	(0.067)	(0.028)
Imm >=10	0.006	0.006	0.006	0.006	0.004	0.007	0.004	0.007	0.013	0.007
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.009)	(0.005)	(0.009)	(0.015)	(0.004)
NumConds- 1	0.029***	0.021***	0.029***	0.021***	0.013***	0.032***	0.013***	0.032***	0.014	0.024***
	(0.003)	(0.004)	(0.003)	(0.004)	(0.005)	(0.007)	(0.005)	(0.007)	(0.010)	(0.004)
NumConds- 2 or 3	0.040***	0.027***	0.040***	0.027***	0.011*	0.050***	0.011*	0.050***	0.027**	0.028***
	(0.004)	(0.005)	(0.004)	(0.005)	(0.006)	(0.009)	(0.006)	(0.009)	(0.013)	(0.005)
NumConds- 4+	0.053***	0.035***	0.053***	0.036***	0.019**	0.054***	0.019**	0.055***	0.015	0.039***
	(0.005)	(0.007)	(0.005)	(0.007)	(0.008)	(0.014)	(0.008)	(0.014)	(0.022)	(0.007)
HFP	0.007	0.004	0.007	0.004	-0.008	0.024*	-0.008	0.024*	-0.025	0.013*
	(0.006)	(0.008)	(0.006)	(0.008)	(0.008)	(0.014)	(0.008)	(0.014)	(0.022)	(0.007)
HG	-0.003	-0.006	-0.003	-0.006	-0.004	-0.009	-0.004	-0.009	-0.022*	0.002
	(0.004)	(0.005)	(0.004)	(0.005)	(0.006)	(0.009)	(0.006)	(0.009)	(0.012)	(0.005)
HVG	-0.001	-0.004	-0.001	-0.004	-0.003	-0.007	-0.003	-0.007	-0.023**	0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.008)	(0.005)	(0.008)	(0.010)	(0.004)
DrinkReg	-0.002	-0.013	-0.002	-0.013	-0.008	-0.024	-0.008	-0.024	-0.033	-0.007
	(0.007)	(0.011)	(0.007)	(0.011)	(0.011)	(0.023)	(0.011)	(0.023)	(0.032)	(0.011)
DrinkOcc	0.002	-0.006	0.002	-0.006	0.001	-0.023	0.001	-0.023	-0.012	-0.006
	(0.008)	(0.011)	(0.008)	(0.011)	(0.011)	(0.023)	(0.011)	(0.023)	(0.032)	(0.010)
DrinkForm	-0.010	-0.012	-0.010	-0.011	-0.011	-0.011	-0.011	-0.011	-0.023	-0.009
	(0.008)	(0.010)	(0.008)	(0.010)	(0.010)	(0.022)	(0.010)	(0.022)	(0.032)	(0.010)
Physical Mod	0.010***	0.007*	0.010***	0.007*	0.008	0.006	0.008	0.007	0.006	0.004
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.007)	(0.005)	(0.007)	(0.010)	(0.004)
Physically Inactive	0.002	0.002	0.002	0.002	0.008*	-0.008	0.008*	-0.008	0.015	0.001
	(0.003)	(0.004)	(0.003)	(0.004)	(0.005)	(0.007)	(0.005)	(0.007)	(0.010)	(0.004)
SmokeDaily	-0.017***	-0.007	-0.017***	-0.007	-0.007	-0.007	-0.008	-0.007	-0.013	-0.003
	(0.003)	(0.006)	(0.003)	(0.006)	(0.007)	(0.011)	(0.007)	(0.011)	(0.015)	(0.007)
SmokeOcc	-0.013**	-0.010	-0.013**	-0.010	0.002	-0.027**	0.002	-0.027**	-0.027	0.001
	(0.006)	(0.007)	(0.006)	(0.007)	(0.008)	(0.013)	(0.008)	(0.013)	(0.016)	(0.008)
Urban	-0.004	-0.005	-0.004	-0.006	-0.004	-0.007	-0.004	-0.007	-0.014	-0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)	(0.004)	(0.006)	(0.010)	(0.003)
NFL	-0.020***	-0.011*	-0.020***	-0.011	-0.008	-0.016	-0.007	-0.017	-0.010	-0.013**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.013)	(0.007)	(0.013)	(0.019)	(0.006)
PEI	0.004	0.004	0.004	0.004	0.001	0.010	0.001	0.009	0.020	0.000
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.013)	(0.008)	(0.013)	(0.018)	(0.007)
NS	0.014*	0.015**	0.013*	0.015**	0.007	0.027**	0.007	0.026*	0.042**	0.007
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.014)	(0.007)	(0.014)	(0.017)	(0.007)

NB	0.015*	0.016**	0.014*	0.016**	0.008	0.030**	0.008	0.029**	0.031*	0.009
	(0.007)	(0.007)	(0.007)	(0.007)	(0.008)	(0.014)	(0.008)	(0.014)	(0.017)	(0.007)
QUE	-0.049***	-0.039***	-0.049***	-0.040***	-0.030***	-0.052***	-0.030***	-0.053***	-0.074***	-0.028***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.008)	(0.005)	(0.008)	(0.011)	(0.004)
MAN	-0.031***	-0.026***	-0.031***	-0.026***	-0.015**	-0.043***	-0.015**	-0.043***	-0.057***	-0.017***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.011)	(0.007)	(0.011)	(0.016)	(0.006)
SAS	-0.028***	-0.023***	-0.028***	-0.023***	-0.011*	-0.041***	-0.011	-0.041***	-0.027	-0.021***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.011)	(0.007)	(0.011)	(0.016)	(0.006)
ALB	-0.035***	-0.029***	-0.035***	-0.029***	-0.020***	-0.043***	-0.020***	-0.043***	-0.057***	-0.020***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.010)	(0.006)	(0.010)	(0.012)	(0.005)
BC	-0.015***	-0.013**	-0.015***	-0.013**	-0.008	-0.023**	-0.008	-0.023**	-0.017	-0.010*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.010)	(0.006)	(0.010)	(0.014)	(0.005)
Year: 2002/03	0.000	0.001	0.000	0.001	0.003	-0.001	0.003	-0.001	0.009	-0.002
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)	(0.004)	(0.006)	(0.008)	(0.004)
Year: 2004/05	-0.009**	-0.005	-0.009**	-0.005	-0.001	-0.013*	-0.001	-0.012*	-0.001	-0.006
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)	(0.004)	(0.007)	(0.009)	(0.004)
Year: 2006/07	-0.003	0.001	-0.002	0.001	0.002	0.000	0.002	0.000	-0.005	0.004
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.007)	(0.005)	(0.007)	(0.011)	(0.004)
Year: 2008/09	-0.008*	-0.003	-0.008*	-0.002	0.001	-0.008	0.001	-0.007	0.019*	-0.005
	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.008)	(0.005)	(0.008)	(0.011)	(0.004)
Year: 2010/11	-0.008*	-0.003	-0.008*	-0.003	-0.000	-0.006	-0.000	-0.005	0.011	-0.001
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.008)	(0.005)	(0.008)	(0.013)	(0.005)
Mean (Sec)		0.023**		0.023**	0.005	0.051***	0.005	0.052***	0.030	0.010
		(0.011)		(0.011)	(0.012)	(0.019)	(0.012)	(0.019)	(0.035)	(0.009)
Mean (Some Post)		0.004		0.004	-0.012	0.026	-0.012	0.027	0.007	-0.008
		(0.010)		(0.010)	(0.011)	(0.018)	(0.011)	(0.018)	(0.032)	(0.009)
Mean (Post Sec)		0.014		0.014	-0.006	0.041**	-0.006	0.043**	0.007	0.006
		(0.009)		(0.009)	(0.011)	(0.017)	(0.011)	(0.017)	(0.031)	(0.009)
Mean (Low Income)		-0.027**		-0.027**	-0.033***	-0.004	-0.034***	-0.003	-0.047	-0.025**
		(0.012)		(0.012)	(0.012)	(0.024)	(0.012)	(0.024)	(0.030)	(0.012)
Mean (Low Middle Income)		-0.017**		-0.017**	-0.005	-0.043***	-0.005	-0.043***	-0.004	-0.019**
		(0.008)		(0.008)	(0.009)	(0.016)	(0.009)	(0.016)	(0.022)	(0.008)
Mean (High Middle Income)		0.002		0.002	0.005	-0.001	0.005	-0.001	0.020	-0.005
		(0.007)		(0.007)	(0.008)	(0.012)	(0.008)	(0.012)	(0.017)	(0.007)
Mean (NumConds- 1)		0.012*		0.012*	0.013	0.011	0.013	0.011	0.023	0.012
		(0.007)		(0.007)	(0.008)	(0.012)	(0.008)	(0.012)	(0.017)	(0.007)
Mean (NumConds- 2 or 3)		0.014*		0.014*	0.021**	0.006	0.021**	0.006	0.010	0.019***
		(0.007)		(0.007)	(0.008)	(0.014)	(0.008)	(0.014)	(0.019)	(0.007)
Mean (NumConds- 4+)		0.019*		0.019*	0.023**	0.021	0.024**	0.020	0.041	0.020*
		(0.011)		(0.011)	(0.011)	(0.022)	(0.011)	(0.022)	(0.032)	(0.010)

Mean(HFP)		0.011		0.010	0.028**	-0.019	0.026**	-0.019	0.077**	-0.005
		(0.012)		(0.012)	(0.013)	(0.022)	(0.013)	(0.022)	(0.038)	(0.011)
Mean(HG)		0.007		0.007	0.014	-0.005	0.013	-0.004	0.025	-0.003
		(0.008)		(0.008)	(0.009)	(0.015)	(0.009)	(0.014)	(0.020)	(0.008)
Mean (HVG)		0.010		0.010	0.016**	-0.002	0.016*	-0.001	0.027	0.003
		(0.007)		(0.007)	(0.008)	(0.013)	(0.008)	(0.013)	(0.018)	(0.007)
Mean (DrinkReg)		0.012		0.012	0.003	0.023	0.003	0.022	-0.011	0.006
		(0.014)		(0.014)	(0.014)	(0.030)	(0.014)	(0.030)	(0.040)	(0.013)
Mean (DrinkOcc)		0.008		0.008	-0.001	0.026	-0.001	0.025	-0.006	0.001
		(0.014)		(0.014)	(0.014)	(0.031)	(0.014)	(0.031)	(0.041)	(0.013)
Mean (DrinkForm)		-0.001		-0.001	0.002	-0.010	0.003	-0.012	-0.016	-0.000
		(0.015)		(0.015)	(0.015)	(0.032)	(0.015)	(0.032)	(0.046)	(0.013)
Mean (PhysicallyMod)		0.015*		0.015*	-0.003	0.040***	-0.003	0.040***	-0.010	0.024***
		(0.008)		(0.008)	(0.010)	(0.015)	(0.010)	(0.015)	(0.021)	(0.008)
Mean (Physically Inactive)		0.002		0.002	-0.013*	0.024**	-0.014*	0.024**	-0.018	0.010
		(0.007)		(0.007)	(0.008)	(0.012)	(0.008)	(0.012)	(0.017)	(0.007)
Mean (SmokeDaily)		-0.010		-0.010	-0.014	-0.006	-0.014	-0.006	0.002	-0.021***
		(0.007)		(0.007)	(0.008)	(0.013)	(0.008)	(0.013)	(0.018)	(0.008)
Mean (SmokeOcc)		-0.003		-0.003	-0.018	0.017	-0.018	0.019	0.009	-0.016
		(0.013)		(0.013)	(0.015)	(0.025)	(0.015)	(0.025)	(0.028)	(0.015)
Rho	0.14	0.25	0.14	0.25	0.20	0.30	0.20	0.30	0.25	0.22
The predicted probability	0.89	0.89	0.89	0.89	0.91	0.88	0.91	0.88	0.82	0.92
N	41,022	41,022	41,022	41,022	23,143	17,879	23,143	17,879	11,420	29,602

Note: Data from the NPHS. Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01. (L) indicates a lagged variable and (I) indicated the initial observation of the variable in cycle 3. Sample sizes refer to periods 4 to T. predicted probability= 0.89 for the total sample, 0.91 for females and 0.88 for males. The standard deviation for social capital indicators as follow: for Affection =2.444; Tangible = 3.19. For males: SD of Affection=2.44 and SD of Tangible=3.15. for females: SD of Affection=2.18 and SD of Tangible=3.36. for the Age<40: SD of Tangible=3.28 and for Age>40: SD of Tangible =3.35. Average marginal effects are reported above. Rho is the proportion of the total variance that is accounted for by the individual-level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table 3.9: The effects of social capital on having a regular family doctor when the sample is parsed into two subsamples, which reflect access status in the previous cycle(t-1): those who had no family doctor in t-1, and those who had one.

Variables	Tangible		Affection	
	Previously had no family doctor	Previously had family doctor	Previously had no family doctor	Previously had family doctor
(L) Social Capital	0.005*	0.001**	0.008*	0.001***
	(0.003)	(0.000)	(0.004)	(0.000)
(L) Alone	-0.044*	-0.012***	-0.043	-0.012***
	(0.027)	(0.003)	(0.027)	(0.003)
(L) WSpouse only	0.082***	0.005	0.080***	0.004
	(0.026)	(0.003)	(0.026)	(0.003)
(L) WSpouse and Kid(s)	0.074***	0.009***	0.071***	0.009***
	(0.026)	(0.003)	(0.026)	(0.003)
(L) SnglParent and Kid(s)	-0.027	0.006	-0.027	0.006
	(0.046)	(0.005)	(0.046)	(0.005)
(L) Num RF	-0.002	3.45e-05**	-0.002	3.30e-04*
	(0.001)	(1.7e-04)	(0.001)	(1.7e-04)
Age	-2.0E-4	0.002***	-0.000	0.002***
	(0.004)	(0.000)	(0.004)	(0.000)
Age Sq	3.8e-05	- 9.3e-06 **	3.9e-05	- 9.5e-06 **
	(4.5e-05)	(4.5e-06)	(4.5e-05)	(4.5e-06)
Male	-0.136***	-0.020***	-0.132***	-0.019***
	(0.020)	(0.002)	(0.020)	(0.002)
Sec	-0.000	0.003	-0.002	0.003
	(0.037)	(0.004)	(0.037)	(0.004)
Some Post	0.011	-0.000	0.010	-0.001
	(0.035)	(0.004)	(0.035)	(0.004)
Post Sec	0.083**	-0.002	0.081**	-0.002
	(0.033)	(0.004)	(0.033)	(0.004)
Low Income	0.030	-0.006	0.031	-0.006
	(0.039)	(0.005)	(0.038)	(0.005)
Low Middle Income	-0.013	-0.006*	-0.013	-0.007**
	(0.028)	(0.003)	(0.028)	(0.003)
High Middle Income	0.008	-0.002	0.008	-0.002
	(0.022)	(0.003)	(0.022)	(0.003)
Imm <10	0.124	0.045*	0.129	0.045*
	(0.153)	(0.026)	(0.153)	(0.026)
Imm >=10	-0.017	0.006	-0.017	0.006
	(0.037)	(0.004)	(0.037)	(0.004)
NumConds- 1	0.139***	0.015***	0.138***	0.015***
	(0.021)	(0.003)	(0.021)	(0.003)
NumConds- 2 or 3	0.194***	0.021***	0.193***	0.021***
	(0.024)	(0.003)	(0.024)	(0.003)
NumConds- 4+	0.253***	0.029***	0.252***	0.029***
	(0.039)	(0.004)	(0.039)	(0.004)
HFP	0.142***	-0.001	0.143***	-0.001
	(0.043)	(0.005)	(0.043)	(0.005)
HG	-0.001	-0.002	-0.000	-0.002
	(0.026)	(0.003)	(0.026)	(0.003)

HVG	0.011	-0.002	0.012	-0.002
	(0.023)	(0.003)	(0.023)	(0.003)
DrinkReg	-0.043	-0.000	-0.040	-0.000
	(0.058)	(0.005)	(0.058)	(0.005)
DrinkOcc	-0.046	0.004	-0.043	0.004
	(0.060)	(0.006)	(0.060)	(0.006)
DrinkForm	-0.073	-0.003	-0.071	-0.004
	(0.062)	(0.006)	(0.062)	(0.006)
Physical Mod	-0.007	0.010***	-0.006	0.010***
	(0.024)	(0.003)	(0.024)	(0.003)
Physically Inactive	-0.001	0.001	-0.001	0.001
	(0.023)	(0.003)	(0.023)	(0.003)
SmokeDaily	-0.086***	-0.009***	-0.084***	-0.009***
	(0.022)	(0.003)	(0.022)	(0.003)
SmokeOcc	-0.109***	-0.004	-0.110***	-0.004
	(0.038)	(0.005)	(0.038)	(0.005)
Urban	-0.065***	0.001	-0.065***	0.001
	(0.024)	(0.003)	(0.024)	(0.003)
NFL	-0.102**	-0.009*	-0.103**	-0.009*
	(0.045)	(0.005)	(0.045)	(0.005)
PEI	0.155***	-0.003	0.156***	-0.003
	(0.054)	(0.005)	(0.054)	(0.005)
NS	0.047	0.010*	0.046	0.010*
	(0.054)	(0.005)	(0.054)	(0.005)
NB	0.003	0.014**	0.005	0.014***
	(0.062)	(0.005)	(0.063)	(0.005)
QUE	-0.178***	-0.030***	-0.177***	-0.029***
	(0.029)	(0.004)	(0.029)	(0.004)
MAN	-0.076*	-0.023***	-0.075*	-0.023***
	(0.042)	(0.005)	(0.042)	(0.005)
SAS	0.007	-0.023***	0.005	-0.023***
	(0.044)	(0.005)	(0.044)	(0.005)
ALB	-0.056*	-0.026***	-0.058*	-0.026***
	(0.034)	(0.004)	(0.034)	(0.004)
BC	-0.030	-0.011***	-0.031	-0.011***
	(0.041)	(0.004)	(0.041)	(0.004)
Year: 2002/03	0.015	-0.001	0.014	-0.001
	(0.023)	(0.003)	(0.023)	(0.003)
Year: 2004/05	-0.026	-0.006**	-0.026	-0.006**
	(0.026)	(0.003)	(0.026)	(0.003)
Year: 2006/07	-0.016	-0.002	-0.016	-0.002
	(0.027)	(0.003)	(0.027)	(0.003)
Year: 2008/09	-0.082***	-0.002	-0.081***	-0.002
	(0.030)	(0.004)	(0.030)	(0.004)
Year: 2010/11	-0.104***	0.000	-0.104***	0.000
	(0.033)	(0.004)	(0.033)	(0.004)
Rho	0.38	0.25	0.38	0.25
Predicted Probability	0.47	0.95	0.47	0.95
N	4,710	36,312	4,710	36,312

Note: SD of Tangible for the two samples: 3.40 and 3.16. SD of Affection for the two samples: 2.57 and 2.20. Average marginal effects are reported above. Rho is the proportion of the total variance that is accounted for by the individual -level variance. If rho =0, this indicates that individual level variance is unimportant and there is no difference between the panel estimate and the pooled estimate.

Table 3.10: Verbeek and Nijman tests for attrition: based on dynamic random effects probit model with Wooldridge specification of initial conditions

A: when affection social support is considered

	B	Std.err	*t*-Test	*P*-Value
Next cycle	0.005	0.031	0.17	0.866
Number of cycles	0.014	0.010	1.45	0.147
All cycles	0.034	0.028	1.19	0.234
N	41,022			

B: when tangible social support is considered

	B	Std.err	*t*-Test	*P*-Value
Next cycle	0.005	0.031	0.17	0.884
Number of cycles	0.015	0.010	1.47	0.145
All cycles	0.035	0.028	1.24	0.216
N	41,022			

Note: Data from the NPHS. The corresponding full results are presented in table A3.7.

Appendix 3

Table A3.1: Correlation matrix between different measures of social capital and age

Variable	Tangible support	Affection support	Social participation	Emotional /informational support	Living in one-person households
Affection support	0.677*				
Social participation	0.709*	0.780*			
Emotional /informational support	0.706*	0.754*	0.842*		
Living in one- person households	-0.299*	-0.315*	-0.249*	-0.208*	
Age	-0.051*	-0.098*	-0.096*	-0.106*	0.264*

* P<0.05

Table A3.2: Transition matrices for the balanced sample (1998- 2010)

From Having Family Doc. (cycle w)	To (cycle w +1)		
	Reg Family Doc=1	Reg Family Doc=0	N
Reg Family Doc=1	**0.95**	0.05	17,949
Reg Family Doc=0	0.53	**0.47**	2187
N			20,136

Note: Data from the NPHS.

Table A3.3: Summary statistics by cycle (1998-2010) when the sample is parsed by the presence of a family doctor and for the total sample

A: individuals with a regular family doc.

	1998	2000	2002	2004	2006	2008	2010
Alone	0.153	0.146	0.150	0.146	0.136	0.134	0.168
WSpouse only	0.253	0.260	0.275	0.298	0.317	0.334	0.344
WSpouse and Kid(s)	0.330	0.348	0.354	0.366	0.382	0.400	0.368
SnglParent and Kids(s)	0.050	0.0511	0.055	0.056	0.050	0.046	0.051
WOthers	0.214	0.167	0.166	0.134	0.115	0.086	0.069
Tangible	13.478	13.692	13.431	13.632	13.401	13.482	13.509
Affection	10.481	10.635	10.515	10.692	10.615	10.629	10.588
Social Participation	13.439	13.821	13.537	13.793	13.593	13.615	13.481
Emotional/informational	26.678	27.20	27.001	27.339	27.199	27.235	27.256
Num RF	6.480	6.436	6.789	6.700	7.184	7.087	7.270
Age (years)	46.22	47.25	48.20	49.67	50.37	51.89	53.91
Male	0.458	0.449	0.442	0.437	0.459	0.467	0.464
Les Sec	0.114	0.185	0.162	0.095	0.058	0.049	0.053
Sec	0.101	0.151	0.144	0.166	0.163	0.156	0.152
Some Post	0.263	0.274	0.268	0.135	0.097	0.089	0.077
Post Sec	0.522	0.390	0.426	0.601	0.682	0.706	0.718
Low Income	0.116	0.092	0.077	0.063	0.041	0.030	0.032
Low Middle Income	0.255	0.212	0.185	0.166	0.127	0.106	0.103
High Middle Income	0.386	0.394	0.376	0.353	0.325	0.293	0.282
High Income	0.242	0.302	0.362	0.418	0.507	0.571	0.583
Imm<15	0.049	0.044	0.033	0.026	0.012	0.003	0
Imm1520	0.0175	0.017	0.015	0.018	0.023	0.0177	0.010
Imm>=20	0.124	0.122	0.126	0.131	0.126	0.137	0.146
NumConds- 0	0.347	0.330	0.271	0.261	0.227	0.202	0.197
NumConds- 1	0.268	0.280	0.282	0.267	0.266	0.273	0.256
Numconds- 2 or 3	0.273	0.278	0.300	0.313	0.348	0.340	0.341
Numconds- 4+	0.113	0.112	0.147	0.159	0.158	0.185	0.207
Activity- limit	0.137	0.142	0.162	0.155	0.145	0.153	0.147
HFP	0.101	0.113	0.105	0.104	0.099	0.088	0.089
HG	0.270	0.285	0.315	0.310	0.305	0.312	0.325
HVG	0.396	0.391	0.393	0.399	0.420	0.436	0.415
HEX	0.233	0.211	0.187	0.187	0.176	0.164	0.171
DrinkOcc	0.211	0.199	0.190	0.182	0.153	0.150	0.150
DrinkForm	0.129	0.119	0.107	0.119	0.110	0.105	0.114
DrinkNever	0.069	0.065	0.050	0.049	0.041	0.032	0.031
Physically Inactive	0.539	0.568	0.480	0.509	0.441	0.446	0.402
Physically Mod	0.251	0.259	0.288	0.275	0.283	0.294	0.309
Physically Active	0.209	0.173	0.232	0.216	0.276	0.260	0.289
SmokeDaily	0.231	0.210	0.176	0.169	0.160	0.149	0.141
SmokeOcc	0.038	0.0407	0.042	0.038	0.044	0.038	0.032
SmokeNever	0.731	0.749	0.782	0.793	0.796	0.813	0.827
Urban	0.878	0.871	0.871	0.878	0.852	0.830	0.823
NFL	0.019	0.019	0.020	0.019	0.019	0.020	0.019
PEI	0.005	0.005	0.006	0.005	0.005	0.006	0.006
NS	0.034	0.035	0.034	0.037	0.038	0.037	0.036
NB	0.031	0.030	0.028	0.029	0.029	0.028	0.023
QUE	0.216	0.218	0.229	0.220	0.234	0.251	0.261
MAN	0.037	0.034	0.033	0.035	0.031	0.029	0.033
SAS	0.033	0.030	0.030	0.033	0.031	0.030	0.030
ALB	0.092	0.095	0.099	0.104	0.095	0.096	0.104
ON	0.410	0.411	0.392	0.395	0.398	0.393	0.372
BC	0.123	0.123	0.129	0.123	0.119	0.110	0.116

B: individuals without a regular family doc.

	1998	2000	2002	2004	2006	2008	2010
Alone	0.223	0.228	0.221	0.196	0.203	0.163	0.258

WSpouse only	0.201	0.195	0.219	0.241	0.242	0.277	0.285
WSpouse and Kid(s)	0.309	0.303	0.335	0.334	0.345	0.370	0.313
SnglParent and Kid(s)	0.040	0.048	0.042	0.051	0.038	0.056	0.054
WOthers	0.227	0.226	0.183	0.178	0.172	0.134	0.090
Tangible	13.152	13.204	13.012	13.046	13.219	13.267	13.138
Affection	10.416	10.307	10.098	10.183	10.233	10.371	10.266
Social Participation	13.416	13.671	13.356	13.381	13.354	13.386	13.173
Emotional/informational	26.360	27.430	26.417	26.124	26.898	26.547	26.509
Num RF	6.492	6.061	5.970	6.418	6.752	6.505	6.262
Age (years)	36.82	37.93	40.21	41.26	41.67	44.91	45.85
Male	0.640	0.621	0.650	0.663	0.634	0.615	0.618
Les Sec	0.102	0.148	0.129	0.079	0.048	0.042	0.039
Sec	0.087	0.106	0.108	0.163	0.162	0.158	0.153
Some Post	0.279	0.279	0.314	0.149	0.104	0.106	0.089
Post Sec	0.532	0.467	0.449	0.609	0.686	0.694	0.719
Low Income	0.140	0.119	0.073	0.052	0.034	0.027	0.028
Low Middle Income	0.275	0.190	0.210	0.152	0.144	0.091	0.074
High Middle Income	0.358	0.370	0.357	0.364	0.322	0.280	0.270
High Income	0.227	0.321	0.360	0.432	0.500	0.602	0.628
Imm<15	0.039	0.026	0.025	0.020	0.007	0.003	0
Imm1520	0.008	0.003	0.010	0.007	0.007	0.0214	0.016
Imm>=20	0.048	0.067	0.067	0.061	0.079	0.069	0.067
NumConds- 0	0.534	0.563	0.464	0.486	0.403	0.372	0.401
NumConds- 1	0.271	0.243	0.273	0.264	0.316	0.260	0.217
Numconds- 2 or 3	0.157	0.158	0.212	0.195	0.205	0.257	0.293
Numconds- 4+	0.038	0.036	0.051	0.055	0.076	0.111	0.089
Activity- limit	0.035	0.048	0.067	0.066	0.055	0.094	0.064
HFP	0.040	0.059	0.064	0.045	0.048	0.056	0.056
HG	0.231	0.260	0.287	0.326	0.319	0.326	0.346
HVG	0.436	0.431	0.396	0.430	0.442	0.413	0.381
HEX	0.293	0.250	0.253	0.199	0.191	0.205	0.217
Drink Occ	0.163	0.162	0.117	0.146	0.141	0.147	0.141
DrinkForm	0.065	0.083	0.071	0.083	0.084	0.098	0.079
DrinkNever	0.022	0.016	0.039	0.028	0.014	0.019	0.019
Physically Inactive	0.523	0.578	0.522	0.487	0.445	0.457	0.451
Physically Mod	0.263	0.221	0.264	0.270	0.300	0.234	0.268
Physically Active	0.214	0.200	0.214	0.243	0.255	0.309	0.281
SmokeDaily	0.340	0.310	0.247	0.249	0.233	0.243	0.221
SmokeOcc	0.032	0.057	0.068	0.054	0.082	0.064	0.064
SmokeNever	0.628	0.633	0.685	0.697	0.685	0.693	0.715
Urban	0.872	0.871	0.886	0.872	0.885	0.849	0.873
NFL	0.024	0.025	0.026	0.022	0.020	0.016	0.012
PEI	0.005	0.004	0.003	0.003	0.005	0.003	0.003
NS	0.019	0.024	0.018	0.015	0.010	0.014	0.015
NB	0.011	0.014	0.017	0.011	0.011	0.014	0.024
QUE	0.451	0.440	0.471	0.417	0.423	0.444	0.439
MAN	0.039	0.044	0.038	0.035	0.034	0.035	0.043
SAS	0.036	0.036	0.036	0.031	0.036	0.035	0.044
ALB	0.136	0.128	0.111	0.112	0.117	0.143	0.142
ON	0.188	0.205	0.202	0.239	0.272	0.217	0.196
BC	0.091	0.080	0.078	0.115	0.072	0.079	0.082

C: Full sample

	1998	2000	2002	2004	2006	2008	2010
Alone	0.162	0.158	0.158	0.152	0.140	0.136	0.177
WSpouse only	0.246	0.252	0.269	0.292	0.310	0.327	0.359
WSpouse and Kid(s))	0.327	0.344	0.352	0.362	0.380	0.380	0.342
SnglParent and Kid(s)	0.048	0.051	0.054	0.056	0.050	0.048	0.051
WOthers	0.217	0.195	0.167	0.138	0.120	0.109	0.071
Tangible	13.435	13.633	13.385	13.562	13.382	13.461	13.472
Affection	10.438	10.598	10.468	10.631	10.575	10.664	10.557
Social Participation	13.436	13.802	3.517	13.744	13.568	13.591	13.450
Emotional/informational	26.637	27.403	26.935	27.192	27.189	27.165	27.182
Num RF	6.482	6.391	6.696	6.666	7.139	7.028	7.170
Age (years)	44.97	46.13	47.30	48.65	49.47	51.18	53.10
Male	0.482	0.470	0.465	0.464	0.477	0.482	0.480
Les Sec	0.112	0.181	0.158	0.094	0.057	0.047	0.052
Sec	0.099	0.146	0.140	0.166	0.163	0.156	0.152
Some Post	0.265	0.274	0.273	0.136	0.097	0.091	0.078

Post Sec	0.524	0.399	0.429	0.604	0.683	0.706	0.718
Low Income	0.119	0.096	0.076	0.062	0.040	0.030	0.032
Low Middle Income	0.258	0.209	0.187	0.164	0.129	0.104	0.100
High Middle Income	0.383	0.391	0.374	0.354	0.325	0.292	0.281
High Income	0.240	0.304	0.363	0.420	0.506	0.574	0.587
Imm<15	0.048	0.042	0.032	0.026	0.012	0.003	0.00
Imm1520	0.016	0.015	0.014	0.016	0.021	0.018	0.011
Imm>=20	0.114	0.116	0.120	0.123	0.121	0.130	0.138
NumConds- 0	0.372	0.358	0.293	0.288	0.246	0.219	0.218
NumConds- 1	0.268	0.275	0.281	0.267	0.271	0.271	0.252
Numconds- 2 or 3	0.257	0.264	0.290	0.299	0.333	0.332	0.336
Numconds- 4+	0.103	0.103	0.136	0.146	0.150	0.178	0.194
Activity- limit	0.123	0.130	0.151	0.144	0.135	0.147	0.138
HFP	0.092	0.106	0.100	0.097	0.094	0.085	0.086
HG	0.265	0.282	0.312	0.312	0.306	0.314	0.327
HVG	0.402	0.396	0.393	0.403	0.422	0.434	0.411
HEX	0.241	0.216	0.195	0.188	0.178	0.167	0.176
DrinkOcc	0.204	0.195	0.182	0.178	0.151	0.149	0.149
DrinkForm	0.120	0.115	0.103	0.115	0.107	0.104	0.110
DrinkNever	0.063	0.059	0.049	0.047	0.038	0.031	0.029
Physically Inactive	0.537	0.569	0.484	0.506	0.441	0.447	0.407
Physically Mod	0.253	0.254	0.285	0.275	0.285	0.288	0.305
Physically Active	0.210	0.177	0.231	0.219	0.274	0.265	0.288
SmokeDaily	0.245	0.222	0.184	0.179	0.167	0.159	0.149
SmokeOcc	0.037	0.0426	0.045	0.040	0.048	0.041	0.035
SmokeNever	0.718	0.735	0.771	0.781	0.785	0.800	0.816
Urban	0.878	0.871	0.873	0.878	0.855	0.832	0.828
NFL	0.020	0.020	0.021	0.019	0.019	0.019	0.018
PEI	0.005	0.005	0.006	0.005	0.005	0.005	0.005
NS	0.032	0.033	0.032	0.034	0.035	0.035	0.034
NB	0.028	0.027	0.027	0.027	0.028	0.026	0.023
QUE	0.247	0.245	0.256	0.243	0.253	0.271	0.279
MAN	0.038	0.036	0.034	0.034	0.031	0.029	0.034
SAS	0.034	0.031	0.031	0.033	0.032	0.031	0.032
ALB	0.098	0.099	0.101	0.105	0.097	0.101	0.108
ON	0.380	0.386	0.370	0.376	0.385	0.376	0.355
BC	0.118	0.118	0.122	0.124	0.115	0.107	0.112
Number of individuals	10,403	9,129	7,937	7,233	6,230	5,426	5,067

Table A3.4a: Transition matrix for living arrangements (1998- 2010)

Living status (cycle w)	(cycle w +1)		
	Living in one-person household	Living in multi-person households	N
Living in one-person household	**0.87**	0.13	9,640
	8,387	1,253	
Living in multi-person households	0.05	**0.95**	**31,382**
	1,569	**29,813**	

Table A3.4b: Transition matrix for levels of affection support (1998- 2010)

From (cycle w)	To (cycle w +1)			
	Low	Medium	High	N
Low	**0.57**	0.17	0.26	11,764
	6,706	2,000	3,058	
Medium	0.29	**0.25**	0.46	9,143
	2,651	**2,286**	4,206	
High	0.12	0.14	**0.74**	20,115
	2,414	2,816	**14,885**	
				41,022

Table A3.4c: Transition matrix for levels of tangible support (1998- 2010)

From (cycle w)	To (cycle w +1)			
	Low	Medium	High	N
Low	**0.60**	0.18	0.22	13,852
	8,311	2,494	3,047	
Medium	0.29	**0.36**	0.35	12,286
	3,563	**4,423**	4,300	
High	0.15	0.24	**0.61**	14,884
	2,233	3,572	**9,079**	
				41,022

Note: Data from the NPHS. Considering the living arrangement in period t and t+1, approximately 20% of the observations represent continuation of living alone (8,387 of 41,022) and 72% of the observations represent continuation of living with other family members (29,813 of 41,022) and leaving only about7% that transition between these two states of living arrangement.

Considering the level of affection support in period t and t+1, approximately 16 % of the observations represent continuation of having low level of affection support (6,706 of1,022), 6% of the observations continuation of having medium level of affection support (2,286 of 41,022) and 36% of the observations represent continuation of having high level of affection support (14,885 of 41,022) and leaving about 42% that transition between levels of affection support during the two-year period.

Considering the level of tangible support in period t and t+1, approximately 20 % of the observations represent continuation of having low level of tangible support (8,311 of 41,022), 6 % of the observations continuation of having medium level of tangible support (4,423 of 41,022) an 22% of the observations represent continuation of having high level of tangible support (9,079 of 41,022) and leaving about 52% that transition between levels of tangible support during the two-year period.

Table A3.5: Descriptive statistics for the pooled sample parsed by living arrangements and level of affection support

	By living arrangement			By level of affection support		
Variables	Individuals in Multi-Person Households	Individuals in One-Person Households	**Total**	Low Affection	Medium Affection	High Affection
Reg Family Doc.	0.900	0.849	0.889	0.865	0.890	0.899
Age (years)	47.70	55.32	48.87	50.59	49.54	47.93
Male	0.481	0.421	0.472	0.487	0.451	0.471
Les Sec	0.089	0.213	0.108	0.140	0.115	0.091
Sec	0.151	0.165	0.153	0.159	0.157	0.149
Some Post	0.176	0.165	0.174	0.178	0.169	0.173
Post Sec	0.584	0.455	0.565	0.523	0.559	0.587
Low Income	0.036	0.173	0.058	0.081	0.064	0.047
Low Middle Income	0.135	0.270	0.157	0.193	0.160	0.140
High Middle Income	0.346	0.331	0.344	0.359	0.352	0.335
High Income	0.483	0.226	0.441	0.367	0.424	0.478
Imm<10	0.005	0.003	0.004	0.007	0.006	0.003
imm1020	0.033	0.015	0.030	0.047	0.036	0.022
Imm>=20	0.126	0.107	0.123	0.145	0.121	0.114
NumConds- 0	0.287	0.238	0.280	0.258	0.260	0.295
NumConds- 1	0.279	0.223	0.270	0.263	0.271	0.274
Numconds- 2 or 3	0.302	0.315	0.304	0.305	0.312	0.301
Numconds- 4+	0.132	0.224	0.146	0.174	0.157	0.130
Activity- limit	0.124	0.236	0.141	0.177	0.148	0.123
HFP	0.085	0.155	0.096	0.136	0.096	0.078
HG	0.300	0.345	0.307	0.366	0.331	0.274
HVG	0.420	0.338	0.407	0.366	0.412	0.425
HEX	0.195	0.162	0.190	0.132	0.161	0.223
DrinkOcc	0.170	0.176	0.171	0.174	0.168	0.170
DrinkReg	0.684	0.630	0.676	0.651	0.679	0.685
DrinkForm	0.104	0.139	0.109	0.123	0.110	0.103
DrinkNevr	0.042	0.055	0.044	0.052	0.043	0.042
Physically Inactive	0.479	0.521	0.485	0.535	0.487	0.462
Physically Mod	0.283	0.259	0.279	0.257	0.293	0.286
Physically Active	0.238	0.220	0.236	0.208	0.220	0.252
SmokeDaily	0.174	0.218	0.181	0.207	0.169	0.173
SmokeOcc	0.042	0.046	0.042	0.046	0.039	0.042
SmokeNever	0.784	0.736	0.777	0.747	0.792	0.785
Urban	0.853	0.897	0.859	0.875	0.863	0.851
NFL	0.021	0.014	0.019	0.013	0.020	0.023
PEI	0.005	0.004	0.005	0.004	0.005	0.006
NS	0.034	0.033	0.031	0.031	0.033	0.035
NB	0.028	0.023	0.026	0.023	0.024	0.029
QUE	0.244	0.321	0.256	0.284	0.261	0.242
MAN	0.034	0.029	0.033	0.034	0.030	0.034
SAS	0.031	0.034	0.031	0.027	0.027	0.035
ALB	0.104	0.089	0.102	0.096	0.095	0.106
BC	0.114	0.125	0.121	0.121	0.115	0.114
Observations	34745	6277	41022	10767	6370	23885

The table above show: descriptive analyses on all the variables for the pooled sample and for those in single-person, and, for and those living in multi-person households. About 15% of the individuals aged 18 and older are living in

single person households at the time of the interview, as we can see from the transition matrix above (table) that the persistence in living arrangement is high (about 87% of individuals who live in single-households remain living in single-person households). The descriptive analysis above show that individuals living in single-person households are more likely to be women, older, with lower level of education, lower income, non-immigrant and living in urban area. There is also differences among provinces, with higher proportion of individuals in single-person households residing in Quebec (32%) compared to those living in multi-person households (24%). On the other hand, lower proportion of those living alone residing in Ontario (33%) compared to those living in multi-person households (38%). Regarding health conditions, the results also show that those living alone tend to have worse health status than those living in multi-person households. The proportion of individuals living in one-person-household with activity limitation or fair or poor health is double the proportion of those living in multi-person households. In general, individuals with low affection support are more likely to be male, immigrant, with low income adequacy, low education, and with worse health and have activity limitation.

Table A3.6: The effect of social capital on the probability of having a regular family doctor-extra robustness

	Emotional/ Information	Social Participation	Marital status and Tangible	Alone and Tangible
	(1)	(2)	(3)	(4)
(L) Reg Family Doc	0.176***	0.177***	0.177***	0.176***
	(0.012)	(0.012)	(0.012)	(0.012)
(I) Reg Family Doc	0.065***	0.065***	0.065***	0.065***
	(0.004)	(0.004)	(0.004)	(0.004)
(L) Social capital	0.001***	0.001**	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
(L) Alone	-0.015***	-0.015***	-0.013***	-0.022***
	(0.004)	(0.004)	(0.004)	(0.004)
Mar-Com			0.015***	
			(0.004)	
(L) WSpouse only	0.011***	0.012***		
	(0.004)	(0.004)		
(L) WSpouse and Kid(s)	0.015***	0.015***		
	(0.004)	(0.004)		
(L) SnglParent and Kid(s)	0.008	0.008		
	(0.006)	(0.006)		
Age	0.002***	0.002***	0.002***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Age Sq	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Male	-0.027***	-0.028***	-0.029***	-0.028***
	(0.003)	(0.003)	(0.003)	(0.003)
Sec	-0.009	-0.009	-0.008	-0.009
	(0.007)	(0.007)	(0.007)	(0.007)
Some Post	-0.005	-0.005	-0.005	-0.006
	(0.007)	(0.007)	(0.007)	(0.007)
Post Sec	-0.006	-0.006	-0.006	-0.006
	(0.007)	(0.007)	(0.007)	(0.007)
Low Income	0.013	0.013	0.015*	0.014*
	(0.008)	(0.008)	(0.008)	(0.008)
Low Middle Income	0.003	0.003	0.005	0.004
	(0.006)	(0.006)	(0.006)	(0.006)
High Middle Income	-0.001	-0.001	-0.000	-0.000
	(0.004)	(0.004)	(0.004)	(0.004)
Imm <10	0.051*	0.050*	0.051*	0.052*
	(0.028)	(0.028)	(0.028)	(0.028)
Imm >=10	0.006	0.006	0.005	0.005
	(0.005)	(0.005)	(0.005)	(0.005)
NumConds- 1	0.021***	0.021***	0.021***	0.021***
	(0.004)	(0.004)	(0.004)	(0.004)
NumConds- 2 or 3	0.027***	0.027***	0.027***	0.027***
	(0.005)	(0.005)	(0.005)	(0.005)
NumConds- 4+	0.035***	0.035***	0.036***	0.035***
	(0.007)	(0.007)	(0.007)	(0.007)
HFP	0.004	0.004	0.004	0.004
	(0.008)	(0.008)	(0.008)	(0.008)
HG	-0.006	-0.006	-0.006	-0.006
	(0.005)	(0.005)	(0.005)	(0.005)

HVG	-0.004	-0.004	-0.004	-0.004
	(0.004)	(0.004)	(0.004)	(0.004)
DrinkReg	-0.013	-0.013	-0.013	-0.014
	(0.011)	(0.011)	(0.011)	(0.011)
DrinkOcc	-0.005	-0.006	-0.006	-0.006
	(0.011)	(0.011)	(0.011)	(0.011)
DrinkForm	-0.011	-0.011	-0.012	-0.012
	(0.010)	(0.010)	(0.010)	(0.010)
Physical Mod	0.007*	0.007*	0.007*	0.007*
	(0.004)	(0.004)	(0.004)	(0.004)
Physically Inactive	0.002	0.002	0.002	0.002
	(0.004)	(0.004)	(0.004)	(0.004)
SmokeDaily	-0.007	-0.007	-0.007	-0.008
	(0.006)	(0.006)	(0.006)	(0.006)
SmokeOcc	-0.010	-0.010	-0.010	-0.010
	(0.007)	(0.007)	(0.007)	(0.007)
Urban	-0.006	-0.006	-0.005	-0.006*
	(0.004)	(0.004)	(0.004)	(0.004)
NFL	-0.011	-0.011	-0.011*	-0.011
	(0.007)	(0.007)	(0.007)	(0.007)
PEI	0.004	0.004	0.005	0.005
	(0.007)	(0.007)	(0.007)	(0.007)
NS	0.015**	0.015**	0.015**	0.015**
	(0.007)	(0.007)	(0.007)	(0.007)
NB	0.016**	0.016**	0.016**	0.016**
	(0.007)	(0.007)	(0.007)	(0.007)
QUE	-0.039***	-0.040***	-0.040***	-0.040***
	(0.004)	(0.004)	(0.004)	(0.004)
MAN	-0.026***	-0.026***	-0.026***	-0.026***
	(0.006)	(0.006)	(0.006)	(0.006)
SAS	-0.023***	-0.023***	-0.023***	-0.022***
	(0.006)	(0.006)	(0.006)	(0.006)
ALB	-0.029***	-0.029***	-0.029***	-0.029***
	(0.005)	(0.005)	(0.005)	(0.005)
BC	-0.013**	-0.013**	-0.014**	-0.013**
	(0.005)	(0.005)	(0.005)	(0.005)
Year: 2002/03	0.001	0.001	0.001	0.001
	(0.004)	(0.004)	(0.004)	(0.004)
Year: 2004/05	-0.006	-0.005	-0.006	-0.005
	(0.004)	(0.004)	(0.004)	(0.004)
Year: 2006/07	0.001	0.001	0.001	0.002
	(0.004)	(0.004)	(0.004)	(0.004)
Year: 2008/09	-0.003	-0.002	-0.002	-0.002
	(0.004)	(0.004)	(0.004)	(0.004)
Year: 2010/11	-0.003	-0.002	-0.002	-0.002
	(0.005)	(0.005)	(0.005)	(0.005)
Mean (Sec)	0.023**	0.023**	0.023**	0.024**
	(0.011)	(0.011)	(0.011)	(0.011)
Mean (Some Post)	0.004	0.004	0.005	0.005
	(0.010)	(0.010)	(0.010)	(0.010)
Mean (Post Sec)	0.014	0.014	0.014	0.015
	(0.009)	(0.009)	(0.010)	(0.010)
Mean (Low Income)	-0.027**	-0.027**	-0.027**	-0.031***
	(0.012)	(0.012)	(0.012)	(0.012)
Mean (Low Middle Income)	-0.017**	-0.018**	-0.017**	-0.019**
	(0.008)	(0.008)	(0.008)	(0.008)

Mean (High Middle Income)	0.002	0.002	0.002	0.001
	(0.007)	(0.007)	(0.007)	(0.007)
Mean (NumConds- 1)	0.012*	0.012*	0.012*	0.012*
	(0.007)	(0.007)	(0.007)	(0.007)
Mean (NumConds- 2 or 3)	0.014*	0.014*	0.014*	0.014*
	(0.007)	(0.007)	(0.007)	(0.007)
Mean (NumConds- 4+)	0.019*	0.019*	0.019*	0.019*
	(0.011)	(0.011)	(0.011)	(0.011)
Mean(HFP)	0.011	0.010	0.010	0.009
	(0.012)	(0.012)	(0.012)	(0.012)
Mean(HG)	0.008	0.007	0.007	0.007
	(0.008)	(0.008)	(0.008)	(0.008)
Mean (HVG)	0.010	0.009	0.009	0.009
	(0.007)	(0.007)	(0.007)	(0.007)
Mean (DrinkReg)	0.011	0.011	0.012	0.011
	(0.014)	(0.014)	(0.014)	(0.014)
Mean (DrinkOcc)	0.007	0.008	0.008	0.008
	(0.014)	(0.014)	(0.014)	(0.014)
Mean (DrinkForm)	-0.001	-0.001	-0.001	-0.001
	(0.015)	(0.015)	(0.015)	(0.015)
Mean (PhysicallyMod)	0.015*	0.015*	0.015*	0.016*
	(0.008)	(0.008)	(0.008)	(0.008)
Mean (Physically Inactive)	0.002	0.002	0.002	0.002
	(0.007)	(0.007)	(0.007)	(0.007)
Mean (SmokeDaily)	-0.010	-0.010	-0.010	-0.011
	(0.007)	(0.007)	(0.007)	(0.007)
Mean (SmokeOcc)	-0.003	-0.003	-0.003	-0.003
	(0.013)	(0.013)	(0.013)	(0.013)
Rho	0.25	0.25	0.25	0.25
N	41022	41022	41022	41022
The predicted probability	0.89	0.89	0.89	0.89

Note: The standard deviation for social capital indicators as follow: for Affection =2.444; Tangible = 3.19; Emotional= 5.902 and for Participation =3.017. Wooldridge dynamic random effects model to estimate the above 4 models: (1) shows the results for emotional\ informational social capital, (2) when controlled for social participation, column (3) has the results when I controlled for marital status, live alone, and Tangible support, and column (4) has the results when controlled for only live alone and Tangible support. Average marginal effects are reported above.

Table A3.7: The effect of social capital on having a regular family doctor after including test variables for attrition-based on dynamic random effects probit model with Wooldridge specification of initial condition

Variables	Affection SC			Tangible SC		
(L) Reg Family Doc	0.176***	0.178***	0.178***	0.178***	0.178***	0.178***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
(I) Reg Family Doc	0.064***	0.065***	0.065***	0.065***	0.065***	0.065***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Number of cycles	**0.002**			**0.002**		
	(0.001)			**(0.001)**		
All cycles		**0.004**			**0.004**	
		(0.003)			**(0.003)**	
Next cycle			**0.000**			**0.000**
			(0.003)			**(0.003)**
(L) Social Capital	0.002***	0.002***	0.002***	0.001***	0.001***	0.001***
	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)
(L) Alone	-0.015***	-0.015***	-0.015***	-0.015***	-0.015***	-0.015***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
(L) WSpouse only	0.010**	0.010**	0.010**	0.011***	0.011***	0.011***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
(L) WSpouse and Kid(s)	0.014***	0.014***	0.014***	0.015***	0.015***	0.015***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
(L) SnglParent and Kids(s)	0.008	0.008	0.008	0.008	0.008	0.008
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Age	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Age Sq	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Rho	0.25	0.25	0.25	0.25	0.25	0.25
N	41022	41022	41022	41022	41022	41022

Note: Data from the NPHS. Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01
(L) indicates a lagged variable and (I) indicated the initial observation of the variable in cycle 3. Sample sizes refer to periods 4 to T. I control for all the other control variables in table 3.1 (not reported for brevity). Average marginal effects are reported above

Table A3.8: The effect of social capital on having regular medical doctor: with Wooldridge specification of correlated effects and initial condition-pooled probit

Variables	Affection SC		Tangible SC	
	Not-Weighted	Weighted	Not-Weighted	Weighted
(L) Reg Family Doc	0.320***	0.335***	0.320***	0.334***
	(0.008)	(0.011)	(0.008)	(0.011)
(I) Reg Family Doc	0.040***	0.035***	0.040***	0.035***
	(0.003)	(0.005)	(0.003)	(0.005)
(L) Social Capital	0.002***	0.003***	0.001***	0.002***
	(0.001)	(0.001)	(0.000)	(0.001)
(L) Alone	-0.014***	-0.022***	-0.015***	-0.022***
	(0.004)	(0.006)	(0.004)	(0.006)
(L) WSpouse only	0.011**	0.004	0.012***	0.005
	(0.004)	(0.006)	(0.004)	(0.006)
(L) WSpouse and Kid(s)	0.014***	0.005	0.015***	0.006
	(0.004)	(0.005)	(0.004)	(0.005)
(L) SnglParent and Kids(s)	0.008	0.001	0.009	0.001
	(0.006)	(0.008)	(0.006)	(0.008)
(L) Num RF	3.11e-04	0.001**	0.001*	0.001**
	(1.98e-04)	(0.000)	(0.000)	(0.000)
Age	0.002***	0.002**	0.002***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
AgeSq	-4.72e-07	-8.10e-06	-1.94e-07	-8.30e-06
	(5.91e-06)	(9.86e-06)	(5.89e-06)	(9.82e-06)
Male	-0.027***	-0.029***	-0.028***	-0.030***
	(0.003)	(0.004)	(0.003)	(0.004)
Sec	-0.011	-0.013	-0.011	-0.013
	(0.007)	(0.010)	(0.007)	(0.010)
Some Post	-0.008	-0.002	-0.009	-0.002
	(0.008)	(0.010)	(0.008)	(0.010)
Post Sec	-0.008	-0.000	-0.008	-0.000
	(0.008)	(0.010)	(0.008)	(0.010)
Low Income	0.015*	0.021*	0.015*	0.021*
	(0.009)	(0.013)	(0.009)	(0.012)
Low Middle Income	0.004	0.012	0.004	0.012
	(0.006)	(0.009)	(0.006)	(0.009)
High Middle Income	-0.001	0.003	-0.001	0.003
	(0.004)	(0.006)	(0.004)	(0.006)
Imm <10	0.053*	0.080*	0.052*	0.079*
	(0.030)	(0.046)	(0.030)	(0.045)
Imm >=10	0.006	0.011*	0.006	0.011*
	(0.005)	(0.006)	(0.005)	(0.006)
NumConds- 1	0.023***	0.027***	0.023***	0.028***
	(0.004)	(0.006)	(0.004)	(0.006)
NumConds- 2 or 3	0.029***	0.042***	0.029***	0.042***
	(0.006)	(0.008)	(0.006)	(0.008)
NumConds- 4+	0.038***	0.034***	0.038***	0.035***
	(0.008)	(0.012)	(0.008)	(0.012)
HFP	0.004	-0.000	0.004	0.000
	(0.008)	(0.011)	(0.008)	(0.011)
HG	-0.006	-0.013*	-0.006	-0.013*
	(0.006)	(0.007)	(0.006)	(0.007)
HVG	-0.005	-0.009	-0.005	-0.009
	(0.005)	(0.006)	(0.005)	(0.006)

DrinkReg	-0.015	-0.019	-0.015	-0.019
	(0.012)	(0.015)	(0.012)	(0.015)
DrinkOcc	-0.006	-0.009	-0.006	-0.009
	(0.011)	(0.015)	(0.011)	(0.015)
DrinkForm	-0.013	-0.018	-0.013	-0.018
	(0.011)	(0.013)	(0.011)	(0.014)
Physically Mode	0.008*	0.002	0.008*	0.002
	(0.004)	(0.006)	(0.004)	(0.006)
Physical Inactive	0.003	-0.001	0.003	-0.001
	(0.005)	(0.006)	(0.005)	(0.006)
SmokeDaily	-0.008	-0.014	-0.009	-0.015
	(0.007)	(0.009)	(0.007)	(0.009)
SmokeOcc	-0.010	-0.017	-0.010	-0.018
	(0.008)	(0.011)	(0.008)	(0.011)
Urban	-0.006	-0.011**	-0.006	-0.011**
	(0.004)	(0.005)	(0.004)	(0.005)
NFL	-0.016***	-0.029***	-0.016***	-0.029***
	(0.006)	(0.008)	(0.006)	(0.008)
PEI	0.004	-0.004	0.004	-0.004
	(0.007)	(0.010)	(0.007)	(0.010)
NS	0.015**	0.013*	0.015**	0.013*
	(0.007)	(0.008)	(0.007)	(0.008)
NB	0.013**	0.000	0.013*	-0.000
	(0.007)	(0.009)	(0.007)	(0.009)
QUE	-0.039***	-0.045***	-0.040***	-0.046***
	(0.004)	(0.005)	(0.004)	(0.005)
MAN	-0.026***	-0.033***	-0.027***	-0.034***
	(0.006)	(0.007)	(0.006)	(0.007)
SAS	-0.023***	-0.032***	-0.023***	-0.032***
	(0.006)	(0.007)	(0.006)	(0.007)
ALB	-0.029***	-0.029***	-0.029***	-0.028***
	(0.005)	(0.005)	(0.005)	(0.005)
BC	-0.013**	-0.013**	-0.013**	-0.013**
	(0.005)	(0.006)	(0.005)	(0.006)
Year: 2002/03	-0.002	-0.002	-0.002	-0.002
	(0.004)	(0.005)	(0.004)	(0.005)
Year: 2004/05	-0.010**	-0.020***	-0.010**	-0.019***
	(0.004)	(0.006)	(0.004)	(0.006)
Year: 2006/07	-0.003	-0.003	-0.003	-0.003
	(0.004)	(0.006)	(0.004)	(0.006)
Year: 2008/09	-0.009*	-0.012*	-0.009*	-0.012*
	(0.005)	(0.006)	(0.005)	(0.006)
Year: 2010/11	-0.009*	-0.011*	-0.009*	-0.010*
	(0.005)	(0.006)	(0.005)	(0.006)
Mean (Sec)	0.023**	0.026*	0.024**	0.027**
	(0.011)	(0.014)	(0.011)	(0.014)
Mean (Some Post)	0.007	-0.017	0.007	-0.016
	(0.010)	(0.014)	(0.010)	(0.014)
Mean (Post Sec)	0.015	-0.003	0.016*	-0.002
	(0.010)	(0.013)	(0.010)	(0.013)
Mean (Low Income)	-0.027**	-0.032*	-0.027**	-0.032*
	(0.012)	(0.017)	(0.012)	(0.016)
Mean (Low Middle Income)	-0.017**	-0.023**	-0.017**	-0.023*
	(0.009)	(0.012)	(0.009)	(0.012)
Mean (High Middle Income)	0.003	0.003	0.003	0.002
	(0.007)	(0.009)	(0.007)	(0.009)

Mean (NumConds- 1)	0.009	0.003	0.009	0.003
	(0.007)	(0.009)	(0.007)	(0.009)
Mean (NumConds- 2 or 3)	0.012	-0.008	0.012	-0.008
	(0.008)	(0.010)	(0.008)	(0.010)
Mean (NumConds- 4+)	0.016	0.016	0.016	0.016
	(0.011)	(0.015)	(0.011)	(0.015)
Mean(HFP)	0.012	0.015	0.011	0.014
	(0.012)	(0.017)	(0.012)	(0.017)
Mean(HG)	0.007	0.021**	0.007	0.021**
	(0.008)	(0.010)	(0.008)	(0.010)
Mean (HVG)	0.011	0.020**	0.011	0.020**
	(0.007)	(0.009)	(0.007)	(0.009)
Mean (DrinkReg)	0.015	0.017	0.014	0.017
	(0.014)	(0.019)	(0.014)	(0.019)
Mean (DrinkOcc)	0.009	0.008	0.009	0.008
	(0.014)	(0.020)	(0.014)	(0.020)
Mean (DrinkForm)	0.002	0.007	0.002	0.007
	(0.015)	(0.020)	(0.015)	(0.020)
Mean (Physically Inactive)	0.013	0.022**	0.013	0.022**
	(0.008)	(0.010)	(0.008)	(0.010)
Mean (Physical Mod)	0.001	-0.001	0.001	-0.001
	(0.007)	(0.009)	(0.007)	(0.009)
Mean (SmokeDaily)	-0.008	-0.004	-0.008	-0.004
	(0.008)	(0.011)	(0.008)	(0.011)
Mean (SmokeOcc)	-0.005	-0.013	-0.004	-0.012
	(0.013)	(0.017)	(0.013)	(0.017)
N	41022	41022	41022	41022

Note: Data from the NPHS. Standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01
(L) indicates a lagged variable and (I) indicated the initial observation of the variable in cycle 3. Sample sizes refer to periods 4 to T. Average marginal effects are reported above.

Table A3.9: Sample description for the pooled sample and when the sample is parsed by the accesses statue in (t-1)

	Full sample	Family Doc (t, t+2)			
		(1,1)	(1,0)	(0,0)	(0,1)
Number of person-year obs.	41,022	34,413	1,899	2,516	2,194
Proportion of full sample	1.00	0.84	0.05	0.06	0.05
Alone	0.153	0.145	0.191	0.220	0.161
WSpouse only	0.294	0.302	0.238	0.233	0.259
WSpouse and Kid(s)	0.376	0.372	0.355	0.320	0.356
SnglParent and Kids(s)	0.051	0.054	0.044	0.050	0.045
WOthers	0.136	0.127	0.172	0.177	0.179
Num RF	6.797	6.876	6.342	6.248	6.612
Age	48.87	50.26	42.72	40.27	42.90
Male	0.472	0.444	0.560	0.690	0.578
Less Sec	0.108	0.110	0.096	0.088	0.099
Sec	0.153	0.157	0.129	0.143	0.120
Some Post	0.174	0.170	0.201	0.187	0.194
Post Sec	0.565	0.563	0.574	0.582	0.587
Low Income	0.058	0.057	0.065	0.060	0.077
Low Middle Income	0.157	0.156	0.160	0.153	0.165
High Middle Income	0.344	0.345	0.346	0.331	0.334
High Income	0.441	0.442	0.429	0.456	0.424
NumConds- 0	0.280	0.250	0.416	0.500	0.354
NumConds- 1	0.270	0.271	0.263	0.262	0.284
Numconds- 2 or 3	0.304	0.318	0.233	0.193	0.285
Numconds- 4+	0.146	0.161	0.088	0.045	0.077
Activity- limit	0.141	0.154	0.089	0.045	0.092
HFP	0.096	0.103	0.076	0.040	0.078
HG	0.307	0.307	0.307	0.302	0.300
HVG	0.407	0.406	0.416	0.419	0.418
HEX	0.190	0.184	0.201	0.239	0.204
DrinkReg	0.676	0.662	0.727	0.768	0.731
DrinkOcc	0.171	0.175	0.143	0.143	0.164
DrinkForm	0.109	0.115	0.093	0.075	0.074
DrinkNever	0.044	0.048	0.037	0.014	0.031
Physically Inactive	0.485	0.482	0.507	0.498	0.496
Physically Mod	0.279	0.284	0.245	0.265	0.260
Physically Active	0.236	0.234	0.248	0.237	0.244
SmokeDaily	0.181	0.168	0.244	0.266	0.224
SmokeOcc	0.042	0.039	0.065	0.064	0.047
SmokeNever	0.777	0.793	0.691	0.670	0.729
Urban	0.859	0.858	0.873	0.874	0.848
NFL	0.019	0.0195	0.0197	0.0223	0.0228
PEI	0.005	0.005	0.005	0.002	0.005
NS	0.031	0.037	0.019	0.015	0.022
NB	0.026	0.029	0.018	0.013	0.018
QUE	0.256	0.223	0.355	0.500	0.385
MAN	0.033	0.033	0.041	0.037	0.034
SAS	0.031	0.030	0.043	0.030	0.041
ALB	0.102	0.097	0.124	0.123	0.129
BC	0.120	0.121	0.107	0.069	0.099

Considering access status in periods t and t+2, approximately 84 percent of the observations represent continuations of having a family doctor (34,413 out of 41,022), and about 6 percent come from continuations of not having a family doctor (2,516 out of 41,022), leaving around 10 percent that present transitions between access states during the two-year period. In particular, there are about (1899) transitions from having regular family doctor to not which implies a transition rate of 5% and 2194 transitions from not having access to family doctor to having one and this implies a transition rate about 47%.