

Impact of Viagra on the Health Service Use of Men in Canada

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I. Introduction

A 2005 *Boomers in the Bedroom: Sexual Attitudes and Behaviours of the Boomer Generation*¹, a Canadian survey of 2498 baby boomers age 40-64, found that Canadians are too stressed or tired and do not spend enough time being romantic. With the majority (58%) being too tired, and many (40%), just not having enough time, baby boomers are finding obstacles to sexual fulfillment. More importantly, "For men, erection quality is cited as a common source of sexual dissatisfaction. About one-fourth of Canadian boomer men surveyed say they have 'difficulty gaining or sustaining an erection' and only 36 per cent of Canadian men say they are very satisfied with their erections."²

Erectile dysfunction (ED), a failure to achieve and maintain an erection, is a health condition found among men over the age of 40.³ Viagra is a prescription drug used to treat erectile dysfunction. Being the number one prescribed medicine for ED, it improves the ability to get and maintain an erection. Viagra, one of this generation's most popular pills, has revolutionized treatment of erectile dysfunction among men worldwide since its first introduction in the United States in 1998. It has been shown to work for the majority of men diagnosed with erectile dysfunction with 8 out of 10 men having improved their erection.⁴ And the problem of ED is not a 'small one'. Approximately 30 million men in the United States and about 100 million men worldwide are affected by erectile dysfunction.

¹ (<http://www.ipsos-na.com/news/pressrelease.cfm?id=3011>)

² (www.pharmacygateway.ca)

³ (www.viagraforce.com)

⁴ (www.viagra.com)

In a Massachusetts male aging study, 52 percent of men 40 to 75 were found to have some degree of ED (Feldman et al.1994).

Prior to Viagra, most treatments on the market were of an invasive nature. They included: "...penile prostheses; vacuum constriction devices; penile injection therapy; transurethral suppositories; and professional counseling" (Keith 2000, pg 148). In addition, compared to Viagra, those treatments were substantially more expensive (Keith 2000). The introduction of Viagra provided a simple solution to ED condition – it was an effective, oral treatment that could be used by many. And in the modern world where people are said to believe in 'pill popping' culture and finding quick solutions to almost every problem⁵, Viagra was the perfect solution. According to Keith (2000), Viagra not only presented a radical change in the treatment of ED, but it also brought more recognition and acceptance to the problem. Before Viagra was introduced, only 14 percent of patients with erectile dysfunction sought professional help (Pfizer, Men Health Survey 1997). After the introduction of Viagra, about 75 percent more patients sought treatment (Middleton 1999). Thus, not only did it present a popular, new innovation, it also helped bring out more patients to get professional help and turn the problem of ED into a more widely recognized one. One month after Viagra was introduced in US, in just one week of May 8th 1998, 300,000 prescriptions were filled out for Viagra (IMS Health, Retail and Provider Perspective 1998).

⁵ (www.viagraforce.com)

But the little blue pill also changed the way that people view the erectile dysfunction. Before the introduction of Viagra, sex for older people (40+ years of age) was viewed as a taboo and was often ignored as a subject. The influence of the drug was such that the elder generation no longer considers giving up intimate relations because of their age.⁶ Viagra has revolutionized the social attitude towards sexual problems, and brought the phrase “lifestyle drug” to the world.

Its popularity was also due to the large marketing campaign, with Pfizer spending \$53 million on advertising in 1999 alone, and reaching \$617 million in sales that same year.⁷ Viagra became a success within the first year of its introduction, with prescriptions for Viagra from 1998-2003 reaching 133 million in U.S. alone.⁸

Just like in the United States, the introduction of Viagra to the Canadian market had a large success. After two years of being on the market, it received a prestigious Prix Galien Canada Innovative Drug Product Award in 2001 for its significant impact on the treatment of ED among Canadian male patients.⁹ Moreover, “Canada's contribution to the clinical development of Viagra was greater than for any other new Pfizer medication. Health Canada approved Viagra, the first effective oral treatment for erectile difficulties, on March 8, 1999. Viagra has received unprecedented media attention before, during and after the Canadian launch”.¹⁰ With the Canadian market being very similar to that of the United States, Canadian population had almost the same reaction. Viagra became very popular

⁶ (www.viagraforce.com)

⁷ (www.viagraforce.com)

⁸ (www.viagraforce.com)

⁹ (www.pfizer.ca)

¹⁰ (www.pfizer.ca)

very quick. The key to success of Viagra was also due the ageing baby boomers who are becoming a large part of the population. As a result, Viagra was welcomed by many Canadian men diagnosed with ED.

ED is rarely a condition in and of itself. It is often a symptom of the underlying conditions that restricts the flow of blood throughout the body. With nearly 80 % of erectile dysfunction being associated with organic causes (Benet and Melman 1995), more serious, chronic conditions can lead to ED. For example, more than 65% of men with high blood pressure have ED, having high cholesterol increases the chances of ED by 80%, while having diabetes increases the probability of having some degree of ED in up to 85% of men. In addition, having heart (coronary artery) disease, prostate problems, spinal injury, and certain medicines that lower blood pressure can all contribute to having erectile dysfunction. Even such activities as smoking, drinking, or being depressed or under stress can be a factor in having ED.¹¹ As a result, erectile dysfunction can be seen as one of the factors that reveal the possibility of having more serious conditions such as diabetes or high blood pressure.

The primary objective of this paper is to examine the changes that the introduction of Viagra brought to the health service use of men in Canada. Since in Canada Viagra can be obtained from a family doctor¹², an increasing interest in Viagra could have brought an increase in the use of health services among men. In addition, if having an erectile dysfunction can be seen as a red flag for other medical conditions associated with ED, the number of men diagnosed with these conditions could have also increased. Therefore, this paper also considers the

¹¹ (www.viagra.com)

¹² (<http://www.pharmaciesanddrugs.com/presc-viagra.html>),

hypothesis that the introduction of Viagra increased the underlying conditions associated with ED, in particular, diabetes and high blood pressure.

These questions are important for two reasons. First, it has been noted that the insurance companies do not provide complete coverage of Viagra for patients with ED. Viagra is not covered by the Canadian public health insurance¹³, while private companies have a limited coverage restricting the annual amount spent on Viagra by patients¹⁴, with some insurance companies that fully refuse to cover Viagra (as is the case with many companies in the US). Keith (2000) attributes most of the reason why insurance companies limit their coverage of Viagra to cost. He suggests two additional reasons why this might be the case – the problems of moral hazard and adverse selection (Keith 2000). The moral hazard problem arises because ED diagnosis is self-reported and also because the cost of Viagra is partially covered by insurance companies. It also refers to the implication that given that Viagra is covered by insurance, men will be using more than necessary amounts of it. As a result, there is a reason to believe that there might be some over reporting of the ED diagnosis by men and that full insurance coverage might lead to over use of Viagra. The problem of adverse selection refers to the implication that there might be an increase in the diagnosis of the underlying chronic conditions associated with ED as more men will be presenting themselves in medical offices with the self-diagnosed condition of ED. There might be a large increase in the number of patients who are seeking help for the first time and consequently are getting treated for other medical conditions, such as diabetes and high blood pressure. As a result of both the adverse selection and the moral hazard, associated treatment costs of

¹³ (<http://www.canada-health-insurance.com>)

¹⁴ (www.heath.ca/clients/media/documents/talkingbenefits/archive/en/199906_EN.pdf)

ED are expected to increase. These might be the reasons why insurance companies limit their coverage of Viagra.¹⁵

The second reason why an increase in health service use might be important is if Viagra in fact has led to an increase in the number of diagnosed chronic conditions associated with ED, then it can be considered as an important instrument in early detection of serious conditions that accompany ED.

In this paper, I use the National Population Health Survey (1996-1997) and the Canadian Community Health Survey (2002-2003). I use the difference in difference approach to test my hypotheses that there was an increase in the health service utilization among men over 40 and that there was an increase in the number of diagnosed chronic conditions associated with ED. In particular, I focus on the change in the utilization of both regular doctors and specialists and I use diabetes and high blood pressure to represent chronic conditions associated with ED. To test my hypotheses, I use two control groups – men under 40 and women over 40. The results of this paper indicate that in fact, after the introduction of Viagra in Canada, there was no substantial increase in the use of health care services among men over the age of 40. They also indicate that there was no increase in the number of diagnosed chronic conditions associated with ED. These findings indicate that moral hazard and adverse selection are not sufficient enough reasons to exclude Viagra from insurance packages.

This paper proceeds as follows. Section II will focus on the literature review, section III will discuss data and methodology, section IV will review the results

¹⁵ Of course, one of the biggest concerns of insurance companies is the cost associated with Viagra coverage.

and section V will follow with the discussion and conclusion. The tables can be found in section VI.

II. Literature review

In this section I review the literature on the determinants of health service utilization. The factors that are discussed here are then used to motivate my estimating equations.

Basic determinants of health care use

The economic literature examines the importance of many determinants of health care utilization, such as need, education, insurance, income, age and sex. The importance of these factors is explored in many studies. One of the basic models of determinants of health care utilization is attributed to Grossman (1972). Grossman uses the human capital theory to explain the correlations of age, education and wage on the demand for health care. His model assumes that people view health, along with education and training, as an investment in themselves. It also assumes no correlation of age, education or wage with individuals' tastes for health. The Grossman model examines the impact of health status on the demand for health care. With an assumption that the rate of depreciation increases with age of an individual, the author shows that elderly people demand more health care services than the young and that aging increases the price of health capital. Grossman also finds that the demand for health care is positively correlated with wage, and under

the assumption that education improves market productivity, increases in education increase the optimal health capital stock (Grossman, 1972).

Folland et al. (2004) also review the basic determinants of health care services. They suggest that price of health care services, health status, time (including travel time and waiting time), coinsurance, income elasticities for different health care services, as well as ethnicity, gender and area of living are all significant in determining the demand for health care services.

A review of the determinants of health service utilization was done by Hulka and Wheat (1985). The authors find that many models that look at the determinants of health service use include the need for health care, defined as "...a condition...that is useful for maintaining a desired level of health" (Hulka and Wheat 1985, pg 440) suggesting that it is an important factor in determination of the level of medical use. The authors also suggest that one's perception of health plays an important role: "...it seems reasonable that an individual's perception of poor health would influence his/her decision to contact a physician and that the physician's judgment of health status would influence the remainder of the individual's use of services" (Hulka and Wheat 1985, pg 442). They also summarize a study by Maurana et al.(1981) which shows that out of 100 different factors that can explain physician utilization, six most important ones are volume of visits (i.e. rates, % of population visiting, etc), types of visit, type of provider, reason for visit, location of visit and appointment characteristics.

The authors also review the importance of other factors of health service utilization, such as demographic characteristics – race, social class, sex and age, of which all were found significant. In one of the reviewed studies, Kleinman et al.

(1981) show that poor health was positively correlated with the low income groups and with the black race. Age and sex were also found to be important, with elderly as a significant subgroup. The factors such as availability of health care services and physician to population ratio were also found to be the factors explaining health service utilization, with a finding that the greater availability of physicians is associated with higher health service use. However, supply of physicians appeared less important than other variables such as demographic characteristics (age, sex and educational level) (Hulka and Wheat, 1985). Other factors such as regular source of care, number of affiliations that patients have with their physicians, previous use, organizational characteristics and insurance were considered to be significant factors of health care use; however, health status was the most important one. Hulka and Wheat show that many factors affect health care use and that both patients, physicians and organizational structure are important in determining their significance of health service utilization.

Insurance

Stabile (2001) investigates the relationship between employer-provided health insurance and the utilization of public health services. Part of the employer-provided insurance is income tax exempt in Canada, and hence it can be viewed as government subsidized private health insurance. This private, employer-provided insurance that is tax exempt can lead to more purchases of such insurance when compared to other private insurance companies that do not offer the benefit of tax exemption. It is also not unreasonable to assume that an increase in employer provided health insurance will increase the use of public health care services due to

moral hazard. Since it is difficult to distinguish between pure price effects of the tax laws and higher income and non-wage effects, Stabile uses two different provincial tax systems. To capture the variation in tax systems, author uses the province of Quebec, where employer provided health insurance is not tax-exempt, to compare with other Canadian provinces where such health insurance is tax exempt. The Stabile paper uses the 1995 Survey of Work Arrangements (SWA) and National Population Health Survey (NPHS) from 1994 to 1996 and defines health service utilization as either visits to a general practitioner or overnight stays in the hospital. His findings show that the supplemental health insurance (which includes both supplemental hospital and prescription drug insurance) increases the probability of using doctor's services by 2 percent, and increases the number of visits to the doctor by 4 percent. Overall, Stabile finds that supplemental private health insurance increases the magnitude of health service utilization, as well as the probability of using doctors' services. In addition, he concludes that "...individuals who hold supplemental insurance use approximately 10 per cent more publicly funded physician services than individuals who do not hold such insurance. As much as half of this additional use can be attributed to moral hazard from holding private supplemental health insurance" (Stabile 2001, pg 941).

Tilford et al. (1999) studies uninsured school children in Arkansas, US. They compare the levels of health care use among insured and uninsured children, and then study the changes in health service use as they introduce insurance to those who previously did not have it. They show that the introduction of insurance does not radically change health care consumption, but rather steadily increases it to the level of typical consumption of the insured. Overall, health care insurance is shown

to have not immediate, but rather slow and continuous effects on the utilization of health services.

Socio-economic status

Dunlop et al. (2000) study the effects of socio-economic status (SES) in the Canadian universal health care system. The authors use the data from National Population Health Survey for 1994. They find that lower socio-economic groups are less likely to visit a specialist than higher socio-economic groups, despite equal access to health care. The strongest correlation between visits to the general practitioner and to the specialist is found in the number of health problems and perceived health status. The authors also find that having a post-secondary education, a regular medical doctor, having children under the age of 12, being married, divorced, widowed, having a common-law partner and living in an urban community all increased the chances of going to the doctor. Negative health behavior, such as lack of exercise, smoking and drinking also increased the probability of health care use. Dunlop et al. (2000) show that family composition, education, health habits and geographical area all play an important role in determination of health service utilization, given equal access to health care (Dunlop et al., 2000).

Family composition and subsidy levels

Kazanjian et al. (2001) use Canadian BC Linked Health Database, linking Medical Service Plan and Hospital Admission and Separations database to a Linkage Coordinating file. They examine the relationship between determinants of health and the use of health care services and find that among other factors,

premium subsidy levels significantly affected health care use. In their study, premium subsidy levels represent the level of private insurance held by an individual and are indicated as a percentage of coverage for a certain medical service. In addition, they suggest that family composition is a significant factor in health service utilization, with highest rate of Medical Services Plan utilization among two adult families of opposite sex with children. When looking at depression, the authors find that for females, being single led to higher rates of treatment, except those in two adult families of same sex with children. Family composition had no impact on the treatment for depression among men. Overall, they find that family composition did not completely explain the differences between men and women.

Differential use between men and women

It has been shown that everything else being equal, health service utilization is different between men and women. Different studies suggest many cases in which men and women respond differently to many health conditions and have different patterns of health service use. Keene and Li (2005) combine the data of Community Health, Mental Health and Social Services population in the UK over 3 years. They find that overall, women use more health services than men. In addition, the authors show that men have more unequal access to care (Keene and Li 2005). Kazanjian et al. (2001) study sex differences in 1996/97 health care use in British Columbia with respect to the treatment of both physical (coronary heart disease) and mental (depression) conditions. While they find that, controlling for all other factors, men were hospitalized more than women for coronary heart disease, they were

hospitalized less for depression. Moreover, for the Medical Services Plan, women were found to be more frequent users than men. They also find that premium subsidy levels (levels of private insurance) affected men and women differently. For treatment of coronary disease, among men, highest hospitalization rate was among those with 100% subsidy, while the highest treatment rate was among those who are not on premium subsidy. Among women, both rates of hospitalization and treatment were highest among those with 100% subsidy levels.

Verbrugge (1985) also finds some significant factors that might explain the differential use of health care services among men and women. The author suggests that women tend to evaluate their illness more seriously than men and have different attitude towards pain, which can in turn lead to more health service utilization among females. He also considers social roles to be an important factor in determining health care use – while boys were always discouraged from complaining, women felt more free to do so. In addition, Verbrugge suggests that women are more able to make a quick decision and take action than men, leading to higher health care utilization. In addition, “Women show more persistence in caring for their health problems – by purchasing drugs prescribed to them, complying with medical regimens, making followup visits or recommended referral visits, and even changing their roles permanently to accommodate health problems...Not only do women take followup actions sooner than men, but they are more likely to take them at all” (Verbrugge 1985, pg 166).

Sindelar (1982) suggests the importance of family characteristics as a factor explaining differential use between men and women. His analysis is based on the 1973-1974 survey of US families. He assumes that the difference in health service

use between men and women can be explained by the following four factors: women have lower opportunity cost of time than men, men substitute home care for market care more cheaply than women, externalities to the health care use increase with family size and finally men use less preventative care than women. Sindelar finds that on average women use 50% more health care services due to, among other factors, the fact that men can substitute home care for medical care more readily than women. His analysis shows that men are more likely to use less health care services if there is a spouse not in labor force. As a result, viewing married, unemployed women as main health care providers helps to see why married men use less health care services. Opportunity cost of time is found to be insignificant in explaining the differential use of health care among men and women, as was having children under six. Family size is found to be significant and negatively correlated with health care utilization (doctor visits) for both men and women, perhaps due to the fact that as family size increases, income per person decreases (Sindelar, 1985). The author also finds support for his hypothesis that men use less preventative care than women. Overall, Sindelar (1985) shows that family characteristics play an important role in determination of differential use between men and women. Family set up helps explain one of the reasons why men use less health care services than women.

Other factors

There are many other factors that influence an individual's demand for health care and even though they are sometimes difficult to measure or observe, they are important nonetheless. Health status is considered to be important determinant of

health service use (Dunlop et al 2000, Hulka and Wheat 1985). As a result, one can argue that factors that influence one's health also indirectly influence the demand for health care services. Thus, such factors as nutrition, exercise, stress, participation in dangerous sports and chemical dependencies all influence one's health (Johnson-Lans 2006) and therefore can influence the demand for health care. Economic influences such as business cycles can also affect one's health (see for example, Ruhm 2000) and to some degree determine individual's demand for health care services. In addition, even technological improvements in health care can increase medical service inputs into the health production (Johnson-Lans 2000).

The role of physicians as a health care providers is also important to the demand for health care. Considering the principal-agent relationship between the patient and a doctor, it can be argued that physicians do influence the amount of services a person receives. The theory of physicians as quantity setters is explored by many studies (for example see McGuire 2000 and references therein), which assume that due to imperfect information problem, physicians can recommend more than necessary and optimal amount of services without the patient knowing about it. It also assumes that physicians are able to induce demand for their services that is not in the best interest of the patients. For example, Gruber and Owings (1996) find support for such hypothesis in obstetrician services. Physicians cannot affect fertility rates, and it is believed that with a decrease in fertility rates, the number of cesarean section deliveries increases due to the higher costs of such procedures. Hence the authors use fertility rates to measure a change in the demand for obstetricians' services in United States. When looking at the cesarean section

deliveries, they found a 1 percent increase in their use with every 10 percent decline in cross-state fertility rates (Gruber and Owings 1996). Other studies, however, find just the opposite conclusion (see Dranove and Webner 1994 and references therein).

In addition, in the United States, due to high rates of malpractice suits, there exists defensive medicine. This concept is applicable to those physicians who over provide medical treatments in fear of malpractice suits, thus unnecessarily increasing the use of health care services.

Overall, any form of physician induced demand or defensive medicine can affect the amount of health care services an individual receives. And while this hypothesis is subject to a lot of controversy, many suggest that it cannot be ignored.

There is not any research known to me that studies physician-induced demand for ED treatments in Canada. It does not suggest that there is no such occurrence and that it should be ignored. However, it is very difficult to observe or measure physician-induced demand and any such measurements are not always accurate and are a subject to errors. Hence, for the simplicity of my analysis, I will assume that there is no physician-induced demand for ED treatments in Canada, as it would be difficult to include any measure of such occurrences. Also, it might not be such a concern for ED patients since ED diagnosis is self-reported by patients and not determined by physicians.

The role of time is also an important determinant of health service utilization. If the cost of the time of the procedure is more valuable than the benefit from that procedure, an individual will forgo it. On the other hand, if the time of getting a procedure is less valuable than the benefit obtained from it, an individual will

choose to have it (see Johnson-Lans 2001-2002 and references therein). One can also argue that the value of one's time depends not only on his/her preferences, but on the procedure itself. The value of one's time might become less irrelevant with increased importance of the medical service and vice versa. However, the waiting time alone might not fully explain one's decision to have or forgo a service. This decision can also depend on one's salary or an opportunity cost of an individual. A two and a half hour visit to the clinic of someone whose wage is 10\$ is not the same as a two and a half hour visit of someone whose wage is 50\$ an hour (Johnson-Lans 2006). In the case of Viagra, its popularity can be explained by the fact that it presented a quick, simple and effective solution, whereas all the previous treatments were lengthy and more complicated.¹⁶ Therefore, there is a reason to believe that there was a significant increase in the demand for Viagra prescriptions and as a result, for the physician services, since in Canada only a family doctor or a G.P. can prescribe Viagra.

Finally, the type of medical service is also important in determination of the demand for it. The price elasticities of demand vary from one type of service to another. Some services will have higher price elasticities due to the fact that they have substitutes. For example, nursing homes can be substituted with home care (Johnson-Lans 2006), and there are many at-home treatments to everyday sicknesses such as colds and viruses. For those services, the demand might be highly elastic. On the contrary, demand for very specific services that require specialists' attention, will be less elastic. Since Viagra does not require specialist's

¹⁶ (Keith 2000)

use and is deemed medically unnecessary, I will assume that the demand for it is relatively elastic.

III. Methodology and data

Data

Two data sets used are: the National Population Health Survey (NPHS) for the year 1996-1997 and Canadian Community Health Survey (CCHS) for the year 2003. These surveys were chosen since Viagra was introduced to the Canadian market in 1999 and for comparison purposes, I use the observations before and after the launch of Viagra.

National Population Health Survey is a survey of individuals collected across Canada with the exception of some remote areas. It is targeted at issues related to health care determinants, utilization and health status of Canadians. The survey contains both longitudinal and cross-sectional estimates and includes measures of health status, health service utilization, health determinants, chronic conditions, activity restrictions and health index.¹⁷

The general component of the survey is conducted from a large sample of the population and is focused on general health questions, while the health component is done for the smaller sample of those in the general file and in addition to the general questions, contains information about specific health conditions. The general component of the NPHS collects socio-demographic information such as age, sex, education, employment status and income level of the individual, as well as information about respondent's general health and health care use. The health

¹⁷ (<http://www.statcan.ca/english/Dli/Data/Ftp/nphs.htm>)

component of the survey contains health specific questions, such as questions about respondents' current medical conditions, in addition to the questions used in general component. It contains 81,804 observations for the year 1996-1997. In this paper, only the health component is used due to the fact that it contains more specific and in-depth observations about chronic conditions (such as diabetes and high blood pressure) and lifestyle determinants.

After the year 1999, the Canadian Community Health Survey replaced the National Population Health Survey. The CCHS had a few adjustments, but its main focus stayed the same. It was conducted on a two-year cycle, with the first one being large general survey comparable to the general component of the NPHS. The second-year cycle is a smaller survey that focused on provincial-level information about specific health issues. The 2003 survey was conducted for all provinces and territories and 126 health regions. Just like for NPHS of 1996-1997, individuals living on Indian Reserves and Crown Lands, members of Canadian Armed Forces and residents of some remote areas are not included in the sample. The surveys covers 98% of the Canadian population ages 12 and over.¹⁸ The first year of the cycle survey collected socio-demographic information such as age, sex, education, ethnicity, employment status and income level of the respondent. The second year of the cycle contained the same information, as well as information about specific health conditions, such as chronic conditions like diabetes and high blood pressure. Since the second cycle of the CCHS was constructed similarly to the health component of the 1996-1997 NPHS, it is used for the analysis of this paper. It contains 134,072 observations.

¹⁸(http://www.statcan.ca/english/Dli/Metadata/cchs/cycle2-1/guide_e.pdf)

Hypotheses

Due to the fact that Viagra proved to be very popular after its introduction to the Canadian market in 1999, and the fact that in Canada, Viagra is a drug that can be prescribed only by a doctor, the main hypothesis of this paper is that the introduction of Viagra increased health service utilization among Canadian men most likely to be affected by ED.

This paper looks at four testable implications of this hypothesis. First, it looks at whether the introduction of Viagra increased the number of doctor visits among men. By “doctor”, this paper assumes a family doctor or a general practitioner (GP).

It has been shown that ED is rarely a condition on its own; it is usually a symptom of a more serious underlying chronic condition such as diabetes, high blood pressure, heart disease and depression.¹⁹ Due to the nature of these underlying conditions, their treatment is usually done by specialists and not by general doctors.²⁰ Hence, the second testable implication focuses on whether the introduction of Viagra increased the number of specialists visits among men. By “specialist” this paper means medical doctors other than a general practitioner or a family doctor, such as surgeon, allergist, orthopedist, gynaecologist, or psychiatrist. Hence, this paper tests whether introduction of Viagra brought more men not just to see a doctor, but to see a specialist as well.

¹⁹ See for example (www.viagra.com), (Keith 2000).

²⁰ In Canada, a person is usually referred to a specialist from their regular medical doctor.

The third and fourth implications focus on whether the introduction of Viagra increased the number of diagnosed cases of the two chronic conditions associated with ED: diabetes and high blood pressure.²¹

Variables

i) dependent variables

To capture the changes in the levels of health service utilization, two types of health care use are considered: regular doctor visits and specialist visits. For each type, three different measures are constructed to reflect the level and frequency of the utilization. First, to determine the number of doctor visits, this paper uses direct response answers as to the question: “In the past 12 months, how many times have you seen or talked on the telephone about your physical, emotional or mental health with a family doctor (pediatrician) or general practitioner?”. This first measure takes on the values from zero to thirty one, with the value “thirty one” meaning thirty one or more visits to the doctor. Hence this variable is capped at thirty one and is indicative of the level of doctor service utilization. In the data set, thirty one is not a common entry for the number of doctor visits, as very few people go to the doctor that often. As a result, a probit approach is appropriate here, as oppose to tobit (discussed further in the next section). To see whether a person went to the doctor at all, a binary variable is constructed. The second measure, the visit variable is a binary variable equal to one if the person went to the doctor and zero if he/she did not. This variable also measures the level of the health service utilization, but is more indicative of the distinction between being a patient and a non-patient. Finally,

²¹ Only these two conditions are chosen due to data restrictions

to capture the frequency of the doctor visits, this paper follows Dunlop et al. (2000) and uses six or more doctor visits as an indicator of frequent health service use and less than six visits as an indicator of a low level of use. As a result, the third measure is a binary variable equal to one if the person had six or more visits to the doctor and it is equal to zero if the person had less than six visits. This variable distinguishes between high and low health service utilization.

The same approach is used when looking at the measure of utilization of specialist services. First, frequency of visits to the specialist is captured by the variable indicating the total number of specialist visits of a person. It is determined by the responses to the question “In the past 12 months, how many times have you seen, or talked on the telephone about your physical, emotional or mental health with any other medical doctor (such as surgeon, allergist, orthopedist, gynaecologist or psychiatrist) ?”. Since people see a specialist only for something very particular, it is assumed that specialist visits are not as common as visits to the general doctor, hence visits to the specialist are capped at twelve. Therefore, this first measure of specialist services takes on the values from zero to twelve. In the data set, twelve is not a common entry for the number of specialist visits, as very few people go to the specialist that often. As a result, a probit approach is appropriate, as oppose to tobit (discussed further in the next section). To test whether a person went to see a specialist at all, a binary variable is used. This second measure takes on the value of one if a person in fact did see a specialist within a given year and zero if he/she did not. To see the intensity of one’s visits to the specialist, this paper follows Dunlop et al. (2000) and uses six or more visits as an indicator of high health service utilization and less than six as of low health service utilization with respect to

specialist visits. For this third measure, a binary variable is constructed where one indicates six or more visits and zero indicates less than six visits to the specialist.

To test an implication that after the introduction of Viagra men were diagnosed more with two underlying conditions of ED, diabetes and high blood pressure, two dummy variables are constructed. They reflect positive answers to the questions. “Do you have diabetes?” and “Do you have high blood pressure?” as diagnosed by a health professional.

ii) independent variables

Based on the literature review on the determinants of health care utilization, I control for the following variables: age, male, insurance, socio-economic status, education, marital status, self-perceived health status, type of drinker, type of smoker, level of physical activity, and province of residence.²²

The variable “age group” is a set of indicators for being the following categories: 12-14, 15-19, 20-24, 25-29, 30-34, 35-39 years of age and so on. Studies indicate that age is an important factor in determination of health care service utilization, especially among elderly.

To indicate the differences between men and women, a male dummy variable is used. “Male” is an important factor in my estimation, since I will be testing the effects of the introduction of Viagra on men only (since ED affects men only).

“Insurance” is a 0/1 variable indicating whether a person has insurance or not, which is determined by the answer to the question: “Do you have insurance that covers all or part of the cost of your prescription medications?” Insurance is found

²² The variables follow Dunlop et al. (2000) since they were found to be significant for the determination of health service utilization.

to have a significant impact on the use of the prescription drugs.²³ To capture this effect, I use a measure of insurance in my analysis. Since Viagra as a drug is not covered by the Canadian public health care system, I need to control for those individuals who have alternative, private insurance plans.

The indicator of socio-economic status of an individual is measured by two variables. Income adequacy measure classifies total household income into 5 quintiles based on the total household income and the number of people living in that household. Five categories that determine home adequacy are lowest income quintile, lower middle income quintile, middle income quintile, upper-middle income quintile and highest income quintile. A second measure of the socio-economic status is education.²⁴ For “education”, four categories are used: less than secondary school graduation, secondary school graduation, some post secondary schooling and post secondary graduation. Even though Dunlop et al. (2000) also included work status in their estimations, I exclude it due to the different nature of the questions used for its measure in 1997 and 2003.

²³ To see the effects of drug coverage among Medicare beneficiaries on the level of prescription drug utilization, Davis et al. (1999) use 1995 Medicare Current Beneficiary Survey (MCBS), a panel survey of 12,000 aged and disabled US beneficiaries. They use primary supplemental coverage, as well as drug coverage from another source to test their hypothesis. Authors find that more comprehensive insurance coverage and higher income lead to higher use of any prescription drug. Those beneficiaries who had Medicaid on average used twice as many prescriptions as those with no supplemental insurance, while having drug insurance resulted in 60 percent higher average spending when compared to those who had no drug insurance at all (Davis et al., 1999). Authors thus find that insurance is an important determinant of prescription drug use among elderly. Such result can also be seen in other studies, such as Khan et al. (2007). Using the same survey as Davis et al. from 1992 to 2000, they found that public coverage increased annual number of prescriptions by 13.7%, when controlling for individual fixed effects (Khan et al., 2007). Their overall results also reaffirmed the importance of insurance on the demand for prescription drugs.

²⁴ Dunlop et al. (2000) found that among other factors, education, along with income, determine the demand for health care services. In particular, those in lower socio-economic status groups use more of GP services, while those in higher socio-economic status groups use more specialist services (Dunlop et al. 2000).

The variable “marital status” is also included in my model and is used as a set of indicators for: 1) married or common law, 2) widowed/separated/divorced and 3) single, never married. Categories for marital status are combined so that they correspond in both 1997 and 2003.

“Health status” is used to indicate individuals’ self perceived health. It is believed that worse perception of one’s health increases health service utilization, while if the perception of health is good, it leads to lower health care use. The “health status” indicator is determined by the question “In general, would you say your health is excellent, very good, good, fair, or poor?”. As a result, the above 5 measures of self-perceived health are used.

One’s lifestyle was also found to be a significant factor to the determination of health care service use. Therefore, measures of individuals’ physical activity, smoking and drinking levels are used. These variables are also important since they greatly affect the chances of having ED. Being a smoker or a drinker increases one’s chances of having ED, while lack of exercise can lead to serious health problems which have been identified as the underlying conditions of ED.²⁵

The variable “type of drinker” is based on the individuals’ drinking habits. Four types of drinker are used: regular drinker, occasional drinker, former drinker or never drank. The variable “type of smoker” is determined by the answer to the question: “At the present time, do you smoke daily, occasionally or not at all?”. Hence three measures of the type of smoker are used.

“Physical activity” variable is an activity index that categorises respondents as either active, moderate or inactive, based on the total daily expenditure values. It is

²⁵ (www.viagra.com)

a measure of the average daily energy expended during leisure time activities by the respondent in the past three months.²⁶

For the geographical location, variable “province” is used. The provinces included are Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta and British Columbia. Yukon, Northwest Territories and Nunavut Territories are excluded since they are not used in the 1997 survey.

A year dummy variable “year 2003” is also included. It is equal to 1 for the year 2003 and 0 for the year 1997. This allows me to compare the settings before and after Viagra was introduced, and to capture the national trends in health service use and the rates of diabetes and high blood pressure.

Empirical Strategy

To test the impact of the introduction of Viagra on health service utilization among men over the age of 40, I compare the change in probability of doctor visits, specialist visits, and in the number of diagnosed chronic conditions between 1997 and 2003.

I construct a new variable “men over 40”. Since men are more likely to be affected by ED after the age of 40²⁷, the group on which I test effects of the introduction of Viagra is men over the age of 40.

To test whether men over 40 increased health service utilization and got diagnosed with chronic conditions more often than before the introduction of Viagra, I use the method of difference in difference. I chose two control groups that

²⁶ (http://www.statcan.ca/english/Dli/Metadata/cchs/cycle2-1/derive_e.pdf)

²⁷ (www.viagra.com)

are not likely to be affected by the introduction of Viagra. First group is women, since Viagra is a treatment that is specific to men only. To make groups more comparable and homogeneous, I use women over 40 years of age as a control group – “women over 40”. I believe that using women in the same age category as the main group allows me to have a better comparison between the two samples, since women over 40 are more likely to be susceptible to the same health conditions as men over 40, when compared to women under the age of 40 and men over the age of 40.

The second control group that I use is men under 40 – “young men”. Again, this group is not likely to be affected by the introduction of Viagra, and hence their health service utilization or a likelihood of being diagnosed with diabetes or high blood pressure is not likely to be affected as well.

The method of difference in difference tests to see whether the change in health service utilization among men over 40 between 1997 and 2003 is greater than the probability of change in health service utilization for the reference group (either women over 40 or young men). Hence, for the effect of Viagra to be significant, this difference in difference should be positive, indicating that men used more health services in 2003 when compared to women over 40 and year 1997. The same strategy is used when the control group is young men. The method of difference in difference is also used when testing for the change in the number of diagnosed chronic conditions (diabetes and high blood pressure). A positive difference in difference indicates that after the introduction of Viagra, more men over the age of 40 were diagnosed with underlying chronic conditions of ED, such as diabetes and high blood pressure, when compared to the control group.

The general specifications for the regression model are as follows:

$$I) \text{ Visits to doctor} = \beta_1 + \beta_2 \text{menover40} + \beta_3 \text{year2003} + \beta_4 \text{menover40} \times \text{year2003} + X \beta_5 + \varepsilon$$

Or similarly,

$$II) \text{ Chronic condition} = \beta_1 + \beta_2 \text{menover40} + \beta_3 \text{year2003} + \beta_4 \text{menover40} \times \text{year2003} + X \beta_5 + \varepsilon$$

For the above specifications, *menover40* is a binary variable, and it is equal to 1 for men over 40 and it is equal to 0 for *i*) women over 40 and *ii*) men under 40. Hence, for every specification, there are two equations estimated: one under *i*) and another one under *ii*). The variable *year2003* is a binary variable that is equal to 1 if all of the observations are taken from the dataset for the year 2003, and it is equal to 0 if the observations are from the 1997 dataset. The variable *menover40* × *year2003* is also a binary variable, since it is a product of two binary variables, *menover40* and *year2003*. It is equal to one for men over 40 in the year 2003 and it is equal to 0 when either *menover40* or *year2003* are equal to 0. This variable controls for the difference in difference estimates in my regression. The variable *X* represents a matrix of all of the other independent variables, including age group, insurance, socio-economic status, education, marital status, health status, type of drinker, type of smoker, physical activity, and province.

For these models (I and II), the dependent variable is either a measure of health service utilization (regular doctor visits or specialists') or a diagnosed chronic condition indicator (indicating having diabetes or high blood pressure), β_1 is a constant term, β_2 shows the effect of men over 40 on the specific measures of health care use or chronic conditions (holding everything else constant), β_3 represents the significance of the year on the specific measures of health service use or chronic

conditions (holding everything else constant). β_4 represents a difference in difference coefficient between the years 2003 and 1997 for men over 40 and women over 40 or for men over 40 and men under 40. β_5 is a general vector of coefficient estimates for the matrix X . As a result, my coefficients are as follows:

	1997	2003	Difference
Men over 40	$\beta_1 + \beta_2 + \beta_5$	$\beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5$	$\beta_3 + \beta_4$
Control group	$\beta_1 + \beta_5$	$\beta_1 + \beta_3 + \beta_5$	β_3
Difference	β_2	$\beta_2 + \beta_4$	β_4

Overall, my specific regression models are as follows:

$$\text{Health Service Utilization} = \beta_1 + \beta_2 \text{menover40} + \beta_3 \text{year2003} + \beta_4 \text{menover40} \times \text{year2003} + \beta_5 X + \varepsilon \quad (\text{control group: women over 40})$$

$$\text{Health Service Utilization} = \beta_1 + \beta_2 \text{oldermen} + \beta_3 \text{year2003} + \beta_4 \text{oldermen} \times \text{year2003} + \beta_5 X + \varepsilon \quad (\text{control group: men under 40})$$

$$\text{Chronic Condition} = \beta_1 + \beta_2 \text{menover40} + \beta_3 \text{year2003} + \beta_4 \text{menover40} \times \text{year2003} + \beta_5 X + \varepsilon \quad (\text{control group: women over 40})$$

$$\text{Chronic Condition} = \beta_1 + \beta_2 \text{oldermen} + \beta_3 \text{year2003} + \beta_4 \text{oldermen} \times \text{year2003} + \beta_5 X + \varepsilon \quad (\text{control group: men under 40})$$

Recall, my determinants of health care use are: 1) number of doctor visits, 2) at least one doctor visits (0/1 variable with 1 representing at least 1 visit and 0 representing zero visits) 3) six or more doctor visits (0/1 variable with 1 representing

at least six visits to the doctor and 0 representing five or less visits to the doctor) 4) number of specialists visits 5) at least one specialist visit (0/1 variable with 1 representing at least 1 visit and 0 representing zero visits) and 6) six or more specialist visits (0/1 variable with 1 representing at least six visits to the specialist and 0 representing five or less visits to the specialist). To represent chronic conditions indicative of underlying problems associated with ED I use 1) diabetes and 2) high blood pressure variables. Both of them are binary, with value 1 being indicative of having a diagnosed condition and 0 of not having it.

In the data given, many observations were missing due to the fact that the person either refused to answer the question, did not know the answer or the question was not applicable in the particular situation. In order not to lose all these observations, I created extra categories for all of the independent variables (excluding sex and age group, which did not have missing categories). However, the inclusion of the missing observations can negatively affect my results. It can be the case that the respondents are not truthful in their answers and choose to hide their information. For example, they might hide their true income or education levels by answering “I don’t know” to some questions. If low-income individuals are embarrassed about their true income and socio-economic status, they might choose to hide it. The inclusion of these people can negatively bias my results, since those individuals are not likely to have insurance that covers Viagra and hence will not be affected by the introduction of Viagra to the Canadian market. If I include all these individuals in the missing observations category, it might be harder for me to pick up the effects of the new policy. As a result, the inclusion of the missing observations ensures a larger sample, but has the potential to bias the results. To see if the inclusion of the

missing observations gives a significant bias in my estimates, I drop all of the observations with the missing information and look at the regression results (Appendix A, tables a-d). Compared with the other regression results, dropping the missing observations does not have a significant impact on the main coefficients and does not change my conclusions. Given that there is no significant difference between the two regression methods, the inclusion of the missing observations does not create a large bias in my results. Therefore, for my all of my regressions, I include the missing observations to create a larger sample.

Further, not to make an assumption that the variables are continuous variables, which would mean that an incremental impact of a change from one category of the variable to another would be the same across all categories, I use them as sets of dummy variables excluding one category to avoid multicollinearity problem. I drop one of the categories for the independent variables and estimate the coefficients of the variable for every category in the relation to the dropped one.

As a result, for the variable “age group” I dropped individuals ‘40-44’ years of age. Since men are most likely to be affected by ED after the age of 40, dropping those in ‘40-44’ years of age category makes estimates for the rest of the categories be relevant to those who are 40 years of age. For the rest of the variables, I try to drop the middle category, such that the estimates for the included categories relate to the average observation and not to the extreme. Hence, for the “socio-economic status” I drop the ‘middle income quintile’, for the “education” I drop the category for individuals with ‘some post secondary education’. Category for ‘widowed/separated or divorced’ was dropped from the “marital status” observations, while ‘good’ self-perceived health was dropped from “health status”.

As for the lifestyle variables, ‘former drinker’ was dropped from “type of drinker”, ‘occasional’ smoker from “type of smoker” and ‘moderate’ physical activity indicator from “physical activity”. Finally, for the variable “province”, I drop ‘Ontario’, given that it is the largest province. Two variables for which there were just two categories were excluded from this reconstruction of variables. They are “male” and “insurance”.

For the two independent variables that represent the number of visits (to the doctor or the specialist) I use the OLS regression method to estimate my equations. For the rest of the equations where the dependent variables are binary, I use a probit regression model and report the marginal effects of the variable estimated. In other words, I estimate a change in probability of a small change in the independent variable. However, my tables report estimates of the maximum likelihood probit model, which do not change the overall implications of the model. To correct for the heteroskedasticity, I use White’s heteroskedasticity correction and run robust variance estimators.

In addition, I ran all of my regressions as before, but I control for those people who have insurance – i.e. I specify that for all of my regressions insurance is equal to 1. This is done to test my hypotheses on the group that is most likely to get prescriptions for Viagra – those who have insurance coverage of the drug.

IV. Results

Before reporting the regression results, I will present some summary statistics by years. First, I report the impact of the covariates: men over 40, women over 40 and men under 40 for both 1997 and 2003 (Table 1). To see an overall impact of the

independent variables I regroup them into 0/1 variables and look at their means. The covariates were regrouped as follows. Age group is either over 40 or under 40, depending on the sample looked. Sex is either male or female, again depending on the sample in question. Insurance variable was regrouped into insured and uninsured, socio-economic status was either lowest and middle income quintile or middle high and high income quintile. Education was regrouped into secondary school education (or less) and post secondary graduation (or less). Marital status was divided into those who are married and those who are single, divorced, widowed or separated. Health status was either good and excellent or poor and fair. Type of drinker and type of smoker were divided into either drinker and non-drinker and smoker and non-smoker. Finally, physical activity was regrouped into those who are physically active and those who are physically inactive.

Overall, the results indicate the changes in the general patterns of behaviour among men over 40, women over 40 and men under 40 between 1997 and 2003. The average number of men and women over 40, as well as men under 40 who are insured increased in 2003 when compared to 1997. The average number of men and women over the age of 40, as well as young men decreased for the low/middle income quintile category, suggesting an improvement in socio-economic status across groups. The average number of men over 40 and women under 40 who have at least secondary school graduation decreased between 1997 and 2003, while the average number of men under 40 increased. This suggests that overall there is an increase in education levels among older people, since a decrease in the levels of secondary school education or higher mean an increase in the level of post secondary education or higher. There was a decline in the average number of those

who are married among all groups, suggesting an increase among the single/widowed/separated/divorced category. The same pattern is observed when looking at those who have either good or excellent health status among all groups. It suggests an overall decline in the levels of self-perceived health among men over 40, men under 40 and women over 40.

There were also significant changes in the lifestyle patterns among all categories. In 2003, there was an increase in the average number of drinkers among men and women over the age of 40, while the average number of drinkers among young men decreased between 1997 and 2003. This suggests that younger men improved their habits with respect to drinking, while older people did just the opposite. When looking at smokers, a significant improvement can be noted between 1997 and 2003 - their average number decreased among all groups, suggesting an increase among the non-smokers. There was also a positive change among the physical activity levels of the individuals. The average number of those who are active increased between 1997 and 2003 among all groups.

Next, I look at the difference in difference results. The results are reported in table 2a-h. The overall impact of the dependent variables can be seen from their means, as reported by year and control group. The first two rows report respective means and standard errors of the number of doctor visits/ number of diagnosed chronic conditions for men over 40 and the two control groups for both 1997 and 2003. The last row represents a difference in difference coefficient for each control group and dependent variable. For this table, I look at all 8 dependent variables.²⁸

²⁸ These include a) regular doctor visits; b) regular doctor visits (0/1) variable represents the probability of having at least 1 doctor visit; c) regular doctor (6+) variable represents the probability of having at least 6 doctor visits; d) specialist visits; e) specialist (0/1) represents the probability of having of at least 1 visit to the specialist; f) specialist (6+)

As mentioned before, if men over 40 increased their health service utilization after Viagra was introduced, the difference in difference coefficient would be positive and significant (in this paper I report significance at 5% level). Looking at the means in table 2, the positive and significant value of the difference in difference is found for the regular doctor visits (0/1) when males under 40 are the control group. There are also significant difference in difference coefficients found for the diabetes variable for both control groups and for high blood pressure for the men under 40 control group. The rest of the values are either insignificant and/or negative, suggesting that introduction of Viagra did not result in higher health service utilization among men most likely to be affected by ED. Overall, this unadjusted analysis is not suggestive of the fact that the introduction of Viagra had a significant impact on the health service utilization and the number of diagnosed cases of chronic conditions, even though there is a significant increase in the number of men over 40 who were diagnosed with diabetes in 2003. I look at the regression results to see support of my hypotheses.

The tables 3a-d represent regression results for all 8 regressions. Looking at the estimates of the difference in difference coefficients, I find a significant and positive estimate for the regression with doctor visits (0/1) as a dependent variable and men under 40 as a control group and with diabetes as a dependent variable and women over 40 as a control group (however, it is significant only at the 10% level, not 5%). Estimates of the difference in difference coefficients for six or more doctor visits, six or more specialist visits and just doctor visits are found to be

represents the probability of having at least 6 or more visits to the specialist; g) diagnosed with diabetes represents the probability of being diagnosed with diabetes and h) diagnosed with high blood pressure represents the probability of being diagnosed with high blood pressure.

negative and significant with men under 40 as a control group. For the rest of the regression models, I find the difference in difference estimates either positive or negative, but not significant.

What these results suggest is that after Viagra was introduced, overall, men over 40 did not increase their health service utilization and were not diagnosed with chronic conditions more often. The significant impact that Viagra had on health service use among men over 40 is the increase in probability of seeing a doctor at all when compared to men under 40. That is, in 2003 the chances that men over 40 went to see a doctor were higher than in 1997 when compared with men under 40. This measure of doctor visits is important, since it is most likely that Viagra increased the probability of seeing a doctor among men. It is not unreasonable to believe that men who already had a regular family doctor would already have been diagnosed with ED; hence Viagra did not have such a strong impact on those men and did not make them more frequent users of the doctor services. I believe that it had the biggest impact on those men who did not see a doctor before, but became doctor patients in order to receive Viagra prescriptions. Therefore this binary measure of doctor visits is the main dependent variable for which I hope to see significant results. For the effect of the introduction of Viagra to be significant, I should find positive and significant difference in difference coefficient when looking at women over 40 as a control group and a binary measure of doctor visits as the dependent variable. Unfortunately, this was not confirmed with the second control group. It is also important to note that women over 40 provide a more appropriate control group than men under 40. It is more likely that women over 40 are not going to be using Viagra, whereas there are some chances that men under

40 might. Both control groups are used to produce better and more thorough results, but I take the results which use women over 40 as a control group to be more significant. The fact that my results were not confirmed with women over 40 as a control group clearly suggests that men over 40 did not change their patterns of doctor service utilization in 2003. The chances of having diabetes among men over 40 when compared to women over 40 also increased, but since the significance of this finding is at the 10% level and the result was not confirmed with the second control group, I conclude that there was no considerable increase in the number of men who were diagnosed with diabetes in 2003.

In all other areas of health service use, patterns of utilization among older men did not change after Viagra was introduced. Since the prescriptions for Viagra can be obtained from a general practitioner or a family doctor and the fact that individuals are referred to a specialist by a regular doctor, it is not surprising that I do not find an increase in the specialist visits in 2003 among men over 40. Overall, the number of doctor visits did not change significantly and men did not become more frequent users of specialists or regular doctors. Men were also not diagnosed with underlying chronic conditions of ED more frequently. Therefore, I can say that I did not find any significant results showing considerable change in the patterns of health care use and in the number of diagnosed chronic conditions in men over 40 after the introduction of Viagra.

On the other hand, a negative and significant difference in difference for regular doctor visits, for six or more doctor visits and for six or more specialist visits, shows that men under 40 became more frequent users of health care services in 2003 when compared to 1997 and men over 40. This finding suggests that perhaps

the reason that I did not find a positive difference in difference is that due to some other factor, men under 40 also increased their health service utilization in 2003. It must be something that affected only young men's use of health services and not older men's, since something that could have affected both equally is being controlled for. And since it is required to see a regular doctor in order to get a referral to a specialist, an increase in specialist visits might be partly due to an increase in regular doctor visits. Hence, there might be a reason why my results did not coincide with my hypothesis. A further investigation into the subject can explain this, but for this paper, I just note that there might be some factor, like a new policy or a change in preferences (i.e. the new popularity of the healthy lifestyle), that increased health service utilization among men under 40 and it might be the reason why the difference in difference coefficients between men under 40 and over 40 are not positive and statistically significant. However, if this result is particular to young men only and is the only reason why my results do not coincide with my hypotheses, I would find positive and significant difference in difference estimates when looking at women over 40 as a control group. The fact that this was not found, suggests that perhaps there was no effect of introduction of Viagra on health service use among men over 40 after all.

Almost all of the estimates of the covariates of the regression results are found to be statistically significant. Their impacts on the dependent variables all follow economic theory. When looking at women over 40 as a control group, I find that in relation to the 40-44 year olds, being older increases the chances of seeing any kind of doctor as well as the probability of having diabetes and high blood pressure. It is especially apparent when looking at high blood pressure, with those in the 45-49

year old category being 8.5 percent more likely to be diagnosed with high blood pressure in relation to those who are 40-44 years of age. When looking at the individuals in the category of 75-79 years of age, those chances increase to 39 percent. Insurance was found to have a positive and significant impact on the health service utilization, with the biggest impact being on the probability of seeing a regular doctor. It also increased the probability of being diagnosed with the two chronic conditions.

When comparing with the middle income quintile, having a lower socio-economic status increased the chances of seeing any kind of doctor for men over 40, while having a higher one mostly increased the chances of seeing a specialist. Having lower levels of education decreased the probability of seeing any kind of doctor and of having a chronic condition, except for high blood pressure when compared to individuals with some post secondary education. In relation to those who are widowed, separated or divorced, being married lowered the chances of seeing a doctor, while being single increased them (the same finding as described by Sindelar, 1982). Both categories decreased the probability of having any kind of chronic condition. As expected, with respect to good health status, excellent health status decreased the chances of seeing a doctor and having diabetes or high blood pressure, while having a poor health status increased them. Compared with former drinkers, being a drinker lowered the probability of seeing a doctor and of having any type of chronic condition, and being a non-drinker did not change the results. Being a smoker had the same effect, but being a non-smoker actually increased the chances of seeing a doctor, in relation to those who are occasional smokers. Finally, when compared with being moderately active, being active increased the

chances of seeing a regular doctor, but not a specialist and increased the chances of having diabetes, but not high blood pressure. Being physically inactive mostly increased the chances of seeing any kind of doctor and of having a chronic condition.

When looking at the regression results which use men under 40 as a control group, the same trends can be found. The only major difference is the effect of the younger groups (12-39 years of age) on the dependent variables. While the chances of seeing a doctor are higher with an increase in every age category in relation to the 40-44 year olds, they are actually lower for the dependent variables that indicate the change from probability of not seeing a doctor or a specialist at all to the probability of seeing them at least once. That is, being younger decreases the chances of becoming a patient of a doctor or a specialist, when compared to the 40-44 year olds. Being younger is also found to have a negative or very small impact on the probability of having diabetes or high blood pressure.

Overall, my results indicate that the estimates of the covariates are generally consistent with economic theory predictions. Most of the determinants of health care use are found to be statistically significant.

Finally, I look at the regression results which are done for those individuals who have insurance coverage. I estimate all of my previous equations with a specification that “insurance” is equal to 1. By doing so, I look at the changes in health service utilization and in the number of diagnosed chronic conditions among those men, who are most likely to be filling out prescriptions for Viagra – those who have insurance coverage of the prescription medications. The results are reported in tables 4a-d. For these regressions, most of the covariates are found to be

statistically significant, and in general follow the same patterns as those estimates from the previous regressions.

Controlling for those who have insurance coverage, my results are almost the same as in the previous regressions where both insured and uninsured men are considered. I find positive and statistically significant difference in difference coefficients when looking at the number of doctor visits and at the probability of seeing a doctor at least once (doctor visits 0/1 variable) for women over 40 as a control group. Looking at the men under 40 as a control group, I once again find *negative* and statistically significant difference in difference coefficients for the number of doctor visits, six or more doctor visits (0/1 variable) and for six or more specialist visits. I also find a positive and significant difference in difference coefficient for the probability of seeing a doctor at least once (0/1 variable) when men under 40 are used as a control group. None of the difference in difference coefficients are significant for both diabetes and high blood pressure as the dependent variables under both control groups.

These results suggest that once again, after the introduction of Viagra there was no significant change in the number of diagnosed chronic conditions among men over 40. They also suggest that there is some factor that increased the health service utilization among young men only. As noted before, this factor could be an increased popularity of the healthy lifestyle or some new policy that affected just men under 40 and not men over 40. I did find a positive and significant difference in difference estimate for the number of doctor visits as the dependent variable and women over 40 as a control group. This finding would be significant if the same result was found under the second control group, men under 40. However, it is not

the case. The only different finding that is discovered is that controlling for those men who have insurance, there was a significant increase in the probability of men seeing a doctor when comparing 1997 and 2003. The fact that the difference in difference coefficients are positive and significant for the probability of seeing a doctor at least once for both of the control groups, suggests that there was an increase in probability that those men who have insurance became doctor patients and started using medical services.

As a result, when controlling for men who have insurance that covers their prescriptions, I find that there was an increase in the chances of seeing a doctor among those men. When I combine all of my findings, I cannot suggest that overall the introduction of Viagra had a significant impact on the health service utilization and on the number of diagnosed chronic conditions among men over the age of 40. I do note that there was a significant finding with respect to the use of the services of regular doctors among those who have insurance. I believe that controlling for insurance might be a more appropriate specification, since those who have insurance are more likely to be getting prescription for different medications when compared to those who do not have any insurance at all. As a result, I place more significance on the results of the model that controls for insurance; however, I do not claim that based on this finding alone I can conclude that all of my hypotheses were correct. This finding, however, might motivate further research in this area.

V. Discussion & Policy implications

My findings suggest that overall the introduction of Viagra did not change the patterns of health service utilization among men over 40 - those most likely to be

affected by ED. I did not find any significant change in almost all patterns of health care use when I used two control groups to compare men to: women over 40 and men under 40. The only positive and significant difference in difference coefficient was found for the dependent variable representing having at least one doctor visit for those men who have insurance. However, since this is the only evidence of the increased health service use that I find, I do not take it to represent a significant result that proves my initial hypotheses. The fact that I did not find increased health service utilization among men over 40 implies that there is unlikely to be an increase in the diagnosed chronic conditions associated with ED and my findings show exactly that. As a result, I do not find support for my hypotheses that the introduction of Viagra brought more men to the see either a regular doctor or a specialist and that it increased the chances of being diagnosed with diabetes or high blood pressure.

The implications of my findings suggest that Viagra as a drug should not be seen as a health care utilization determinant. The fact that all of my covariates had a significant impact on patterns of health care use shows that there are other significant determinants of health service utilization that were previously studied by many economists. Perhaps it suggests that the introduction of new, high-demand drugs like Viagra does not change patterns of health care use as much as other personal and social factors like age, sex, marital status, socio-economic status, insurance, education and lifestyle do. The result might also be due to the fact that the introduction of a new drug does not immediately change health service use, with other strong predetermining factors being in place. It might be that the

introduction of new drugs takes time to have an impact on the way people use health care.

In the United States, insurance coverage of Viagra is either limited or excluded from various insurance packages, with only a fraction of its prescriptions being covered. Similar situation is found in the United Kingdom (Keith, 2000). Just like in United States, in Canada, prescription drugs are not covered by the public health care system, and their coverage is limited by the private companies. Some of them do cover Viagra, but most exclude it from general packages, and cover it for additional cost and with a limit as to the annual amount spent on the drug. Most of these companies have \$1000 annual limit and limit Viagra coverage since they consider it a “medically unnecessary” treatment for the patients.²⁹ Keith suggests that the reasons for this limitation of the annual deductible value on behalf of insurance companies might be partly due to the possible moral hazard and adverse selection on behalf of the individuals seeking Viagra.³⁰ Insurance companies might be afraid that there would be too much false self-diagnosing of ED and that there would be too much treatment of other chronic conditions associated with ED (Keith 2000). These factors, if significant, would substantially increase costs for insurance companies. As a result, this might act as a reason to limit coverage of Viagra by insurance companies not just in US, but in Canada as well.

My findings, however, suggest that the moral hazard and adverse selection with respect to Viagra use are not at play here in Canada. Since there was no increase in various measures of health service utilization among men after the introduction of

²⁹ (www.health.ca/clients/media/documents/talkingbenefits/archive/en/199906_EN.pdf) However, it should be noted that at the time when insurance companies capped the annual limit at \$1000, an approximate cost of one pill was \$15.

³⁰ He suggests that cost would be another, perhaps more significant factor

Viagra, there is no reason to believe that there was too much over reporting of ED on behalf of men. If it was the case, I would find my difference in difference coefficients to be positive and significant for most of the measures of health service utilization and among all control groups. Since it is not the case, the problem of moral hazard with respect to ED reporting is very small and insignificant. I come to the same conclusion when looking at the problem of adverse selection among Canadian men. If the use of Viagra would result in treatment of many underlying conditions associated with ED, I would find an increase in the number of diagnosed cases of such chronic conditions. I looked at the number of diagnosed cases of diabetes and high blood pressure, two of many conditions that are usually associated with having ED.³¹ I found that there was no increase in the number of cases of diabetes or high blood pressure among men after the introduction of Viagra. Hence, the problem of adverse selection also seems to be very small and insignificant in Canada. As a result, my findings give a reason for insurance companies not to exclude or put a limitation on Viagra prescriptions in their insurance packages if the main reasons for such policies are the presence of moral hazard and adverse selection. If there is actually little or no moral hazard and adverse selection associated with ED, it might be beneficial for insurance companies to include Viagra in their plans if individuals are willing to pay for it and it might be beneficial for patients to receive more treatment for ED at some additional cost.

³¹ (www.viagra.com).

Limitations

There are several limitations to my approach. First, for my model, I compared the years 1997 and 2003. Since Viagra was introduced in Canada in 1998, I excluded the survey year 1998-1999. In order for all the effects associated with introduction of a new drug to the market to take place, I also excluded the survey year 2000-2001. However, if the response to Viagra took place immediately after its introduction, my approach would only pick up secondary effects of this process. If there was a hump-shaped response to Viagra with an initial spike, then its effects on health service utilization in 2003 would not be as strong as in 2001. As a result, my findings could be weak if there was a strong initial effect of the introduction of Viagra on health care utilization.

The second limitation of my approach might be due to underestimation of the demand for health services. This underestimation might be a result of online pharmacies that prescribe and sell Viagra. Through an online pharmacy, an individual can get a prescription from an online doctor and purchase Viagra online³². This method can be very popular due to the intimate nature of ED. It might be easier for an individual to fill out a prescription online, without having to go to the doctor and talk about ED. This can be particularly useful for those who do not have a family doctor at all. Therefore, my conclusions about the patterns of health service use might be underestimated due to this unreported demand for Viagra.

The third limitation to my estimation is again due to the underestimated demand. Since Viagra became so popular in Canada, there are a lot of illegal online purchases of Viagra without any prescription. There are many web sites that

³² (<http://www.pharmaciesanddrugs.com/pharm-online.html>)

illegally sell Viagra or some sort of it's alternative without a prescription. Therefore, there might be a large part of the demand for Viagra that is expressed through online purchases and not represented in the official health surveys. As a result, this underground market might affect my estimations.

Finally, there might be a misrepresentation of the insurance situation in the household. Health surveys ask the following question: "Do you have insurance that covers all or part of the cost of your prescription medications?" But most of the insurance companies either exclude or limit the number of annual prescription of Viagra.³³ As a result, having insurance does not necessarily mean that an individual has insurance for Viagra. And even though, when comparing those who have insurance and those who do not, it is a lot more likely to find an individual who has Viagra coverage in the category of those who have *any* insurance coverage, it still does not give precise estimates. As a result, when I restrict my sample to those who have insurance, there might be some individuals in my sample who actually do not have any coverage for Viagra medication. However, due to data restrictions, it is the only way that I can control for those who might have coverage for Viagra.

Areas for further research

Possible areas for further research can include a further investigation of the effects of the introduction of Viagra on health service utilization, but accounting for the possibility of a large black market and an under reported problem. There can also be an investigation of the impact of Viagra that uses 2000-2001 health survey as its comparative year. Also, this approach would be more complete if there was a

³³ (www.heath.ca/clients/media/documents/talkingbenefits/archive/en/199906_EN.pdf)

possibility to include a measure of insurance that would specifically indicate which individuals are covered for Viagra prescriptions and which are not. Finally, further examination of the change in the levels of health care use among men under 40 would be beneficial. An explanation of the reason for an increase in health service use among young men in 2003 might result in different findings than presented in this paper. For example, controlling for this increase might result in a positive difference in difference coefficient estimate when looking at a diabetes as a dependent variable (for both insured and uninsured men) and men under 40 as a control group. It would lead to a significant finding, since the estimation under the second control group, women over 40, is already found to be positive and significant and hence it would be possible to conclude that the introduction of Viagra increased the chances of men over 40 being diagnosed with diabetes

Appendix a) -d).

Results of the regressions for which the missing information was omitted.

Table a: Regression results for men over 40 when women over 40 are the control group

	Doctor visits	Doctor Visits (0/1)	Doctor Visits (6+)	Specialist Visits	Specialist Visits (0/1)	Specialist Visits (6+)
men over 40	-0.616**	-0.346**	-0.151**	-0.188**	-0.192**	-0.082**
	(0.051)	(0.019)	(0.018)	(0.017)	(0.015)	(0.032)
year 2003	-0.350**	-0.131**	-0.094**	0.041**	0.047**	-0.00042
	(0.048)	(0.018)	(0.017)	(0.016)	(0.014)	(0.029)
menover40*yr2003	0.052	0.018	-0.0098	-0.022	-0.0062	-0.077**
	(0.062)	(0.022)	(0.022)	(0.020)	(0.018)	(0.039)
N	N=91353	N=91353	N=91353	N=91486	N=91486	N=91486

Note: Standard errors are in parenthesis. ** denote significance at 5% level.

Table b: Regression results for men over 40 when men under 40 are the control group

	Doctor visits	Doctor visits (0/1)	Doctor Visits (6+)	Specialist visits	Specialist visits (0/1)	Specialist Visits (6+)
men over40	0.347**	0.0014	0.220**	0.076**	0.013	0.111
	(0.084)	(0.030)	(0.043)	(0.032)	(0.045)	(0.097)
year 2003	-0.0031	-0.125**	0.015	0.016	0.044**	0.046
	(0.053)	(0.019)	(0.026)	(0.021)	(0.022)	(0.046)
menover40*yr2003	-0.308**	0.040*	-0.126**	-0.033	-0.0084	-0.114**
	(0.064)	(0.024)	(0.030)	(0.027)	(0.026)	(0.053)
N	N=73153	N=73153	N=73153	N=73226	N=73226	N=73226

Note: Standard errors are in parenthesis. ** denote significance at 5% level.

Table c: Regression results for men over 40 when women over 40 are the control group

	Diabetes	High blood pressure
men over 40	0.193** (0.026)	-0.118** (0.019)
year 2003	0.164** (0.024)	0.188** (0.017)
menover40*yr2003	0.024 (0.030)	0.026 (0.022)
N	N=91527	N=91451

Note: Standard errors are in parenthesis. ** denote significance at 5% level.

Table d: Regression results for men over 40 when men under 40 are the control group

	Diabetes	High blood pressure
men over40	0.507** (0.096)	0.700** (0.064)
year 2003	0.126** (0.054)	0.245** (0.036)
menover40*yr2003	0.048 (0.057)	-0.027 (0.039)
N	N=73241	N=73125

Note: Standard errors are in parenthesis. ** denote significance at 5% level.

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VI. Tables

Table 1: Summary Statistics

	Year 1997			Year 2003		
	Men over 40	Men under 40	Women over 40	Men over 40	Men under 40	Women over 40
Insured	0.6328 (0.4821)	0.5940 (0.4911)	0.6113 (0.4875)	0.7718 (0.4197)	0.7106 (0.4535)	0.7681 (0.4220)
Lowest and middle income quintile	0.3316 (0.4708)	0.3332 (0.4714)	0.4106 (0.4919)	0.2698 (0.4439)	0.2197 (0.4141)	0.3636 (0.4811)
Secondary school graduation or higher	0.4829 (0.4997)	0.4614 (0.4985)	0.5179 (0.4997)	0.4484 (0.4973)	0.5310 (0.499)	0.5083 (0.4999)
Married	0.7181 (0.4499)	0.4239 (0.4942)	0.5472 (0.4978)	0.6782 (0.4672)	0.3374 (0.4728)	0.5283 (0.4992)
Good or excellent health status	0.8388 (0.3677)	0.9530 (0.2117)	0.8270 (0.3783)	0.8118 (0.3909)	0.9504 (0.2171)	0.7970 (0.4022)
Drinker	0.7589 (0.4277)	0.8043 (0.3968)	0.6406 (0.4798)	0.7893 (0.4078)	0.7529 (0.4313)	0.6873 (0.4636)
Smoker	0.2691 (0.4435)	0.3357 (0.4723)	0.2177 (0.4127)	0.2388 (0.4263)	0.2715 (0.4448)	0.1977 (0.3983)
Physically active	0.3767 (0.4846)	0.5174 (0.4997)	0.3390 (0.4734)	0.4695 (0.4991)	0.6231 (0.4846)	0.4219 (0.4939)

Note: Standard deviations are in parenthesis.

Table 2: Difference in Difference Estimates

	1997		2003		Change	
a) Regular doctor						
Men over 40	3.4548	(0.0361)	3.2614	(0.0233)	-0.1934	(0.0430)
Women over 40	4.2622	(0.0352)	4.0010	(0.0227)	-0.2612	(0.0419)
<i>Difference-in-difference</i>					0.0678	(0.0600)
Men over 40	3.4548	(0.0361)	3.2614	(0.0233)	-0.1934	(0.0430)
Men under 40	2.0631	(0.0268)	2.0017	(0.0206)	-0.0614	(0.0338)
<i>Difference-in-difference</i>					-0.1320**	(0.0547)
b) Regular doctor (0/1)						
Men over 40	0.7825	(0.0031)	0.7785	(0.0022)	-0.004	(0.0038)
Women over 40	0.8675	(0.0023)	0.8597	(0.0017)	-0.0078	(0.0029)
<i>Difference-in-difference</i>					0.0038	(0.0048)
Men over 40	0.7825	(0.0031)	0.7785	(0.0022)	-0.004	(0.0038)
Men under 40	0.6782	(0.0036)	0.6418	(0.0030)	-0.0364	(0.0047)
<i>Difference-in-difference</i>					0.0324**	(0.0060)
c) Regular doctor (6+ visits)						
Men over 40	0.1883	(0.0029)	0.1701	(0.0020)	-0.0182	(0.0035)
Women over 40	0.2460	(0.0030)	0.2241	(0.0020)	-0.0219	(0.0036)
<i>Difference-in-difference</i>					0.0037	(0.0050)
Men over 40	0.1883	(0.0029)	0.1701	(0.0020)	-0.0182	(0.0035)
Men under 40	0.0805	(0.0021)	0.0777	(0.0017)	-0.0028	(0.0027)
<i>Difference-in-difference</i>					-0.0154**	(0.0044)
d) Specialist						
Men over 40	0.6200	(0.0132)	0.6865	(0.0093)	0.0665	(0.0161)
Women over 40	0.7569	(0.0132)	0.8563	(0.0093)	0.0994	(0.0161)
<i>Difference-in-difference</i>					-0.0329	(0.0228)
Men over 40	0.6200	(0.0132)	0.6865	(0.0093)	0.0665	(0.0161)
Men under 40	0.3361	(0.0103)	0.3936	(0.0085)	0.0575	(0.0134)
<i>Difference-in-difference</i>					0.0090	(0.0209)
e) Specialist (0/1)						
Men over 40	0.2129	(0.0031)	0.2634	(0.0023)	0.0505	(0.0038)
Women over 40	0.2625	(0.0030)	0.3186	(0.0022)	0.0561	(0.0032)
<i>Difference-in-difference</i>					-0.0056	(0.0053)
Men over 40	0.2129	(0.0031)	0.2634	(0.0023)	0.0505	(0.0038)
Men under 40	0.1244	(0.0026)	0.1559	(0.0022)	0.0315	(0.0034)
<i>Difference-in-difference</i>					0.0019	(0.0055)
f) Specialist (6+ visits)						
Men over 40	0.0283	(0.0010)	0.0272	(0.0009)	-0.0011	(0.0015)
Women over 40	0.0342	(0.0012)	0.0357	(0.0009)	0.0015	(0.0015)
<i>Difference-in-difference</i>					-0.0026	(0.0021)
Men over 40	0.0283	(0.0012)	0.0272	(0.0009)	-0.0011	(0.0015)
Men under 40	0.0139	(0.0009)	0.0156	(0.0008)	0.0017	(0.0012)
<i>Difference-in-difference</i>					-0.0028	(0.0019)
g) Diagnosed with diabetes						
Men over 40	0.0670	(0.0019)	0.0992	(0.0016)	0.0322	(0.0025)
Women over 40	0.0592	(0.0016)	0.0846	(0.0013)	0.0254	(0.0021)
<i>Difference-in-difference</i>					0.0068**	(0.0033)
Men over 40	0.0670	(0.0019)	0.0992	(0.0016)	0.0322	(0.0025)
Men under 40	0.0063	(0.0006)	0.0087	(0.0006)	0.0024	(0.0008)
<i>Difference-in-difference</i>					0.0298**	(0.0026)
h) Diagnosed with high blood pressure						
Men over 40	0.1783	(0.0029)	0.2521	(0.0023)	0.0738	(0.0037)
Women over 40	0.2306	(0.0029)	0.3134	(0.0022)	0.0828	(0.0036)
<i>Difference-in-difference</i>					-0.009	(0.0052)
Men over 40	0.1783	(0.0029)	0.2521	(0.0023)	0.0738	(0.0037)
Men under 40	0.0188	(0.0011)	0.0275	(0.0010)	0.0087	(0.0015)
<i>Difference-in-difference</i>					0.0651**	(0.0040)

Note: Standard errors are in parenthesis. ** denote significance at 5% level

Table 3a: Regression results for men over 40 when women over 40 are the control group

	Doctor visits	Doctor Visits (0/1)	Doctor Visits (6+)	Specialist Visits	Specialist Visits (0/1)	Specialist Visits (6+)
men over 40	-0.623** (0.045)	-0.337** (0.016)	-0.159** (0.016)	-0.148** (0.019)	-0.192** (0.015)	-0.099** (0.028)
year 2003	-0.344** (0.043)	-0.126** (0.016)	-0.093** (0.015)	0.025 (0.019)	0.047** (0.014)	-0.010 (0.026)
menover40*yr2003	0.079 (0.055)	0.025 (0.020)	0.0019 (0.019)	-0.039* (0.023)	-0.0062 (0.018)	-0.040 (0.034)
45-49 year old	0.149** (0.048)	0.032** (0.016)	0.042** (0.018)	-0.020 (0.021)	0.013 (0.016)	-0.035 (0.028)
50-54 year old	0.273** (0.048)	0.115** (0.016)	0.104** (0.018)	0.012 (0.021)	0.072** (0.015)	-0.043 (0.028)
55-59 year old	0.303** (0.049)	0.177** (0.017)	0.107** (0.018)	0.035 (0.021)	0.103** (0.016)	-0.039 (0.029)
60-64 year old	0.267** (0.052)	0.252** (0.018)	0.097** (0.019)	0.046** (0.022)	0.152** (0.017)	-0.055* (0.031)
65-69 year old	0.359** (0.053)	0.309** (0.019)	0.123** (0.019)	-0.0021 (0.022)	0.157** (0.017)	-0.111** (0.032)
70-74 year old	0.523** (0.055)	0.409** (0.020)	0.177** (0.020)	-0.036 (0.023)	0.164** (0.018)	-0.160** (0.034)
75-79 year old	0.639** (0.060)	0.457** (0.023)	0.231** (0.021)	-0.115** (0.025)	0.121** (0.019)	-0.239** (0.038)
80 years or older	0.864** (0.060)	0.519** (0.023)	0.297** (0.021)	-0.267** (0.025)	-0.0032 (0.020)	-0.432** (0.042)
insurance	0.580** (0.030)	0.232** (0.010)	0.156** (0.011)	0.185** (0.012)	0.145** (0.0097)	0.197** (0.020)
lowest income quintile	0.203** (0.073)	-0.00061 (0.026)	0.019 (0.024)	0.090** (0.039)	0.0038 (0.023)	0.081** (0.038)
lower middle income quintile	0.092* (0.051)	-0.030 (0.019)	0.016 (0.017)	-0.075** (0.022)	-0.063** (0.017)	-0.039 (0.031)
upper middle income quintile	-0.185** (0.038)	0.050** (0.014)	-0.057** (0.013)	0.019 (0.016)	0.084** (0.012)	-0.028 (0.023)
highest income quintile	-0.321** (0.044)	0.082** (0.016)	-0.114** (0.016)	0.0092 (0.019)	0.107** (0.014)	-0.029 (0.027)
extra category	-0.397** (0.042)	-0.0047 (0.015)	-0.131** (0.014)	-0.107** (0.017)	-0.067** (0.014)	-0.090** (0.026)
less than secondary school graduation	-0.041 (0.043)	-0.088** (0.015)	0.017 (0.015)	-0.304** (0.019)	-0.232** (0.014)	-0.266** (0.027)
secondary school graduation	-0.043	-0.024	-0.0017	-0.104**	-0.105**	-0.062**

	(0.046)	(0.016)	(0.016)	(0.020)	(0.015)	(0.028)
post secondary graduation	0.102**	0.058**	0.018	0.049**	0.049**	0.048*
	(0.044)	(0.016)	(0.016)	(0.019)	(0.014)	(0.026)
extra category	-0.138	-0.054	-0.020	-0.241**	-0.211**	-0.192**
	(0.099)	(0.036)	(0.035)	(0.040)	(0.032)	(0.062)
married/common law	-0.035	0.064**	-0.020	-0.032**	0.013	-0.056**
	(0.034)	(0.012)	(0.012)	(0.015)	(0.011)	(0.021)
single, never married	0.070	-0.019	0.027*	0.024	0.014	0.019
	(0.044)	(0.016)	(0.015)	(0.020)	(0.014)	(0.026)
extra category	-0.289	0.198**	-0.119	-0.051	-0.075	-0.086
	(0.244)	(0.093)	(0.089)	(0.107)	(0.081)	(0.157)
excellent health status	-1.86**	-0.454**	-0.732**	-0.469**	-0.461**	-0.469**
	(0.039)	(0.013)	(0.017)	(0.013)	(0.013)	(0.030)
very good health status	-1.10**	-0.207**	-0.376**	-0.293**	-0.236**	-0.302**
	(0.032)	(0.011)	(0.011)	(0.012)	(0.010)	(0.022)
fair health status	2.08**	0.301**	0.487**	0.596**	0.359**	0.431**
	(0.041)	(0.017)	(0.013)	(0.022)	(0.012)	(0.021)
poor health status	5.29**	0.551**	0.962**	1.52**	0.697**	0.861**
	(0.064)	(0.030)	(0.020)	(0.047)	(0.019)	(0.027)
extra category	0.401	0.108	0.222	0.585**	0.349**	0.501**
	(0.496)	(0.199)	(0.151)	(0.262)	(0.145)	(0.226)
regular drinker	-0.620**	0.013	-0.171**	-0.072**	0.011	-0.098**
	(0.036)	(0.013)	(0.012)	(0.017)	(0.012)	(0.021)
occasional drinker	-0.310**	0.022	-0.060**	-0.036*	0.018	-0.055**
	(0.042)	(0.015)	(0.014)	(0.019)	(0.013)	(0.024)
never drank	-0.250**	-0.056**	-0.053**	-0.172**	-0.122**	-0.179**
	(0.055)	(0.020)	(0.018)	(0.023)	(0.018)	(0.034)
extra category	-0.360**	-0.050	-0.089**	-0.079*	-0.092**	-0.0024
	(0.107)	(0.037)	(0.038)	(0.045)	(0.035)	(0.064)
daily smoker	-0.147*	-0.111**	-0.0057	0.0065	-0.038	0.035
	(0.078)	(0.027)	(0.028)	(0.033)	(0.025)	(0.048)
does not smoke at all	0.089	0.127**	0.044	0.095**	0.091**	0.059
	(0.074)	(0.025)	(0.027)	(0.031)	(0.024)	(0.046)
extra category	-0.174	0.066	0.072	-0.161*	0.0075	-0.384*
	(0.269)	(0.095)	(0.093)	(0.083)	(0.088)	(0.208)
person is active	0.0068	-0.013	0.0047	-0.0049	-0.010	-0.0027
	(0.039)	(0.014)	(0.015)	(0.015)	(0.013)	(0.026)
person is inactive	0.105**	-0.028**	0.051**	0.034**	-0.0060	0.031
	(0.032)	(0.011)	(0.011)	(0.013)	(0.010)	(0.020)
extra category	0.722**	-0.0054	0.147**	0.195**	0.069**	0.190**
	(0.082)	(0.032)	(0.027)	(0.041)	(0.026)	(0.044)
Newfoundland and	0.480**	0.148**	0.186**	-0.191**	-0.090**	-0.250**

Labrador						
	(0.084)	(0.031)	(0.028)	(0.032)	(0.028)	(0.060)
Prince Edward Island	-0.031	0.236**	-0.0043	-0.102**	-0.042	-0.159**
	(0.106)	(0.041)	(0.037)	(0.041)	(0.034)	(0.070)
Nova Scotia	0.410**	0.165**	0.147**	-0.101**	-0.0073	-0.122**
	(0.075)	(0.030)	(0.025)	(0.032)	(0.024)	(0.045)
New Brunswick	-0.372**	0.022	-0.091**	-0.206**	-0.016	-0.233**
	(0.076)	(0.028)	(0.026)	(0.029)	(0.024)	(0.049)
Quebec	-1.31**	-0.287**	-0.492**	-0.105**	0.065**	-0.163**
	(0.040)	(0.014)	(0.016)	(0.016)	(0.012)	(0.025)
Manitoba	-0.334**	-0.083**	-0.099**	-0.230**	-0.199**	-0.180**
	(0.046)	(0.016)	(0.016)	(0.018)	(0.015)	(0.031)
Saskatchewan	0.139**	-0.025	0.036	-0.208**	-0.142**	-0.165**
	(0.065)	(0.023)	(0.022)	(0.025)	(0.021)	(0.042)
Alberta	-0.098**	-0.059**	-0.036**	-0.216**	-0.228**	-0.114**
	(0.042)	(0.015)	(0.015)	(0.017)	(0.014)	(0.025)
British Columbia	0.350**	0.096**	0.088**	-0.115**	-0.085**	-0.103**
	(0.048)	(0.018)	(0.017)	(0.021)	(0.015)	(0.029)
constant	5.45**	1.33**	-0.408**	1.29**	-0.356**	-1.28**
	(0.113)	(0.040)	(0.040)	(0.049)	(0.036)	(0.068)
sample size	N=115595	N=115595	N=115595	N=115919	N=115919	N=115919

Note: Standard errors are in parenthesis. ** denote significance at 5% level. * denote significance at 10% level.

Table 3b: Regression results for men over 40 when men under 40 are the control group

	Doctor visits	Doctor visits (0/1)	Doctor Visits (6+)	Specialist visits	Specialist visits (0/1)	Specialist Visits (6+)
men over40	0.604** (0.095)	-0.186** (0.034)	0.349** (0.047)	0.082** (0.029)	0.00034 (0.039)	0.123 (0.082)
year 2003	-0.013 (0.050)	-0.131** (0.018)	0.016 (0.024)	0.023 (0.019)	0.064** (0.020)	0.046 (0.042)
menover40*yr2003	-0.261** (0.059)	0.059** (0.021)	-0.109** (0.027)	-0.025 (0.024)	-0.0088 (0.024)	-0.096** (0.048)
12-14 years old	0.00000** (0.00000)	0.00000** (0.00000)	0.00000** (0.00000)	0.073** (0.033)	0.00000** (0.00000)	0.00000** (0.00000)
15-19 years old	0.245** (0.081)	-0.030 (0.029)	0.163** (0.042)	0.073** (0.026)	0.020 (0.034)	0.016 (0.075)
20-24 years old	0.301** (0.092)	-0.180** (0.033)	0.162** (0.048)	0.00000** (0.00000)	-0.078** (0.038)	-0.051 (0.084)
25-29 years old	0.315** (0.090)	-0.276** (0.032)	0.215** (0.046)	0.0022 (0.025)	-0.116** (0.037)	0.044 (0.080)
30-34 years old	0.414** (0.088)	-0.203** (0.032)	0.286** (0.044)	0.022 (0.024)	-0.090** (0.036)	0.063 (0.077)
35-39 years old	0.492** (0.088)	-0.172** (0.031)	0.297** (0.044)	0.068** (0.025)	-0.032 (0.036)	0.099 (0.077)
45-49 year old	0.132** (0.060)	0.056** (0.021)	0.053* (0.028)	-0.0071 (0.025)	0.0023 (0.024)	-0.0082 (0.047)
50-54 year old	0.340** (0.061)	0.140** (0.022)	0.142** (0.028)	0.084** (0.026)	0.107** (0.023)	0.074 (0.046)
55-59 year old	0.518** (0.062)	0.233** (0.023)	0.200** (0.028)	0.119** (0.027)	0.189** (0.024)	0.069 (0.047)
60-64 year old	0.633** (0.065)	0.377** (0.025)	0.248** (0.028)	0.154** (0.029)	0.253** (0.024)	0.077 (0.048)
65-69 year old	0.773** (0.068)	0.399** (0.026)	0.261** (0.029)	0.176** (0.031)	0.295** (0.025)	0.082 (0.050)
70-74 year old	0.999** (0.071)	0.534** (0.028)	0.347** (0.030)	0.176** (0.032)	0.344** (0.026)	0.060 (0.052)
75-79 year old	1.30** (0.080)	0.631** (0.034)	0.427** (0.032)	0.127** (0.036)	0.340** (0.029)	-0.052 (0.060)
80 years or older	1.69** (0.082)	0.728** (0.036)	0.522** (0.033)	-0.0085 (0.037)	0.250** (0.031)	-0.190** (0.065)
insurance	-0.551** (0.029)	-0.210** (0.011)	-0.188** (0.013)	-0.130** (0.012)	-0.148** (0.012)	-0.162** (0.025)
lowest income quintile	0.064 (0.079)	0.019 (0.029)	0.012 (0.033)	0.074* (0.041)	0.060* (0.030)	0.062 (0.052)
lower middle income quintile	0.180** (0.060)	0.020 (0.022)	0.041* (0.025)	-0.013 (0.029)	-0.032 (0.024)	0.033 (0.043)
upper middle income quintile	-0.234** (0.037)	0.044** (0.014)	-0.103** (0.016)	-0.0044 (0.016)	0.059** (0.014)	-0.039 (0.028)

highest income quintile	-0.338**	0.076**	-0.164**	-0.0064	0.093**	-0.059*
	(0.042)	(0.015)	(0.019)	(0.018)	(0.016)	(0.033)
extra category	-0.288**	0.031*	-0.123**	-0.083**	-0.064**	-0.114**
	(0.043)	(0.016)	(0.019)	(0.018)	(0.017)	(0.035)
less than secondary school graduation	-0.011	-0.071**	0.037**	-0.171**	-0.177**	-0.169**
	(0.042)	(0.016)	(0.019)	(0.018)	(0.017)	(0.033)
secondary school graduation	-0.049	-0.024	0.016	-0.058**	-0.102**	-0.029
	(0.044)	(0.016)	(0.020)	(0.018)	(0.018)	(0.035)
post secondary graduation	0.0016	0.049**	-0.0031	0.026	0.018	0.024
	(0.041)	(0.015)	(0.019)	(0.017)	(0.016)	(0.032)
extra category	-0.341**	-0.096**	-0.080*	-0.208**	-0.242**	-0.219**
	(0.104)	(0.039)	(0.046)	(0.041)	(0.041)	(0.082)
married/common law	-0.026	0.101**	-0.033**	-0.031*	0.020	-0.084**
	(0.037)	(0.014)	(0.017)	(0.016)	(0.014)	(0.028)
single, never married	0.0034	-0.028*	-0.0056	0.0075	0.0026	0.023
	(0.045)	(0.016)	(0.020)	(0.020)	(0.018)	(0.034)
extra category	-0.239	0.157	-0.071	-0.106	-0.165	0.0018
	(0.288)	(0.112)	(0.136)	(0.129)	(0.124)	(0.235)
excellent health status	-1.25**	-0.328**	-0.578**	-0.302**	-0.355**	-0.408**
	(0.036)	(0.013)	(0.019)	(0.013)	(0.015)	(0.034)
very good health status	-0.775**	-0.134**	-0.324**	-0.194**	-0.199**	-0.245**
	(0.031)	(0.012)	(0.014)	(0.012)	(0.012)	(0.026)
fair health status	1.91**	0.289**	0.469**	0.536**	0.372**	0.400**
	(0.048)	(0.020)	(0.018)	(0.028)	(0.017)	(0.029)
poor health status	5.69**	0.632**	1.05**	1.60**	0.760**	0.898**
	(0.077)	(0.039)	(0.027)	(0.065)	(0.026)	(0.036)
extra category	-0.401	-0.050	-0.102	0.626*	0.465**	0.548*
	(0.561)	(0.217)	(0.231)	(0.341)	(0.187)	(0.290)
regular drinker	-0.564**	-0.014	-0.177**	-0.109**	-0.018	-0.158**
	(0.041)	(0.016)	(0.017)	(0.020)	(0.016)	(0.028)
occasional drinker	-0.179**	0.036*	-0.046**	-0.053**	0.031*	-0.098**
	(0.049)	(0.019)	(0.020)	(0.024)	(0.019)	(0.035)
never drank	-0.300**	-0.0098	-0.075**	-0.133**	-0.060**	-0.183**
	(0.063)	(0.024)	(0.027)	(0.027)	(0.025)	(0.049)
extra category	-0.630**	-0.077*	-0.245**	-0.149**	-0.076*	-0.155*
	(0.114)	(0.042)	(0.053)	(0.049)	(0.044)	(0.087)
daily smoker	-0.080	-0.077**	0.011	0.011	-0.062**	0.034
	(0.064)	(0.023)	(0.030)	(0.024)	(0.026)	(0.053)
does not smoke at all	0.058	0.093**	0.017	0.062**	0.042*	0.054
	(0.061)	(0.022)	(0.029)	(0.022)	(0.024)	(0.050)
extra category	-0.063	-0.168*	0.180	-0.201**	-0.221*	-0.317
	(0.276)	(0.097)	(0.119)	(0.084)	(0.115)	(0.257)

person is active	0.045	0.020	0.030*	0.0086	0.0041	0.027
	(0.036)	(0.013)	(0.017)	(0.014)	(0.014)	(0.030)
person is inactive	-0.057*	-0.065**	-0.0012	-0.0074	-0.030**	0.037
	(0.032)	(0.012)	(0.015)	(0.013)	(0.012)	(0.026)
extra category	0.531**	0.031	0.124**	0.265**	0.118**	0.295**
	(0.075)	(0.030)	(0.031)	(0.042)	(0.028)	(0.048)
Newfoundland and Labrador	0.291**	0.040	0.142**	-0.167**	-0.094**	-0.281**
	(0.085)	(0.032)	(0.036)	(0.033)	(0.034)	(0.077)
Prince Edward Island	0.026	0.116**	0.016	-0.078*	-0.046	-0.095
	(0.109)	(0.041)	(0.047)	(0.045)	(0.043)	(0.089)
Nova Scotia	0.411**	0.125**	0.151**	-0.061*	-0.0071	-0.094
	(0.079)	(0.030)	(0.032)	(0.034)	(0.030)	(0.059)
New Brunswick	-0.284**	-0.059**	-0.067**	-0.126**	0.0015	-0.207**
	(0.078)	(0.029)	(0.034)	(0.031)	(0.029)	(0.064)
Quebec	-0.946**	-0.314**	-0.427**	-0.066**	0.027*	-0.134**
	(0.040)	(0.014)	(0.021)	(0.017)	(0.015)	(0.031)
Manitoba	-0.216**	-0.059**	-0.065**	-0.208**	-0.229**	-0.241**
	(0.046)	(0.017)	(0.021)	(0.017)	(0.019)	(0.041)
Saskatchewan	0.191**	0.0020	0.099**	-0.129**	-0.097**	-0.137**
	(0.066)	(0.025)	(0.028)	(0.027)	(0.026)	(0.054)
Alberta	-0.020	-0.040**	-0.00090	-0.178**	-0.213**	-0.170**
	(0.039)	(0.014)	(0.017)	(0.015)	(0.016)	(0.032)
British Columbia	0.334**	0.078**	0.098**	-0.085**	-0.083**	-0.102**
	(0.048)	(0.018)	(0.021)	(0.021)	(0.019)	(0.038)
constant	3.73**	1.03**	-0.949**	0.834**	-0.608**	-1.63**
	(0.122)	(0.045)	(0.058)	(0.044)	(0.049)	(0.101)
sample size	N=91161	N=91161	N=91161	N=91342	N=91342	N=91342

Note: Standard errors are in parenthesis. ** denote significance at 5% level. * denote significance at 10% level.

Table 3c: Regression results for men over 40 when women over 40 are the control group

	Diabetes	High blood pressure
men over 40	0.181** (0.022)	-0.117** (0.016)
year 2003	0.154** (0.021)	0.207** (0.015)
menover40*yr2003	0.043* (0.026)	0.011 (0.019)
45-49 year old	0.132** (0.030)	0.265** (0.020)
50-54 year old	0.338** (0.028)	0.522** (0.019)
55-59 year old	0.465** (0.027)	0.702** (0.019)
60-64 year old	0.563** (0.028)	0.877** (0.019)
65-69 year old	0.611** (0.028)	0.988** (0.020)
70-74 year old	0.633** (0.028)	1.06** (0.020)
75-79 year old	0.574** (0.030)	1.08** (0.021)
80 years or older	0.419** (0.030)	1.04** (0.022)
insurance	0.150** (0.014)	0.136** (0.010)
lowest income quintile	-0.016 (0.031)	-0.027 (0.024)
lower middle income quintile	0.0027 (0.021)	-0.027* (0.016)
upper middle income quintile	-0.033** (0.017)	-0.0061 (0.012)
highest income quintile	-0.080** (0.021)	-0.063** (0.015)
extra category	-0.075** (0.018)	-0.064** (0.014)
less than secondary school graduation	-0.0011 (0.020)	0.010 (0.015)
secondary school graduation	-0.026 (0.023)	0.015 (0.016)
post secondary graduation	-0.057** (0.021)	-0.034** (0.015)
extra category	-0.022 (0.043)	-0.052 (0.033)
married/common law	-0.038** (0.015)	-0.037** (0.011)

single, never married	-0.028	-0.019
	(0.020)	(0.015)
extra category	-0.273**	0.0035
	(0.125)	(0.085)
excellent health status	-0.707**	-0.721**
	(0.025)	(0.015)
very good health status	-0.330**	-0.291**
	(0.015)	(0.011)
fair health status	0.320**	0.190**
	(0.015)	(0.013)
poor health status	0.473**	0.240**
	(0.022)	(0.020)
extra category	0.074	0.165
	(0.176)	(0.136)
regular drinker	-0.352**	-0.011
	(0.015)	(0.012)
occasional drinker	-0.121**	0.0031
	(0.017)	(0.013)
never drank	-0.016	0.0043
	(0.022)	(0.017)
extra category	-0.230**	-0.070**
	(0.046)	(0.035)
daily smoker	0.0045	-0.074**
	(0.041)	(0.028)
does not smoke at all	0.193**	0.139**
	(0.039)	(0.027)
extra category	0.169	0.122
	(0.117)	(0.090)
person is active	0.018	-0.048**
	(0.019)	(0.014)
person is inactive	0.043**	0.041**
	(0.015)	(0.011)
extra category	0.015	-0.050*
	(0.033)	(0.027)
Newfoundland and Labrador	0.229**	0.196**
	(0.035)	(0.027)
Prince Edward Island	0.020	0.085**
	(0.047)	(0.035)
Nova Scotia	0.021	0.101**
	(0.032)	(0.024)
New Brunswick	-0.080**	-0.021
	(0.033)	(0.025)
Quebec	-0.0055	-0.044**
	(0.018)	(0.013)
Manitoba	0.035	0.0080
	(0.021)	(0.016)
Saskatchewan	-0.055*	0.00093
	(0.029)	(0.021)
Alberta	-0.064**	-0.059**

	(0.020)	(0.014)
British Columbia	0.011	-0.075**
	(0.022)	(0.016)
constant	-1.68**	-1.17**
	(0.057)	(0.040)
sample size	N=116061	N=115933

Note: Standard errors are in parenthesis. ** denote significance at 5% level. * denote significance at 10% level.

Table 3d: Regression results for men over 40 when men under 40 are the control group

	Diabetes	High blood pressure
men over40	0.803** (0.105)	0.721** (0.058)
year 2003	0.154** (0.050)	0.235** (0.033)
menover40*yr2003	0.031 (0.052)	-0.019 (0.035)
12-14 years old	0.000** (0.000)	-0.630** (0.114)
15-19 years old	0.172 (0.109)	-0.226** (0.070)
20-24 years old	0.267** (0.118)	0.000** (0.000)
25-29 years old	0.386** (0.108)	0.180** (0.060)
30-34 years old	0.508** (0.102)	0.360** (0.056)
35-39 years old	0.675** (0.098)	0.482** (0.054)
45-49 year old	0.162** (0.042)	0.238** (0.028)
50-54 year old	0.392** (0.039)	0.481** (0.027)
55-59 year old	0.550** (0.038)	0.639** (0.027)
60-64 year old	0.629** (0.039)	0.765** (0.027)
65-69 year old	0.702** (0.039)	0.881** (0.028)
70-74 year old	0.750** (0.040)	0.920** (0.029)
75-79 year old	0.646** (0.043)	0.874** (0.032)
80 years or older	0.478** (0.045)	0.754** (0.033)
insurance	0.109** (0.019)	0.107** (0.014)
lowest income quintile	-0.097** (0.048)	-0.018 (0.037)
lower middle income quintile	-0.076** (0.034)	-0.014 (0.027)
upper middle income quintile	-0.012 (0.022)	0.016 (0.017)
highest income quintile	-0.067** (0.027)	-0.025 (0.020)
extra category	-0.060**	-0.054**

	(0.026)	(0.021)
less than secondary school graduation	-0.022	-0.046**
	(0.027)	(0.020)
secondary school graduation	-0.0017	0.0012
	(0.030)	(0.022)
post secondary graduation	-0.041	-0.022
	(0.028)	(0.020)
extra category	0.0021	-0.077*
	(0.056)	(0.045)
married/common law	-0.051**	-0.016
	(0.022)	(0.017)
single, never married	-0.036	-0.046**
	(0.029)	(0.022)
extra category	0.018	-0.016
	(0.167)	(0.138)
excellent health status	-0.689**	-0.642**
	(0.031)	(0.020)
very good health status	-0.353**	-0.280**
	(0.020)	(0.014)
fair health status	0.315**	0.246**
	(0.022)	(0.018)
poor health status	0.505**	0.342**
	(0.031)	(0.028)
extra category	0.060	0.127
	(0.234)	(0.182)
regular drinker	-0.263**	0.041**
	(0.021)	(0.018)
occasional drinker	-0.052**	0.026
	(0.026)	(0.022)
never drank	-0.055	-0.031
	(0.039)	(0.032)
extra category	-0.250**	0.0056
	(0.065)	(0.050)
daily smoker	-0.040	-0.056
	(0.050)	(0.035)
does not smoke at all	0.173**	0.105**
	(0.048)	(0.033)
extra category	0.223	0.066
	(0.152)	(0.123)
person is active	-0.013	-0.054**
	(0.024)	(0.018)
person is inactive	0.0039	-0.016
	(0.020)	(0.015)
extra category	-0.019	0.013
	(0.040)	(0.032)
Newfoundland and Labrador	0.107**	0.066*
	(0.050)	(0.038)
Prince Edward Island	0.090	0.023

	(0.064)	(0.050)
Nova Scotia	-0.0036	0.072**
	(0.046)	(0.034)
New Brunswick	-0.099**	-0.050
	(0.047)	(0.035)
Quebec	-0.016	-0.109**
	(0.024)	(0.018)
Manitoba	0.026	-0.042*
	(0.029)	(0.022)
Saskatchewan	-0.083**	-0.025
	(0.040)	(0.030)
Alberta	-0.085**	-0.065**
	(0.027)	(0.019)
British Columbia	0.025	-0.077**
	(0.028)	(0.022)
constant	-2.40**	-1.95**
	(0.118)	(0.069)
sample size	N=91402	N=91233

Note: Standard errors are in parenthesis. ** denote significance at 5% level. * denote significance at 10% level.

Table 4a: Regression results for insured men over 40 when insured women over 40 are the control group

	Doctor visits	Doctor Visits (0/1)	Doctor Visits (6+)	Specialist Visits	Specialist Visits (0/1)	Specialist Visits (6+)
men over 40	-0.639**	-0.348**	-0.158**	-0.166**	-0.194**	-0.095**
	(0.057)	(0.021)	(0.020)	(0.025)	(0.018)	(0.033)
year 2003	-0.350**	-0.117**	-0.101**	0.040*	0.059**	0.013
	(0.052)	(0.020)	(0.018)	(0.024)	(0.016)	(0.030)
menover40*yr2003	0.136**	0.042*	0.018	-0.029	-0.00062	-0.044
	(0.067)	(0.024)	(0.023)	(0.029)	(0.021)	(0.039)
45-49 year old	0.143**	0.038**	0.039*	-0.012	0.025	-0.031
	(0.056)	(0.019)	(0.021)	(0.024)	(0.018)	(0.032)
50-54 year old	0.303**	0.135**	0.112**	0.025	0.094**	-0.038
	(0.055)	(0.019)	(0.020)	(0.024)	(0.018)	(0.032)
55-59 year old	0.287**	0.182**	0.095**	0.046*	0.114**	-0.035
	(0.057)	(0.020)	(0.021)	(0.026)	(0.018)	(0.032)
60-64 year old	0.271**	0.263**	0.097**	0.068**	0.183**	-0.041
	(0.061)	(0.022)	(0.022)	(0.027)	(0.019)	(0.035)
65-69 year old	0.329**	0.316**	0.104**	-0.0031	0.175**	-0.110**
	(0.063)	(0.023)	(0.022)	(0.027)	(0.020)	(0.037)
70-74 year old	0.462**	0.410**	0.159**	-0.042	0.177**	-0.156**
	(0.066)	(0.025)	(0.023)	(0.029)	(0.021)	(0.039)
75-79 year old	0.626**	0.500**	0.230**	-0.131**	0.138**	-0.229**
	(0.072)	(0.029)	(0.025)	(0.031)	(0.023)	(0.044)
80 years or older	0.747**	0.514**	0.274**	-0.291**	0.013	-0.435**
	(0.073)	(0.029)	(0.025)	(0.031)	(0.023)	(0.048)
lowest income quintile	0.416**	0.026	0.059*	0.127**	0.014	0.085*
	(0.095)	(0.036)	(0.031)	(0.055)	(0.029)	(0.046)
lower middle income quintile	0.187**	-0.018	0.033	-0.104**	-0.080**	-0.056
	(0.066)	(0.025)	(0.022)	(0.031)	(0.021)	(0.037)
upper middle income quintile	-0.192**	0.061**	-0.057**	0.012	0.093**	-0.041
	(0.045)	(0.017)	(0.015)	(0.020)	(0.014)	(0.026)
highest income quintile	-0.290**	0.100**	-0.101**	0.0023	0.110**	-0.035
	(0.052)	(0.019)	(0.018)	(0.023)	(0.016)	(0.030)
extra category	-0.381**	0.010	-0.111**	-0.114**	-0.054**	-0.094**
	(0.052)	(0.019)	(0.018)	(0.023)	(0.016)	(0.030)
less than secondary school graduation	-0.091*	-0.090**	0.019	-0.349**	-0.227**	-0.290**
	(0.053)	(0.019)	(0.018)	(0.024)	(0.017)	(0.031)
secondary school graduation	-0.069	-0.043**	0.013	-0.122**	-0.101**	-0.072**
	(0.055)	(0.020)	(0.019)	(0.025)	(0.017)	(0.031)

post secondary graduation	0.100*	0.055**	0.038**	0.038	0.056**	0.030
	(0.052)	(0.019)	(0.018)	(0.024)	(0.016)	(0.029)
extra category	-0.175	-0.056	-0.023	-0.286**	-0.223**	-0.238**
	(0.119)	(0.044)	(0.042)	(0.049)	(0.038)	(0.074)
married/common law	-0.135**	0.038**	-0.052**	-0.033*	0.013	-0.049**
	(0.041)	(0.015)	(0.014)	(0.018)	(0.013)	(0.024)
single, never married	0.025	-0.048**	0.013	0.038	0.027	0.036
	(0.054)	(0.020)	(0.019)	(0.026)	(0.017)	(0.030)
extra category	-0.294	0.243**	-0.081	-0.0068	-0.122	-0.016
	(0.297)	(0.121)	(0.105)	(0.146)	(0.098)	(0.172)
excellent health status	-1.93**	-0.440**	-0.760**	-0.507**	-0.465**	-0.478**
	(0.046)	(0.016)	(0.019)	(0.016)	(0.015)	(0.034)
very good health status	-1.14**	-0.203**	-0.391**	-0.316**	-0.231**	-0.308**
	(0.037)	(0.014)	(0.013)	(0.015)	(0.012)	(0.024)
fair health status	2.09**	0.306**	0.481**	0.676**	0.370**	0.456**
	(0.049)	(0.021)	(0.015)	(0.027)	(0.015)	(0.024)
poor health status	5.23**	0.501**	0.946**	1.61**	0.709**	0.850**
	(0.075)	(0.036)	(0.023)	(0.057)	(0.022)	(0.031)
extra category	0.374	0.022	0.255	0.560*	0.359**	0.348
	(0.591)	(0.243)	(0.178)	(0.302)	(0.171)	(0.277)
regular drinker	-0.660**	-0.0032	-0.175**	-0.102**	-0.0038	-0.118**
	(0.044)	(0.016)	(0.015)	(0.021)	(0.014)	(0.024)
occasional drinker	-0.331**	-0.0030	-0.060**	-0.064**	0.0078	-0.074**
	(0.050)	(0.019)	(0.016)	(0.024)	(0.016)	(0.027)
never drank	-0.317**	-0.094**	-0.068**	-0.189**	-0.106**	-0.179**
	(0.069)	(0.027)	(0.023)	(0.031)	(0.022)	(0.040)
extra category	-0.467**	-0.048	-0.124**	-0.130**	-0.139**	-0.043
	(0.127)	(0.045)	(0.045)	(0.055)	(0.041)	(0.074)
daily smoker	-0.251**	-0.129**	-0.025	-0.013	-0.059**	0.024
	(0.092)	(0.032)	(0.033)	(0.041)	(0.029)	(0.053)
does not smoke at all	-0.0053	0.120**	0.031	0.066*	0.064**	0.028
	(0.088)	(0.030)	(0.031)	(0.038)	(0.027)	(0.051)
extra category	0.048	0.077	0.095	-0.212**	0.036	-0.416*
	(0.333)	(0.122)	(0.112)	(0.106)	(0.108)	(0.234)
person is active	0.015	-0.0090	0.0086	-0.0079	-0.015	0.00079
	(0.045)	(0.016)	(0.017)	(0.018)	(0.014)	(0.028)
person is inactive	0.108**	-0.020	0.047**	0.032**	-0.011	0.028
	(0.037)	(0.014)	(0.013)	(0.016)	(0.012)	(0.022)
extra category	0.881**	-0.0022	0.178**	0.227**	0.052*	0.233**
	(0.097)	(0.038)	(0.032)	(0.052)	(0.030)	(0.049)
Newfoundland and Labrador	0.427**	0.139**	0.186**	-0.203**	-0.090**	-0.261**

	(0.104)	(0.040)	(0.035)	(0.041)	(0.033)	(0.072)
Prince Edward Island	-0.111	0.232**	-0.021	-0.135**	-0.046	-0.163*
	(0.136)	(0.056)	(0.047)	(0.054)	(0.043)	(0.086)
Nova Scotia	0.427**	0.160**	0.138**	-0.100**	-0.021	-0.132**
	(0.087)	(0.035)	(0.029)	(0.038)	(0.027)	(0.050)
New Brunswick	-0.296**	0.029	-0.066**	-0.233**	-0.024	-0.251**
	(0.090)	(0.034)	(0.030)	(0.035)	(0.028)	(0.056)
Quebec	-1.34**	-0.310**	-0.494**	-0.110**	0.069**	-0.160**
	(0.045)	(0.016)	(0.017)	(0.019)	(0.014)	(0.027)
Manitoba	-0.226**	-0.057**	-0.058**	-0.237**	-0.180**	-0.141**
	(0.061)	(0.022)	(0.021)	(0.025)	(0.020)	(0.037)
Saskatchewan	0.163**	-0.026	0.039	-0.240**	-0.202**	-0.147**
	(0.083)	(0.031)	(0.028)	(0.034)	(0.027)	(0.050)
Alberta	-0.033	-0.029*	-0.022	-0.224**	-0.215**	-0.113**
	(0.047)	(0.017)	(0.016)	(0.020)	(0.015)	(0.028)
British Columbia	0.356**	0.095**	0.088**	-0.122**	-0.095**	-0.086**
	(0.057)	(0.022)	(0.019)	(0.025)	(0.018)	(0.032)
constant	5.08**	1.11**	-0.532**	1.18**	-0.501**	-1.45**
	(0.125)	(0.045)	(0.044)	(0.057)	(0.039)	(0.071)
sample size	N=84118	N=84118	N=84118	N=84320	N=84320	N=84320

Note: Standard errors are in parenthesis. ** denote significance at 5% level.
* denote significance at 10% level.

Table 4b: regression results for insured men over 40 when insured men under 40 are the control group

	Doctor visits	Doctor visits (0/1)	Doctor Visits (6+)	Specialist visits	Specialist visits (0/1)	Specialist Visits (6+)
men over40	0.468** (0.097)	0.044 (0.034)	0.226** (0.048)	0.107** (0.038)	0.025 (0.045)	0.109 (0.094)
year 2003	0.031 (0.060)	-0.112** (0.021)	0.0062 (0.028)	0.047** (0.023)	0.081** (0.024)	0.051 (0.049)
menover40*yr2003	-0.300** (0.071)	0.052** (0.026)	-0.097** (0.032)	-0.046 (0.030)	-0.014 (0.028)	-0.094* (0.056)
12-14 years old	-0.185* (0.112)	0.221** (0.040)	-0.161** (0.057)	0.075* (0.041)	0.00000** (0.00000)	0.00000** (0.00000)
15-19 years old	0.076 (0.091)	0.180** (0.032)	0.067 (0.047)	0.080** (0.033)	0.062 (0.038)	-0.037 (0.086)
20-24 years old	0.00000** (0.00000)	0.00000** (0.00000)	0.00000** (0.00000)	0.00000** (0.00000)	-0.060 (0.045)	-0.046 (0.097)
25-29 years old	0.156* (0.090)	-0.075** (0.031)	0.096** (0.047)	0.0070 (0.033)	-0.083* (0.043)	-0.015 (0.093)
30-34 years old	0.263** (0.087)	0.023 (0.030)	0.177** (0.045)	0.039 (0.032)	-0.056 (0.042)	0.068 (0.087)
35-39 years old	0.373** (0.086)	0.066** (0.030)	0.194** (0.044)	0.059* (0.033)	-0.0020 (0.041)	0.035 (0.088)
45-49 year old	0.166** (0.070)	0.069** (0.025)	0.077** (0.032)	0.018 (0.030)	0.026 (0.027)	0.019 (0.053)
50-54 year old	0.379** (0.071)	0.165** (0.026)	0.153** (0.032)	0.102** (0.031)	0.136** (0.027)	0.079 (0.052)
55-59 year old	0.544** (0.073)	0.261** (0.027)	0.211** (0.032)	0.132** (0.032)	0.209** (0.027)	0.067 (0.053)
60-64 year old	0.668** (0.077)	0.385** (0.029)	0.255** (0.033)	0.183** (0.035)	0.285** (0.028)	0.101* (0.055)
65-69 year old	0.735** (0.080)	0.404** (0.031)	0.237** (0.034)	0.204** (0.038)	0.327** (0.029)	0.101* (0.057)
70-74 year old	0.983** (0.084)	0.544** (0.034)	0.353** (0.035)	0.198** (0.040)	0.362** (0.031)	0.087 (0.059)
75-79 year old	1.34** (0.095)	0.697** (0.042)	0.434** (0.038)	0.122** (0.045)	0.356** (0.034)	-0.056 (0.069)
80 years or older	1.68** (0.099)	0.757** (0.045)	0.517** (0.039)	-0.0088 (0.047)	0.270** (0.036)	-0.203** (0.075)
lowest income quintile	0.166 (0.107)	0.049 (0.040)	0.029 (0.043)	0.137** (0.063)	0.082** (0.040)	0.082 (0.065)
lower middle income quintile	0.301** (0.082)	0.010 (0.031)	0.063* (0.032)	-0.036 (0.043)	-0.027 (0.031)	0.015 (0.054)
upper middle income quintile	-0.274** (0.045)	0.041** (0.017)	-0.108** (0.019)	-0.018 (0.021)	0.061** (0.017)	-0.062* (0.033)

highest income quintile	-0.352**	0.087**	-0.161**	-0.015	0.090**	-0.074*
	(0.050)	(0.019)	(0.022)	(0.022)	(0.019)	(0.038)
extra category	-0.342**	0.029	-0.126**	-0.095**	-0.061**	-0.127**
	(0.055)	(0.021)	(0.023)	(0.024)	(0.021)	(0.041)
less than secondary school graduation	-0.037	-0.064**	0.035	-0.193**	-0.161**	-0.201**
	(0.052)	(0.019)	(0.023)	(0.023)	(0.020)	(0.039)
secondary school graduation	-0.064	-0.023	0.029	-0.070**	-0.099**	-0.046
	(0.054)	(0.020)	(0.024)	(0.022)	(0.021)	(0.040)
post secondary graduation	0.0036	0.046**	0.011	0.017	0.020	0.0060
	(0.049)	(0.018)	(0.022)	(0.021)	(0.019)	(0.037)
extra category	-0.346**	-0.095**	-0.086	-0.242**	-0.250**	-0.241**
	(0.126)	(0.048)	(0.056)	(0.051)	(0.049)	(0.096)
married/common law	-0.125**	0.064**	-0.066**	-0.042**	0.018	-0.090**
	(0.046)	(0.017)	(0.020)	(0.020)	(0.017)	(0.033)
single, never married	-0.031	-0.050**	0.0029	0.0011	-0.00031	0.036
	(0.056)	(0.021)	(0.025)	(0.026)	(0.021)	(0.040)
extra category	-0.484	0.095	-0.244	-0.101	-0.231	0.0099
	(0.358)	(0.138)	(0.172)	(0.179)	(0.153)	(0.278)
excellent health status	-1.32**	-0.339**	-0.601**	-0.330**	-0.360**	-0.426**
	(0.043)	(0.016)	(0.022)	(0.016)	(0.017)	(0.040)
very good health status	-0.827**	-0.131**	-0.341**	-0.217**	-0.200**	-0.262**
	(0.037)	(0.014)	(0.016)	(0.015)	(0.014)	(0.030)
fair health status	1.99**	0.304**	0.481**	0.616**	0.379**	0.436**
	(0.057)	(0.024)	(0.021)	(0.035)	(0.020)	(0.033)
poor health status	5.72**	0.598**	1.04**	1.68**	0.759**	0.888**
	(0.092)	(0.047)	(0.032)	(0.079)	(0.031)	(0.042)
extra category	-0.676	-0.188	-0.150	0.654	0.402*	0.438
	(0.660)	(0.251)	(0.277)	(0.425)	(0.214)	(0.345)
regular drinker	-0.588**	-0.027	-0.172**	-0.148**	-0.038**	-0.182**
	(0.050)	(0.019)	(0.020)	(0.026)	(0.018)	(0.033)
occasional drinker	-0.208**	0.017	-0.049**	-0.093**	0.017	-0.143**
	(0.060)	(0.023)	(0.024)	(0.031)	(0.022)	(0.040)
never drank	-0.376**	-0.034	-0.094**	-0.160**	-0.053*	-0.221**
	(0.078)	(0.030)	(0.034)	(0.035)	(0.030)	(0.059)
extra category	-0.507**	-0.019	-0.190**	-0.163**	-0.090*	-0.124
	(0.135)	(0.051)	(0.061)	(0.063)	(0.051)	(0.097)
daily smoker	-0.176**	-0.093**	-0.016	-0.0027	-0.070**	0.018
	(0.078)	(0.028)	(0.036)	(0.030)	(0.030)	(0.061)
does not smoke at all	-0.0023	0.102**	0.0024	0.061**	0.035	0.048
	(0.073)	(0.026)	(0.034)	(0.027)	(0.028)	(0.058)
extra category	-0.034	-0.182	0.162	-0.242**	-0.140	-0.486
	(0.348)	(0.122)	(0.141)	(0.109)	(0.140)	(0.296)

person is active	0.055	0.038**	0.028	0.011	0.0077	0.012
	(0.042)	(0.015)	(0.019)	(0.016)	(0.016)	(0.034)
person is inactive	-0.032	-0.054**	0.0081	0.00092	-0.025*	0.046
	(0.038)	(0.014)	(0.017)	(0.016)	(0.014)	(0.029)
extra category	0.610**	0.040	0.141**	0.274**	0.101**	0.299**
	(0.088)	(0.036)	(0.035)	(0.050)	(0.032)	(0.054)
Newfoundland and Labrador	0.281**	0.019	0.161**	-0.179**	-0.073*	-0.347**
	(0.106)	(0.040)	(0.044)	(0.041)	(0.041)	(0.099)
Prince Edward Island	-0.053	0.077	-0.0085	-0.131**	-0.074	-0.165
	(0.141)	(0.054)	(0.061)	(0.056)	(0.054)	(0.119)
Nova Scotia	0.375**	0.126**	0.135**	-0.056	-0.016	-0.125*
	(0.092)	(0.036)	(0.037)	(0.040)	(0.034)	(0.069)
New Brunswick	-0.291**	-0.069**	-0.085**	-0.156**	0.00055	-0.253**
	(0.093)	(0.035)	(0.040)	(0.036)	(0.034)	(0.076)
Quebec	-0.960**	-0.337**	-0.416**	-0.062**	0.026	-0.109**
	(0.045)	(0.016)	(0.023)	(0.019)	(0.017)	(0.034)
Manitoba	-0.127**	-0.034	-0.037	-0.211**	-0.211**	-0.211**
	(0.060)	(0.022)	(0.026)	(0.023)	(0.024)	(0.050)
Saskatchewan	0.234**	0.020	0.133**	-0.126**	-0.119**	-0.107*
	(0.083)	(0.031)	(0.035)	(0.036)	(0.032)	(0.064)
Alberta	0.025	-0.015	0.013	-0.173**	-0.204**	-0.137**
	(0.046)	(0.017)	(0.020)	(0.019)	(0.018)	(0.036)
British Columbia	0.373**	0.093**	0.111**	-0.096**	-0.090**	-0.087**
	(0.058)	(0.022)	(0.024)	(0.025)	(0.022)	(0.043)
constant	3.49**	0.603**	-0.997**	0.739**	-0.792**	-1.73**
	(0.125)	(0.045)	(0.059)	(0.051)	(0.055)	(0.112)
sample size	N=65704	N=65704	N=65704	N=65819	N=65819	N=65819

Note: Standard errors are in parenthesis. ** denote significance at 5% level. * denote significance at 10% level.

Table 4c: Regression results for insured men over 40 when insured women over 40 are the control group

	Diabetes	High blood pressure
men over 40	0.197** (0.028)	-0.108** (0.020)
year 2003	0.168** (0.025)	0.204** (0.018)
menover40*yr2003	0.023 (0.032)	0.019 (0.023)
45-49 year old	0.116** (0.034)	0.266** (0.023)
50-54 year old	0.333** (0.032)	0.535** (0.022)
55-59 year old	0.462** (0.031)	0.714** (0.022)
60-64 year old	0.535** (0.032)	0.896** (0.023)
65-69 year old	0.596** (0.032)	1.01** (0.023)
70-74 year old	0.619** (0.032)	1.08** (0.023)
75-79 year old	0.567** (0.034)	1.08** (0.025)
80 years or older	0.425** (0.035)	1.04** (0.025)
lowest income quintile	0.019 (0.038)	-0.016 (0.030)
lower middle income quintile	-0.0062 (0.026)	-0.016 (0.021)
upper middle income quintile	-0.029 (0.019)	-0.020 (0.015)
highest income quintile	-0.077** (0.024)	-0.066** (0.017)
extra category	-0.080** (0.022)	-0.067** (0.017)
less than secondary school graduation	0.016 (0.024)	0.0097 (0.018)
secondary school graduation	-0.0054 (0.026)	0.013 (0.019)
post secondary graduation	-0.038 (0.025)	-0.033* (0.018)
extra category	0.0017 (0.050)	-0.042 (0.039)
married/common law	-0.055** (0.018)	-0.057** (0.013)
single, never married	-0.054**	-0.043**

	(0.024)	(0.018)
extra category	-0.353**	-0.050
	(0.154)	(0.102)
excellent health status	-0.729**	-0.731**
	(0.029)	(0.017)
very good health status	-0.347**	-0.302**
	(0.018)	(0.012)
fair health status	0.308**	0.169**
	(0.018)	(0.015)
poor health status	0.439**	0.190**
	(0.026)	(0.023)
extra category	0.163	0.145
	(0.197)	(0.159)
regular drinker	-0.372**	-0.018
	(0.018)	(0.014)
occasional drinker	-0.118**	-0.0044
	(0.020)	(0.016)
never drank	0.0012	0.013
	(0.026)	(0.022)
extra category	-0.224**	-0.075*
	(0.053)	(0.041)
daily smoker	-0.025	-0.085**
	(0.047)	(0.033)
does not smoke at all	0.178**	0.132**
	(0.045)	(0.031)
extra category	0.178	0.100
	(0.144)	(0.111)
person is active	0.0100	-0.052**
	(0.022)	(0.016)
person is inactive	0.049**	0.048**
	(0.017)	(0.012)
extra category	0.029	-0.043
	(0.038)	(0.031)
Newfoundland and Labrador	0.198**	0.164**
	(0.042)	(0.033)
Prince Edward Island	-0.037	0.093**
	(0.062)	(0.045)
Nova Scotia	0.017	0.102**
	(0.036)	(0.027)
New Brunswick	-0.072*	0.00082
	(0.039)	(0.029)
Quebec	-0.020	-0.045**
	(0.020)	(0.015)
Manitoba	0.055**	0.029
	(0.027)	(0.020)
Saskatchewan	-0.048	0.0041
	(0.036)	(0.027)
Alberta	-0.074**	-0.035**
	(0.022)	(0.016)
British Columbia	0.0052	-0.076**

	(0.025)	(0.019)
constant	-1.80**	-1.29**
	(0.064)	(0.044)
sample size	N=84421	N=84334

Note: Standard errors are in parenthesis. ** denote significance at 5% level.
* denote significance at 10% level.

Table 4d: Regression results for insured men over 40 when insured men under 40 are the control group

	Diabetes	High blood pressure
men over40	0.606** (0.109)	0.765** (0.074)
year 2003	0.168** (0.059)	0.226** (0.039)
menover40*yr2003	0.0086 (0.062)	-0.0027 (0.042)
12-14 years old	-0.260* (0.140)	-0.531** (0.128)
15-19 years old	-0.068 (0.123)	-0.184** (0.086)
20-24 years old	0.00000** (0.00000)	0.00000** (0.00000)
25-29 years old	0.212* (0.117)	0.227** (0.077)
30-34 years old	0.314** (0.109)	0.416** (0.071)
35-39 years old	0.461** (0.105)	0.552** (0.069)
45-49 year old	0.150** (0.048)	0.256** (0.032)
50-54 year old	0.382** (0.045)	0.500** (0.031)
55-59 year old	0.570** (0.044)	0.655** (0.031)
60-64 year old	0.612** (0.045)	0.807** (0.032)
65-69 year old	0.695** (0.045)	0.906** (0.033)
70-74 year old	0.742** (0.046)	0.947** (0.034)
75-79 year old	0.656** (0.050)	0.892** (0.037)
80 years or older	0.498** (0.052)	0.755** (0.039)
lowest income quintile	-0.090 (0.060)	0.024 (0.048)
lower middle income quintile	-0.118** (0.045)	-0.0021 (0.035)
upper middle income quintile	0.0042 (0.026)	0.010 (0.020)
highest income quintile	-0.043 (0.031)	-0.022 (0.023)
extra category	-0.048 (0.032)	-0.050** (0.025)
less than secondary school graduation	0.00098	-0.037

	(0.032)	(0.024)
secondary school graduation	0.0042	0.011
	(0.035)	(0.026)
post secondary graduation	-0.032	-0.014
	(0.033)	(0.024)
extra category	0.036	-0.034
	(0.067)	(0.053)
married/common law	-0.083**	-0.043**
	(0.026)	(0.020)
single, never married	-0.043	-0.064**
	(0.035)	(0.026)
extra category	-0.053	-0.103
	(0.204)	(0.166)
excellent health status	-0.707**	-0.661**
	(0.036)	(0.023)
very good health status	-0.379**	-0.292**
	(0.024)	(0.017)
fair health status	0.316**	0.226**
	(0.025)	(0.022)
poor health status	0.486**	0.310**
	(0.036)	(0.033)
extra category	0.100	0.157
	(0.264)	(0.207)
regular drinker	-0.273**	0.037*
	(0.025)	(0.021)
occasional drinker	-0.042	0.0068
	(0.030)	(0.026)
never drank	-0.038	-0.039
	(0.048)	(0.040)
extra category	-0.237**	0.045
	(0.075)	(0.058)
daily smoker	-0.065	-0.075*
	(0.059)	(0.041)
does not smoke at all	0.177**	0.105**
	(0.056)	(0.038)
extra category	0.216	0.100
	(0.192)	(0.148)
person is active	-0.025	-0.061**
	(0.028)	(0.020)
person is inactive	0.011	-0.0078
	(0.023)	(0.017)
extra category	0.0035	0.022
	(0.046)	(0.038)
Newfoundland and Labrador	0.107*	0.040
	(0.061)	(0.047)
Prince Edward Island	0.121	0.069
	(0.082)	(0.063)
Nova Scotia	0.012	0.101**
	(0.052)	(0.039)
New Brunswick	-0.093*	-0.023

	(0.054)	(0.041)
Quebec	-0.032	-0.103**
	(0.027)	(0.021)
Manitoba	0.066*	-0.0064
	(0.037)	(0.028)
Saskatchewan	-0.049	-0.058
	(0.050)	(0.038)
Alberta	-0.094**	-0.045**
	(0.030)	(0.022)
British Columbia	0.032	-0.082**
	(0.033)	(0.026)
constant	-2.30**	-2.10**
	(0.123)	(0.083)
sample size	N=65864	N=65748

Note: Standard errors are in parenthesis. ** denote significance at 5% level. * denote significance at 10% level.