

MISREPORTING COVERAGE AND NON-ADHERENCE TO PRESCRIPTION DRUGS

**MISREPORTING OF COVERAGE AND COST-RELATED NON-ADHERENCE TO PRESCRIPTION
DRUGS: AN ANALYSIS USING THE CANADIAN COMMUNITY HEALTH SURVEY**

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Lay Abstract

Canada is a country that prides itself on universal healthcare yet lacks an important component - universal prescription drug coverage. Hence, it is often described as a “patchwork system” whereby Canadians must rely on a combination of public and private drugs plans depending upon circumstance. As a result, a proportion of Canadians lack prescription drug coverage and may be unable to afford prescription medications.

This study aimed to investigate self-reported knowledge of prescription drug insurance in three populations: Ontario seniors 65 years and over, Quebec seniors 65 years and older, and Quebec adults 25-64 years old. The determinants of misreporting of drug insurance among these study populations was the primary objective of this analysis. The association between cost-related nonadherence (CRNA) to prescribed drugs and misreporting was a key variable in the analysis. Although only a small proportion of respondents reported CRNA to prescribed drugs, Quebec adults 25-64 were more likely to misreport drug coverage if they also reported CRNA.

This study has provided some clarity on the factors that influence misreporting of drug insurance by Ontario seniors, Quebec seniors, and Quebec adults. Given health policy decisions are often guided by studies based on this data, researchers may consider a degree of misreporting in responses. Policy should aim to reduce misunderstandings about their drug coverage.

Abstract

Background: Canada is the only developed country with universal healthcare but no universal prescription drug coverage. Prescription drug coverage in Canada is often described as a “patchwork” system; eligibility for coverage varies by province and influenced by circumstance. Subsets of the population are eligible for partial or full provincial coverage for their prescription medications through public and/or private coverage.

Methods: The extent and factors associated with misreporting of drug insurance and cost-related non-adherence (CRNA) to prescribed medicines were investigated in three study populations: Ontario seniors 65 and over, Quebec seniors 65 and over, and Quebec adults 25-64 using pooled data from the 2015/2016 Canadian Community Health Survey (CCHS). The rationale for these study cohorts was that the vast majority had partial or full coverage for prescription medications from a public and/or private source. The factors associated with CRNA to prescribed medicines were also explored in these three subgroups.

Results: There is a degree of misreporting of drug insurance among Ontario seniors (17%), Quebec seniors (18%) and Quebec adults (9%). Quebec adults who declared CRNA to prescribed drugs had twice the odds of misreporting prescription drug coverage (OR 2.1 95% CI 1.3-3.4). Lower-income earners among Ontario seniors (OR 1.8, 95% CI 1.3-2.6), Quebec seniors (OR 1.7 95% CI 1.2-2.6), and Quebec adults (OR 3.4, 95% CI 2.3-5.1) were more likely to misreport coverage. Quebec seniors were more likely to misreport if they had less than a secondary school education (OR 1.4, 95% CI 1.1-1.8). Ontario seniors who were immigrants were more likely to misreport coverage (OR 1.5, 95% CI 1.2-1.8), as were Quebec seniors who were immigrants (OR 2.2, 95% CI 1.4-3.5). Ontario seniors who had a flu shot in the past 12 months (OR 0.7, 95% CI 0.5-0.9) and Quebec adults who had visited a GP in the past 12 months (OR 0.6, 95% CI 0.45-0.77) were less likely to misreport coverage. CRNA to prescribed drugs was reported by Ontario seniors (3.3%), Quebec seniors (2.5%), and Quebec adults (5.3%). Low-income Ontario seniors (OR 2.9, 95% CI 1.5-5.7) and Quebec adults (2.5, 95% CI 1.6-3.8) were more likely to report CRNA to prescribed medicines. Quebec adults with chronic conditions (OR 1.7, 95% CI 1.2-2.4) and those in self-reported poor health (OR 2.4, 95% CI 1.3-4.4) were also more likely to report CRNA to prescribed drugs.

Conclusions: There appears to be a socio-economic gradient in misreporting and CRNA among Ontario seniors, Quebec seniors, and Quebec adults. Given most of these subgroups will have coverage, we hypothesize a degree of measurement error among responses. More specifically, respondents who report CRNA to prescribed medicines may reflect measurement error.

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List of Abbreviations and Important Terms

CCHS - Canadian Community Health Survey

CHA – Canada Health Act

CRNA - Cost-Related Non-Adherence

INS_005 - Do you have insurance that covers all or part of the cost of your prescription medication?

INS_010A - **Is** it a government-sponsored plan?

ON – Ontario

ODB – Ontario Drug Benefit

PEX_090 - During the last 12 months, was there a time when you did not fill or collect a prescription for medicine, or you skipped doses of your medicine because of the cost?

QC - Québec

RAMQ - Régie de l'assurance maladie du Québec

Declaration of Academic Achievement

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Introduction

In Canada, healthcare is provided at provincial and territorial governments but overseen by the overarching Canada Health Act (CHA), which is federal legislation that sets out the principles and objectives of public health insurance for eligible residents of Canada. The provinces must provide a high-level of care that exemplifies the CHA's objectives. (1). Although provinces share the commonality of being partly funded via the Canada Health Transfer, the provision of prescription drug insurance is not addressed by the CHA and varies by province or territory. Additionally, prescription drug coverage varies within provinces according to age, health status, wealth/income level, employment status and the like. As such, public drug coverage in Canada is often considered a "patchwork" system, whereby Canadians may be covered under a public or private plan (or multiple plans) or have no access to drug coverage at all (2). Hence, some Canadians who have neither public nor private coverage, must pay for prescribed medicines out-of-pocket. If such out-of-pocket payments exceed a modest threshold, they can be partly subsidized through tax credits. The current system lacks uniformity and universality, creating a system whereby not all Canadians can afford prescribed medicines.

The Canadian Institute for Health Information reported that public drug spending amounted to \$14.5 billion in 2018, a 7% increase in spending from the previous year (3). This amounted to 43% of all spending on prescribed medicines in Canada. Approximately 37% and 19% of spending on prescribed medicines in Canada was spent by private insurers and Canadian households respectively. An estimated 39% of public spending was on 2% of people whose drug costs exceeded \$100,000. Of particular interest, as of 2018, non-seniors (<65 years of age) in Ontario accounted for 39% of total spending by public drug programs, compared to 61% for Ontario seniors (≥65 years of age). In Quebec, 38% of spending on public drug programs was on non-seniors, whereas 68% was spent on Quebec seniors (3).

As of 2016, seniors made up 17% of the Canadian population, yet they accounted for roughly 40% of prescriptions and 55% of public drug expenditure. Over 65% of seniors are prescribed 5 or more drugs, and over a quarter are prescribed 10 or more drugs. Approximately 8% of Canadian seniors are prescribed 15 or more prescription drugs (4). Unsurprisingly, the number of drugs prescribed increases with age. The same report found

the females were prescribed only slightly more drugs than males. When looking at the number of prescriptions and neighbourhood income, CIHI found that those living in lower-income neighbourhoods were more likely to be prescribed more drugs compared to those living in higher-income neighbourhoods (21 vs 14%) (4). The most prescribed drug class amongst seniors are statins, with 48% of seniors having been prescribed a statin. Proton Pump Inhibitors (PPIs) were the second most common class of drug amongst Canadian seniors (32%), followed by ace-inhibitors (25%) (4). With an ageing population, it is expected that spending on public drug programs will continue to grow and as a result these programs could be under pressure. For some, this strengthens the equity argument for universal coverage of prescription drugs in Canada (Pharmacare).

Statement of Argument

Prescription drug coverage in Canada differs provincial and is often based on circumstance. This “patchwork” system means that only some Canadians are eligible for publicly funded prescription medication coverage. For this reason and based on previous research that has explored the extent of misreporting of drug coverage in Canada, it is hypothesized that a subset of the population who are theoretically covered under a provincial plan may not fully understand this coverage. Specifically, the primary objective of this study is to report on the factors that influence misreporting of prescription drug coverage among Ontario seniors 65 and over, Quebec seniors 65 and over, and Quebec adults 24-65, with the rationale being that these residents have coverage for prescription medication under public plans in Ontario and either public or private plans in Quebec. A key variable in the analysis is CRNA to prescribed drugs. This paper aims to investigate factors associate with misreporting of prescription drug insurance among Ontario seniors, Quebec seniors, and Quebec adults. A key contribution to previous studies will be determining the extent to which CRNA to prescribed medicines plays a role in misreporting of drug insurance. This study will also explore CRNA as an outcome variable, specifically looking at the extent and influences of key variables on CRNA among study cohorts.

Primary Research Question

What are the factors that influence misreporting of prescription drug insurance among Ontario seniors 65 and over, Quebec seniors 65 and over, and Quebec adults 25-64 given that these individuals are known to have public prescription drug coverage?

Secondary Research Questions

What is the extent of cost-related non-adherence to prescribed medicines among Ontario seniors 65 and over, Quebec seniors 65 and over, and Quebec adults 25-64?

Is reporting of cost-related non-adherence to prescribed drugs associated with misreporting of prescription drug insurance among the study cohorts?

What are the factors that influence cost-related non-adherence to prescribed medicines among Ontario seniors 65 and over, Quebec seniors 65 and over, and Quebec adults 25-64?

Policy

a. Overview of Prescription Drug Coverage in Ontario

In Ontario, public drug coverage is administered by The Ontario Drug Benefit (ODB) program. Those who are eligible include all residents of Ontario who are 65 years and older. Also included are those who live in long-term care, and individuals who live in home for care or community homes for opportunity. Residents 24-years of age or younger not covered by a private insurance plan, those currently on Ontario Works or the Ontario Disability Support Program, those in the Trillium Drug Program for residents with prescription drug costs above a minimum threshold, and those receiving home care or community care services are also covered under the ODB program. ODB covers the partial or full cost of over 4,400 prescription drugs on the formulary (5). ODB recipients may face an annual deductible and co-payment set by the province. This deductible is based on income and living situation for Ontario seniors. For instance, Ontario seniors who are above a specified income may pay a \$100 annual deductible in addition to a ODB co-payment per prescription. Lower-income households may not pay this deductible or co-payment. Further, drugs not found on the formulary may gain coverage through the Exceptional Access Program (EAP) (6). Those who do not qualify for the ODB must pay out-of-pocket or through private insurance for prescription drugs in Ontario (usually taxpayer subsidized – a type of cost sharing) or pay out-of-pocket (with a tax subsidy if costs exceed a modest share of income). In Ontario, private insurance is predominantly provided by an employer, although this is more likely to be applied to high income-earners. Moreover, hospital administration of prescription drugs in Ontario are covered and not paid out-of-pocket.

b. Overview of Prescription Drug Coverage in Quebec

In Quebec, public prescription drug coverage is administered by the Régie de l'assurance maladie du Québec (RAMQ). All residents of Quebec must have prescription medication coverage through a private or publicly funded plan – this is a provincial mandate. Eligibility for public drug insurance is largely based on lack of access to a private prescription drug plan such as an employee benefit plan, group insurance, or through parental insurance coverage (age 18-24). In-hospital prescriptions are also covered under the public sector. Quebec seniors are automatically enrolled into the public plan upon turning 65 years old. Quebec seniors then have a choice of accepting exclusive public prescription drug coverage,

exclusive private prescription drug coverage, or public prescription drug coverage supplemented by private coverage. Public insurance recipients must still pay a deductible and a co-payment of their prescriptions. This is in the form of a monthly deductible paid for your first prescription purchase of the month. The co-payment is a percentage of the cost of the prescription, with the annual rate subject to change – currently set at 35%. RAMQ sets a monthly and annual maximum that recipients must pay for their prescription drugs. Quebec seniors on the Guaranteed Income Supplement have lower monthly and annual maximums, making prescription drug costs more affordable. The RAMQ drug formulary consists of over 8,000 prescription drugs. Like Ontario, coverage for prescription drugs not on the formulary may gain coverage in exceptional circumstances (7).

Review of Relevant Literature

a. Misreporting of prescription drug insurance in Canada

Misreporting of prescription drug insurance in Canada appears to have been first reported by Grootendorst et al. using 1996/1997 National Population Health Survey (NPHS) data (8). This study investigated the extent and factors associated with misreporting of drug insurance coverage by seniors in Canada, asking Canadians whether they had insurance that covered all or part of their prescription medications. Overall, this study found that only 51% of seniors reported having drug insurance coverage in Canada. At the time of this study, no province offered full coverage for prescription drug coverage, but all provinces did have a form of cost-sharing. In both Ontario and Quebec, the extent of coverage for prescription drug coverage was based on income. Approximately 60% of Ontario seniors reported coverage, while only 24% of Quebec seniors reported coverage for prescription drugs. Factors associated with reporting drug coverage included having a large number of prescription medications, high number of chronic conditions, being a man, and seniors living with a spouse. Seniors with post-secondary education were more likely to report drug coverage compared to those with some post-secondary education or lower levels of educational attainment. Household income was a factor associated with reporting of drug coverage, increasing up to the \$30,000-\$39,999 category, before levelling off at higher income categories. Interestingly, proxy-reporting was shown to give data more reflective of actuality, with 55.6% of seniors self-reporting drug coverage, while 67.4% of seniors reporting coverage via proxy (8). Grootendorst et al. also investigated the extent of

misreporting of drug coverage by those on social assistance. Overall, only 47% of those on social assistance in Canada reported coverage, despite having a form of provincial coverage. Approximately 59% and 29% of respondents on social assistance reported drug coverage in Ontario and Quebec respectively. This study provided a first glance at the extent of misreporting in Canada and showed that just over half of Canadian seniors and just under half of Canadians on social insurance reported drug coverage. Further, this study demonstrated that there is provincial variation in reporting drug coverage, which is most likely a result of differences in provincial drug policies (8).

More recently, Guo et al. used data from the Canadian Community Health Survey (CCHS) to assess the socioeconomic differences in prescription drug supplemental coverage in Canada (9). Pooled data from the 2015/2016 cycles were used for respondents of Ontario, Quebec, and British Columbia. Additional analyses used data from the 2005, 2008, 2013, and 2014 cycles which were asked to Ontario respondents only. This study used the same questions as Grootendorst et al. in the aforementioned study: “do you have insurance that covers all or part of the cost of your prescription medications?”. It also looked at type of coverage: government-sponsored plan, employer-sponsored plan, association-sponsored plan, or a private plan. For the analysis, the plans were merged into public (government-sponsored plan) and private (employer-sponsored plan, association-sponsored plan, private plan). Analyses were broken down by age category (12-24, 25-64, 65+) and stratified by province for sub-analyses (9).

Overall, Guo et al. found that 75% of respondents reported having drug coverage. In Canada, most adults under 65-years of age reported private coverage, while most adults over 65-years of age reported public coverage. Quebec respondents reported higher coverage than Ontario and British Columbia respondents.

Compared to respondents from Ontario, respondents from Quebec had 2.72 times the odds of reporting a form of drug insurance among adults 25-64, and 3.5 times the odds of reporting public coverage. Quebec seniors had 1.4 times the odds of reporting public coverage relative to Ontario seniors. Adults 25-64 in British Columbia had 50% higher odds

of reporting public drug insurance compared to Ontario respondents of the same age cohort, yet seniors had nearly half the odds of reporting public drug insurance (9).

High-income earners were more likely to report drug coverage across all insurance types (public and private); respondents in the 10th income decile had greater than 5 times the odds of reporting drug insurance compared to those in the 1st income decile. This is further amplified when looking at those reporting private insurance, with the highest-income earners having over 11.5 times the odds of reporting private drug coverage compared to the lowest-income earners. The effect of income remains significant among seniors, but to a lesser extent.

Guo et al. found that high level of education is often associated with a higher odds of reporting drug insurance, particularly private drug insurance. The unemployed and self-employed were more likely to report public coverage and less likely to report private coverage across all age groups. Adults 25-64 who spoke French only had 20% higher odds of reporting drug insurance compared to bilingual adults. However, bilingual seniors had over 50% the odds of reporting private drug insurance. Respondents who reported speaking a language other than English and/or French were significantly less likely to report drug coverage. Self-reported health was associated with greater odds of reporting public coverage, and lesser odds of reporting private coverage. Having a chronic condition was associated with a higher odd of reporting drug coverage (9).

This study found a high degree of misreporting of drug insurance among Ontario seniors. Despite Ontario seniors having access to public drug coverage via the ODB program, there was a proportion of seniors who reported no public drug coverage and no drug insurance (public or private). In 2016, approximately 18% of respondents reported no drug insurance (public or private) and only 52% reported public insurance. These are similar findings to other iterations of CCHS between 2008 and 2015. Further, over 23% of Ontario seniors reported no drug coverage (public or private), and over 45% reporting no public drug coverage in 2005. Further, this study found that a proportion (between 15-20%) of respondents from Quebec reported no drug coverage (public or private), despite a provincial mandate whereby all residents must have drug insurance. The findings from Guo

et al. act as a catalyst for our study, which aims to look at factors associated with this misreporting (9).

b. Cost-Related Non-Adherence to Prescribed Medicines in Canada

The concept of cost-related nonadherence (CRNA) to prescribed medicines refers to individuals who do not take medication as prescribed due to cost. CRNA takes several forms – from skipping medication doses, failing to fill prescriptions, delaying filling prescriptions, or taking a sub-optimal substitution for a prescribed medicine. Regardless of type or reason for CRNA, the risks of not taking medication as prescribed can be detrimental to individuals but can also have implications at a societal level – more hospitalisations, strain on medical resources, unmet healthcare needs, to name a few (10). Samoy et al. estimated that 16% of hospitalizations in Canada were associated with noncompliance to prescribed drugs (11).

Lee et al. conducted a cross-sectional analysis of CRNA to prescribed medicines using the Commonwealth Fund's 2014 International Health Policy Survey of Older Adults (12). Although this was an international survey, this paper addressed data specific to Canada and included Canadians over the age of 55, with sub-group analysis of 55-64 and 65 and over. CRNA to prescribed medicines was assessed by whether respondents declared not filling a prescription or skipping a dose because of cost in the last 12 months. The sample size of this study was 5,269 participants from across Canada, although for comparison sample size considerations, some provinces were grouped by geographic region and nature of prescribed medicine coverage. This study reported overall CRNA to prescribed medicines in Canada as 8%. This varied by province: British Columbia and Alberta: 9%, Alberta and Saskatchewan: 6%, Quebec: 8%, Atlantic provinces: 10%, Ontario: 9%. Seniors (65+) had a lower prevalence of CRNA to prescribed medicines compared to those 55-64 years old (5% vs 13%). Approximately 6% of private drug insurance holders reported CRNA, compared to 11% of those without private insurance.

This study showed that respondents 55-64 had greater than 3 times the odds of reporting CRNA to prescribed drugs compared to seniors, unsurprising given public coverage for seniors in many Canadian provinces. Low-income earners had greater than 3.5 times the odds, and average-income earners had greater than 1.6 times the odds of reporting CRNA

compared to high-income earners. Respondents without access to private insurance had greater than twice the odds of reporting CRNA to prescribed medicines. Compared to respondents in self-reported excellent or very good health, respondents in good health had 1.4 times the odds, and those in fair or poor health had 1.8 times the odds of reporting CRNA to prescribed drugs. Quebec respondents aged 55-64 had roughly half the odds, while Quebec seniors had 30% greater odds of reporting CRNA to prescribed drugs compared to their Ontario counterparts. Overall, this study provides a useful insight on the extent and associations of CRNA to prescribed drugs in Canada. This was a Canadian extension of a previous study by Lee et al. that looked at CRNA to prescribed medicines in 11 developed countries. The main findings from this original study found that Canada had the second-highest level of CRNA compared to other countries, at 8%. The highest CRNA was in the USA (17%) and the lowest in France (2%) (12). A previous study by Kemp et al. used data from the Commonwealth Fund's 2007 International Health Policy Survey included 2,183 adult Canadians and estimated CRNA to prescribed medicines as 8% (13).

Law et al. used data from the 2007 Canadian Community Health Survey and included 5,732 respondents in the analysis (14). All Canadian provinces were included, with some provinces being grouped for sample size considerations. CRNA to prescribed medicines was assessed by whether respondents had said 'yes' to anyone of three questions "In the past 12 months, did you decide not to fill a new prescription for medication because of cost?", "In the past 12 months, did you decide not to renew a prescription for medication because of cost?", "In the past 12 months, because of cost, did you do anything to make your prescription medication last longer?" (14). Law et al. estimated the overall prevalence of CRNA to prescribed medicines as 10% in Canada, although there was provincial variation (14). Respondents from British Columbia reported the highest level of CRNA, while respondents from Quebec reported the lowest level of CRNA (17% vs 7%). CRNA to prescribed medicines in Alberta (8%) was slightly higher than in Quebec. Ontario reported a CRNA of 9% and the grouped provinces of Saskatchewan and Manitoba reported a CRNA of 9%. The second highest CRNA was found in the Atlantic provinces (12%). Compared to Ontario, Quebec respondents had 30% higher odds of reporting CRNA to prescribed medicines (19). Moreover, respondents from British Columbia had greater than 2.6 times the odds of reporting CRNA to prescribed drugs compared to Ontario. The effect of age was most

pronounced in the 35-44 age cohort, having over 5.5 times the odds of reporting CRNA to prescribed medicines compared to seniors. Compared to respondents in self-reported excellent or very good health, those in good health had 1.4 times the odds, and those in fair or poor health had 2.6 times the odds of reporting CRNA to prescribed medicines. Having a chronic condition increased your odds of reporting CRNA by 1.4, and odds were further increased to 1.6 if the respondent reported two or more chronic conditions. Respondents without private insurance had greater than 4.5 times the odds of reporting CRNA to prescribed medicines. Similar to Lee et al., this study by Law et al. found that just less than 1 in 10 Canadians report CRNA to prescribed medicines. Factors such as province of residence, age, sex, self-reported health status, chronic conditions, income, level of education, and access to private insurance are associated with CRNA to prescribed drugs (14).

More recently, Law et al. used data from the 2016 Canadian Community Health Survey to assess the implications of patient charges for prescription drugs (15). The study population included 28,091 respondents from across Canada. This study assessed CRNA amongst Canadians, also looking at the unintended consequences in terms of additional burden on other healthcare services and utilization. The extent to which an individual experienced financial burden was also assessed. Overall, this study reported CRNA to prescribed medicines as 8%. Approximately 6% of respondents reported at least one form of CRNA in the previous 12 months. This study was novel in its comparison of CRNA among Aboriginal peoples, who reported CRNA of 11%, more than double the proportion of white respondents who reported CRNA (5%). Respondents who took more prescribed drugs, and those with greater out-of-pocket prescription drug spending in the past 12 months had higher levels of CRNA. Of respondents who reported a public prescription drug plan, 7% reported CRNA to prescribed medicines. This is higher than those who have an employer plan (3%) or association plan (4%), but lower than those who reported no prescription drug coverage (11%). The province with the highest CRNA was British Columbia (8%), while Quebec had the lowest CRNA (4%). CRNA in Ontario was calculated at 6% (15). This study by Law et al. is the most recent estimate of CRNA in the general population of Canada and adds valuable information on factors that may be associated with CRNA in Canada.

A 2012 pilot study by Zheng et al. investigated CRNA to prescribed medicines in Ontario (16). This involved an interviewer-administered questionnaire asked at a hospital internal medicine clinic. Approximately 15% of respondents reported a form of CRNA. Forms of CRNA identified included: leaving a prescription unfilled, filling some but not all prescriptions, delaying filling a prescription, not refilling a prescription, taking a prescribed medicine less frequently, taking a prescribed medicine in a smaller dose than prescribed. Respondents without private insurance had greater than 20 times the odds of reporting CRNA to prescribed medicines compared to those with private insurance. Over half (55%) of respondents said their physician did not ask how they fund their prescriptions, and nearly half (48%) felt that their physician did not consider the cost of prescribed medicines (16). This study has significant limitations in sample size and scope - it was limited to 60 respondents from a single clinic. Yet, it does give a first glance of CRNA reported in a hospital clinic setting, as well as looks at patient perceptions of physicians in the context of drug costs.

Prior to the aforementioned studies, Kennedy et al. had reported CRNA to prescribed medicines in Canada at 5% (17). This was a joint Canada-United States 2002/2003 survey of health that included a sample size of 3,505 Canadians and 5,183 Americans across all adult ages. The main finding of this study was that over 9% of the sample reported CRNA to prescribed medications across North America. CRNA was less prevalent in Canada compared to the United States (5% vs 10%). Similar to previously discussed studies, CRNA was less prevalent in older age cohorts, males, higher-income earners, those who self-reported health status of good, very good, or excellent, and in respondents who had insurance for prescribed medicines. Perhaps due to the inclusion of American data in the analysis, some predictors reported higher CRNA than previously described studies. Americans had twice the odds of reporting CRNA to prescribed drugs compared to Canadians. Again, seniors had lower odds of reporting CRNA to prescribed drugs compared to younger age cohorts. Compared to respondents in the third, fourth, or fifth quintile, those in the lowest quintile had greater than 6 times the odds of reporting CRNA. Respondents with a self-reported health of fair or poor had greater than 3 times the odds of reporting CRNA compared to those in excellent, very good, or good health. There is once again an association between chronic conditions and CRNA to prescribed drugs, with those reporting chronic pain or

discomfort that limits activity more likely to report CRNA. Respondents who had more visits to a physician had more than double the odds of reporting CRNA. Compared to white respondents, non-white respondents also have greater than double the odds of reporting CRNA. Perhaps the most startling, yet expected finding was that those with no health insurance had greater than 16 times the odds of reporting CRNA to prescribed drugs, compared to those with prescription drug coverage. Respondents with health insurance but without prescription drug coverage had 3 times the odds of reporting CRNA (17). This study showed that Canadians reported lower levels of CRNA compared to Americans. Although relatively dated, it does present similar associations related to CRNA as more contemporary studies.

Tamblyn et al. investigated nonadherence to prescribed medicines in a primary care setting (18). This prospective study included 15,961 patients in Quebec. Non-adherence was assessed by comparing primary care electronic health records linked to provincial insurer data, which included all drugs dispensed at community pharmacies. Primary nonadherence was defined as not filling an incident prescription within 9 months. This study found that 31% of prescriptions were not filled within 9 months, and this adherence varied with type of prescription. When assessing pharmacological class, nonadherence was highest for hormone and synthetic drugs (37%) and lowest for anti-infectives (24%). Higher-cost drugs had higher rates of non-adherence compared to lower-cost drugs. Compared to those with the maximum co-payment, those with a partial co-payment had nearly half the odds of reporting nonadherence. Respondents who had free medication had lower odds of reporting primary nonadherence (18). Although this study does not look at CRNA to prescribed medicines specifically, it does show that the cost of drugs influence adherence in Quebec.

A comparative analysis of Canada to other healthcare systems assessed CRNA and other cost-related difficulties in healthcare of five different countries (19). This study used the Commonwealth Fund International Health Policy Survey data from 2004 to 2014, but only included years where the survey respondents were asked to the general population or when older adults were included in the sample. CRNA was assessed by a survey question which looked at whether respondents failed to fill a prescription because of cost in the previous 12

months. Analyses were stratified by the general population and older and/or sick adults for descriptive and logistic analyses. CRNA of the general population varied by year: 9% in 2004, 8% in 2007, 9% in 2010, and 7% in 2013. CRNA of respondents of older and/or sick adults also showed variation: 20% in 2005, 14% in 2008, 12% in 2011, and 7% in 2014. After adjusting for age, sex, level of education, income, and self-reported health status, Canadians from the general population group analysis were found to have had 3 times the odds of CRNA, 3 times the odds of serious problems paying medical bills, yet have 4.7 times the odds of holding private drug insurance, when compared to respondents from the United Kingdom (UK). When looking at older and/or sick Canadian adults, these respondents also had twice the odds of CRNA, twice the odds of problems paying medical bills, yet had 6 times the odds of holding private drug insurance when compared to older and/or sick adults from the UK (19). Although this study provides insight to CRNA in Canada, it does not discriminate by province, nor does it define those who may be eligible for public coverage. Further, relatively small sample sizes when stratified by survey year make these estimates less robust than other studies.

Morgan et al. used the Commonwealth Fund 2014 International Health Policy Survey of Older adults to compare CRNA to prescribed medicines among older adults in developed countries (20). This secondary cross-sectional study assessed CRNA by respondents who reported not filling a prescription or skipping a dose in the previous 12 months because of out-of-pocket costs. Lower income was associated with higher odds of reporting CRNA to prescribed medicines; respondents with a below-average income had greater than 5 times the odds of reporting CRNA to prescribed medicines compared to below-average income earners in the UK. Respondents aged 55-64 in had greater than 3 times the odds of reporting CRNA compared to their UK counterparts. Canadian seniors had greater than twice the odds of reporting CRNA to prescribed medicines compared to UK seniors (20). Although both Canada and the UK have universal healthcare, they differ in their provision of pharmaceutical coverage. This has translated into higher levels of CRNA among Canadian respondents compared to UK respondents.

A report by Statistics Canada investigated out-of-pocket spending on pharmaceuticals and CRNA of Canadians with chronic disease (21). This study used data from the 2011 Barriers to

Care for People with Chronic Health Conditions survey. The sample size of this study was 1,849 respondents and included residents of British Columbia, Alberta, Saskatchewan, or Manitoba who had at least one of several chronic cardiovascular conditions including: heart disease, stroke, diabetes, or hypertension. CRNA to prescribed medicines was assessed by respondents who answered “always”, “often”, or “sometimes” when asked whether they had foregone prescription medication in the past 12 months because of cost, or by those who answered “yes” to whether they had not taken medication as prescribed because of cost. Overall, this study calculated CRNA to prescribed medicines in people with chronic health conditions as 4%. In households where healthcare spending amounted to at least 5%, there was a prevalence rate of 3-fold compared to households where healthcare spending amounted to less than 5% of spending, when adjusting for age and sex. An estimated 5% of respondents reported that greater than 5% of their household spending went towards drugs or other pharmaceutical products. These individuals were more likely to be low-income earners, have multiple chronic conditions, and use more medication compared to respondents who spent less than 5% of household income on drugs or other pharmaceutical products (21). This study provided valuable insight on how chronic conditions can influence CRNA. However, it did not stratify by age, nor did it include regions outside Western Canada.

Laba et al. used data from the 2016 iteration of CCHS and isolated analyses to respondents who reported at least 2 chronic conditions to assess the effect of multimorbidity on CRNA to prescribed medicines (22). Analyses were stratified by those who reported multimorbidity in one condition group or more than one condition group (i.e., respiratory vs respiratory and cardiovascular). The analysis included 8,420 respondents from all Canadian provinces and found that 10% of Canadians with multimorbidity reported CRNA, an estimate that is more than double that reported by Statistics Canada. Those with multimorbidity in one condition group were more likely to report CRNA (61%), compared to those with multimorbidity in more than one condition group. Those with respiratory conditions (15%) or mental health disorders (17%) were most likely to report CRNA.

This study found that females had 30% higher odds of reporting CRNA to prescribed medicines. Compared to those in self-reported excellent health, those in poor health had

greater than 5 times the odds of reporting CRNA to prescribed drugs. CRNA appears to increase with the number of chronic conditions reported; respondents with at least 5 chronic conditions had almost twice the odds of reporting CRNA compared to respondents with 2 chronic conditions, yet there were no significant associations between the number of prescribed drugs and CRNA. Compared to the highest income earners, the lowest income earners had higher odds of reporting CRNA, although this relationship was not significant at the 5% level. No significant findings were reported between CRNA and education level. Further, there were no significant differences found between ethnic backgrounds and CRNA. Compared to those who reported an employer-benefit plan, those who reported a government (public) plan had almost twice the odds of reporting CRNA to prescribed medicines. Those without a drug coverage plan had greater than 3 times the odds of reporting CRNA compared to respondents on an employer benefit plan. The effect of age on CRNA was compared using the 45-54 age cohort as the reference category. Compared to this cohort, those in the 55-64, 65-74, and 75 and over age cohorts had lower odds of CRNA, while those in the 19-34 and 35-44 cohorts had greater than twice the odds of CRNA. Except for PEI, those in all other provinces had higher odds of reporting CRNA compared to the reference province of Quebec. Respondents in British Columbia had greater than 4 times the odds of CRNA to prescribed medicines. Of particular interest, respondents in Ontario had 2.4 times the odds of reporting CRNA (22). This study shows the impact of multimorbidity on CRNA, and that this subset of the population shows similar patterns in factors that affect CRNA to the general Canadian population. Those with multimorbidity are a vulnerable group who are more likely to need access to prescribed medicines yet may face barriers to access because of cost.

CRNA to prescribed medicines among homeless and vulnerably housed adults in Canada was assessed by Hunter et al. using data collected from the 2009 Health and Housing in Transition Study (23). Hunter et al. recruited 1,191 single adults in Vancouver, Toronto, and Ottawa who were homeless or vulnerably housed. Approximately 60% of respondents had a prescribed medicine and 26% of these people reported nonadherence to prescribed medicines. Of those reporting nonadherences, 15% attributed this to cost (including not having access to drug coverage), with dislike of side effects of prescribed medicines being the most common reason for non-adherence (33.3%) (23).

The association between food insecurity and non-adherence to prescribed medicines was assessed by Men et al. (24). This study included 11,172 respondents from the Rapid Response module of CCHS 2016. Only 8 Canadian provinces were included in the study, excluding those living in Newfoundland and Labrador, The Territories, and Ontario. Only those who had at least one prescription drug in the previous 12 months were included. Men et al. found that there was an association between food insecurity and CRNA to prescribed drugs. Compared to respondents who were food secure, those with marginal food insecurity had nearly twice times the odds of CRNA to prescribed drugs. This association is amplified when comparing food secure respondents to those with moderate (4 times) and severe (5 times) food insecurity (24).

The patient experience of CRNA to prescribed medicines was explored by Goldsmith et al. in a typology development and application study (25). Factors that influenced CRNA decision-making were identified by framework analysis. Data collection was achieved by semi-structured interviews in British Columbia and Ontario of those who reported some form of CRNA to prescribed medicines. CRNA to prescribed medicines was categorized by type (skip or split doses, not filling prescription, delay filling prescription, sub-optimal substitution), timing (present, past) and frequency (always, sometimes, rarely). Respondents reported skipping or splitting doses as the most often type of CRNA (43%), while sub-optimal substitution (11%) is the least often type of CRNA. Of the 35 participants, 30 (86%) reported CRNA at present and 24 (69%) reported “always” when asked about frequency of CRNA. This study divides CRNA typology into 4 components, citing the reasoning behind CRNA as: insurance reason driving drug cost, individual’s overall financial flexibility, drug cost burden on the individual’s budget, drug importance from the individual’s perspective. Within each of these four components are additional sub-components that provide examples of how CRNA may fall under this category. Of note, this study found that having no drug insurance accounted for 40% of those who reported CRNA. Further, low financial flexibility was reported as a reason for CRNA in 74% of participants. Approximately 20% of respondents considered drug costs as a high burden on their budget. Further, 29% of respondents considered their prescribed drug of low importance and cited this as a reason for CRNA (25). Overall, this study emphasized that CRNA can occur across all ages, income, employment,

and drug insurance status. Further, this study clarifies that CRNA occurs in several forms and that motivations for CRNA can vary by type of insurance, financial flexibility of an individual, relative drug cost burden on an individual's budget, as well as the individual's perspective on the overall importance of the drug. This study provides valuable insight on the thought-process of individuals who have reported CRNA and is unique in the sense that it brings to light the patient experience using a qualitative approach. In saying that, the sample size of this study was relatively small at 35 respondents.

Yaphe et al. aimed to qualitatively explore experiences of people who had previously reported CRNA (26). Data for this study were collected from the Carefully selected and Easily Accessible at No Charge Medicines (CLEAN) randomised controlled trials where enrolled participants were assigned to either conventional (control) or free and accessible (intervention) medicines. There were 198 study participants recruited from four sites (one urban, three rural) in Ontario. A concept map was created based on responses from participants. There were two main themes that emerged related to adherence to prescribed medicines - personal finances and wellbeing. Within personal finances, respondents discussed the financial impact of drug costs, the need to sacrifice other essential goods, and the overall financial burden of pharmaceuticals. Those who received free and accessible medicines (intervention) reported improved financial situations, fewer compromises for the purchase of other essential goods, and less stress related to drug affordability. The CLEAN Meds trial protocol was published in 2017 which provided the quantitative aims of the study for this randomized controlled trial (27). The results of the CLEAN Meds study were published in 2019 by Persaud et al. with the primary objective of assessing adherence to prescribed medicines in the control and intervention group (28). Participants in the intervention group were provided free and accessible medications for 12 months. Of participants identified eligible for study participation, CRNA was assessed by the following question adapted from the Commonwealth Fund International Health Policy Survey: "In the last twelve months, did you not fill a prescription or do anything to make a prescription last longer because of the cost?". This study found that those in the intervention group had better adherence to all medicines compared to the control group (38% vs 27%). The proportion of medicines that respondents were adherent to was also higher in the intervention group compared to the control group (66% vs 56%) (28). This study provides

insight on adherence to prescribed medicines when free and accessible, a particularly relevant topic given the ongoing conversations regarding Pharmacare in Canada.

Several Canadian studies have investigated the extent of CRNA and its influence on specified medical conditions and prescription drug utilization(29-43). This highlights CRNA to prescribed medicines across a wide variety conditions and medications. Systematic reviews by Gupta et al. and Holbrook et al. summarized the varying estimations of CRNA in Canada, while also identifying the determinants and health and social consequences of CRNA to prescribed medicines (10,44). Most recently, Holbrook et al. conducted a systematic review of CRNA in Canada, with the take-away message that it affects a sizeable proportion of Canadians and is largely predicted by financial status. This study emphasized the need for more research on how CRNA affects the health and clinical outcomes of Canadians (44).

These studies highlight that Canadians experience CRNA to prescribed medicines. Commonalities between the studies suggest that the uninsured and low-income groups may be at particular risk. Chronic conditions, level of education, sex, self-reported health status, multimorbidity, also show associations with CRNA. Relative high levels of CRNA to prescribed medicines are seen in British Columbia and Ontario, while lower levels experienced in Quebec. No study, to our knowledge, has examined whether CRNA is a predictor of misreporting of drug insurance in Canada. Using CCHS 2015/2016 data, this study aims to build on previous studies and explore the relationships between misreporting of drug insurance and CRNA to prescribed medicines in Canada.

Methods

a. Dataset

This cross-sectional study used pooled data from the 2015/2016 iterations of The Canadian Community Health Survey (CCHS). Data files were made accessible via Public Use Microdata Files (PUMFs). Because of the publicly accessible and de-identified nature of these data, institutional ethics approval was not required.

The CCHS is an annual voluntary survey that is administered by Statistics Canada. It is a national survey that aims to have a study population representative of Canada. The annual component of CCHS includes 65,000 respondents and consists of 4 sections: core content, theme content, optional content, and rapid response. The core and theme content are asked to all respondents, with the difference being that the core content remains similar year-to-year, while the theme content differs from year-to year and can be heavily influenced by current affairs. The optional component of the survey is only asked to provinces who wish for this information to be asked. Rapid response is also an optional component (45).

Both CCHS 2015 and 2016 included a health insurance module as theme content. This was asked to respondents from all provinces and territories. Analysis conducted in this paper only included a subset of these respondents, specifically Ontario seniors 65 and over, Quebec seniors 65 and over, and Quebec adults 25-64. The rationale for these cohorts is that these respondents have a form of prescription drug coverage under a public plan in Ontario i.e. ODB, or have coverage under provincially-mandated public or private coverage in Quebec. Respondents from other provinces were not included in this paper's analysis as no other province has an exogenous category of individuals who can be identified as having pharmaceutical drug coverage.

The following questions from CCHS 2015/2016 were used as outcome variables in descriptive and regression analyses of respondents from Ontario seniors 65 and older, Quebec seniors 65 and older, and Quebec adults 25-64:

Table 1: Questions from CCHS 2015/2016 as outcome variables for analysis

<u>CCHS Variable Name</u>	<u>CCHS Question</u>	<u>CCHS Response Options</u>
INS_005	<i>Do you have insurance that covers all or part of the cost of your prescription medication?</i>	<i>Yes, No, Valid Skip, Refusal, Don't know, Not stated</i>
INS_010A	<i>Is it a government-sponsored plan?</i>	<i>Yes, No, Valid Skip, Refusal, Don't know, Not stated</i>
PEX_090	<i>During the last 12 months, was there a time when you did not fill or collect a prescription for medicine, or you skipped doses of your medicine because of the cost?</i>	<i>Yes, No, NA no prescription to fill in the last 12 months, Valid Skip, Refusal, Don't know, Not stated</i>

b. Statistical Methods

A series of binary logistic regressions were performed using the three outcome variables – any drug insurance (public or private), public drug insurance, CRNA (Table 1). For each outcome variable, three binary regressions (Model 1, Model 2, Model 3) were performed for each study population (ON65+, QC65+, QC25-64) as follows:

To assess reporting of any form of drug insurance (INS_005), the following regressions were performed :

Model 1: exogenous variables

Model 2: exogenous variables + PEX_090 (CRNA)

Model 3: exogenous variables + other endogenous variables (full model)

To assess reporting of government-sponsored insurance (INS_010A), the following regressions were performed:

Model 1: exogenous variables

Model 2: exogenous variables + PEX_090 (CRNA)

Model 3: exogenous variables + other endogenous variables (full model)

To assess reporting and associations of CRNA to prescribed drugs (PEX_090),

Model 1: exogenous variables

Model 2: exogenous variables + INS_005 (Any drug insurance)

Model 3: exogenous variables + other endogenous variables (full model)

Regardless of outcome variable, model 1 included only exogenous variables. A key variable was added as part of Model 2. CRNA to prescribed medicines was a key explanatory variable when the outcome variable of the regression was having any drug insurance (public or private) or public-only drug insurance. Having any form of drug insurance (public or private) was a key explanatory variable when the outcome variable of the regression was CRNA to prescribed medicines. Thus, three regressions models (Model 1, Model 2, Model 3) were performed per outcome variable per cohort. Given this project focused on three cohorts of interest, a total of nine regressions were performed for Ontario seniors, Quebec seniors, and Quebec adults.

In this instance, exogenous variables were considered any variable that was inherent to the respondent i.e., not due to chance. Endogenous variables were considered any variable that the respondent could have influence over. Explanatory variables were included based on conceptual important and inclusion in similar previous studies. A list of these variables classified by exogenous versus endogenous can be found in Appendix 1. Measures of association were presented as odds ratios (OR). Model fit was assessed using Hosmer-Lemeshow tests. Ordinary Least Squares (OLS) regressions were performed prior to logistic regression when multicollinearity was assessed using the variance inflation factor. A variance inflation factor of 10 or greater warranted further investigation. All responses for outcome and predictor responses that were “valid skip”, “don’t know”, “refusal”, “not

stated” were omitted from the analysis. . All statistical analyses were performed using Stata IC V.16.

Results

a. Reporting any form of drug insurance

The prevalence of prescription drug insurance and CRNA are described in Table 2. The most responses came from Quebec adults 25-64 as this cohort had the broadest age range. A total of 17% (95% CI 15.6,18.5) of Ontario seniors reported that they had no drug insurance (public or private). Among Quebec seniors, 18% (95% CI 16.6,19.6) reported no form of drug insurance. Only 9% (95% CI 7.9,9.7) of respondents aged 25-64 from Quebec reported no form of drug insurance.

The left-hand side of Table 3 illustrates the odds of reporting drug insurance (public or private) of the full model (Model 3) among each study cohort. CRNA to prescribed medicines was only significant among adults from Quebec 25-64, who had greater than twice the odds of reporting no drug insurance if they had declared CRNA (OR 2.1, 95% CI 1.3-3.4). The effect of CRNA on reporting drug insurance status was not significant among Ontario or Quebec seniors. Ontario seniors were more likely to report no drug insurance (public or private) if they were an immigrant (OR 1.5, 95% CI 1.2-1.8) or in the bottom 30% of household income earners (OR 1.8, 95% CI 1.3-2.6). Those who had a flu shot in the last year were significantly less likely to report no drug coverage (OR 0.7, 95% CI 0.5-0.9).

Similar to Ontario respondents, Quebec seniors who were bottom household income earners were significantly more likely to report no drug coverage (OR 1.7, 95% CI 1.2-2.6). Further, respondents with less than a secondary school education were more likely to report no drug coverage when compared to those with a post-secondary certificate diploma or university degree (OR 1.4, 95% CI 1.1-1.8).

Respondents aged 25-64 from Quebec had greater than three times the odds of reporting no drug insurance if they were in the bottom 30% of income earners (OR 3.4, 95% CI 2.3-5.1). Compared to respondents in the top 30% of income earners, those in the middle 40% were over 1.5 times more likely to not report coverage (OR 1.6, 95% CI 1.2-2.2). Compared

to Quebec respondents 25-64 who were married, those who were single were more likely to report no drug coverage (OR 1.9, 95% CI 1.2-2.9). Immigrants in this age cohort had greater than twice the odds of reporting no drug coverage (OR 2.2, 95% CI 1.4-3.5). Those who had visited a general practitioner or family doctor in the previous year were 40% more likely to report drug coverage.

b. Reporting public drug insurance

The middle column for each subpopulation presented in Table 2 shows the prevalence of public drug coverage among respondents. In Ontario, of seniors who reported drug coverage (public or private), 34% (95% CI 31.5, 36.7) reported no public coverage. In Quebec, 21% (18.8, 22.7) of seniors reported that their drug insurance did not come from a public source. Of respondents in Quebec aged 25-64 who reported drug coverage (public or private), 75% (95% CI 73.3, 76.1) reported no public coverage.

When asked specifically whether drug insurance came from a public source, Ontario seniors in the bottom 30% (OR 0.4, 95% CI 0.3-0.5) and middle 30% (OR 0.4, 95% CI 0.6-0.8) had lower odds of reporting that their drug coverage was not from a public source, meaning that it was more likely to come from a public source compared to those with higher income. This pattern held true when comparing top income-earners to bottom income-earners among Quebec seniors (OR 0.2, 95% CI 0.1-0.3). Quebec adults 25-64 who were in the bottom 30% of income earners (OR 0.1, 95% CI 0.1-0.2) and middle 40% of income earners (OR 0.5, 95% CI 0.4-0.6) were also less likely to not report public coverage. Thus, top income-earners were less likely to report public drug coverage in all three study populations.

Educational attainment among respondents aged 25-64 in Quebec was significantly associated with the reporting of public drug coverage. Compared to those with a post-secondary education, those with less than a secondary school education (OR 0.61, 95% CI 0.48-0.77) and those with a secondary school graduation (OR 0.75, 95% CI 0.60, 0.92) were less likely to report having no public drug coverage. A similar finding was observed among

respondents from Quebec seniors with less than a secondary school education (OR 0.6, 95% CI 0.4-0.8). This means that the higher educated among these study populations were less likely to report coverage from a public source.

Respondents in Ontario who were age 70-74 (OR 0.6, 95% CI 0.5-0.8), and 80 and older (OR 0.6, 95% CI 0.5, 0.8) were less likely to report no public drug coverage when compared to the reference range of 65-69. Quebec seniors were less likely to report no public drug coverage if they had less than a secondary school education (OR 0.6, 95% CI 0.4, 0.8). Compared to respondents aged 25-34 in Quebec, those who were 35-44 had greater odds of not reporting public coverage (OR 1.5, 95% CI 1.2, 2.0), while those 55-64 were less likely to not report public coverage (OR 0.6, 95% CI 0.5-0.9).

The association of marital status was only significant for respondents aged 25-64 from Quebec, suggesting that those who were single were less likely to report no public drug coverage compared to those who were married or in a common-law relationship (OR 0.4, 95% CI 0.3-0.6). Being an immigrant in this age cohort was also associated with being less likely to not report public drug coverage. Respondents aged 25-64 from Quebec were less likely to have reported no form of public drug coverage if they had reported CRNA to prescribed drugs (OR 0.6, 95% CI 0.4-0.8). The effect of holding employment in the previous 12 months was only investigated in the Quebec 25-64 age cohort and this showed that those who had worked had almost three times the odds of not reporting public drug coverage (OR 2.9, 95% CI 2.4, 3.6).

Table 2: Weighted prevalence of prescription drug insurance status and CRNA to prescribed drugs across CCHS 2015/2016 respondent characteristics - Ontario 65+, Quebec 65+, Quebec 25-64

	ON 65+			QC 65+			QC 25-64		
	Reported no drug insurance	Reported no public drug insurance	Reported CRNA to prescribed drugs	Reported no drug insurance	Reported no public drug insurance	Reported CRNA to prescribed drugs	Reported no drug insurance	Reported no public drug insurance	Reported CRNA to prescribed drugs
Sex									
Male	16.6 (14.5,19.0)	34.0 (30.9,37.1)	2.1 (1.2,3.4)	17.6 (15.5,20.0)	23.0 (20.0,26.3)	1.4 (1.0,2.0)	8.8 (7.7,10.2)	75.0 (72.9,77.1)	4.6 (3.9,5.5)
Female	17.3 (14.5,19.0)	33.2 (31.5,35.7)	4.3 (3.1,5.9)	18.4 (16.5,20.5)	18.8 (16.6,21.3)	3.5 (2.7,4.6)	8.8 (7.6,10.1)	74.5 (72.6,76.2)	5.9 (5.0,7.1)
Age									
65-69/25-34	17.0 (14.5,19.9)	39.8 (36.2,43.5)	4.6 (3.2,6.6)	14.7 (12.4,17.3)	23.6 (20.5,27.1)	2.9 (2.1,4.1)	9.7 (7.7,12.2)	73.2 (69.9,76.3)	9.0 (7.1,11.5)
70-74/35-44	16.3 (13.8,19.1)	28.5 (25.0,32.4)	3.4 (2.0,5.7)	19.5 (16.9,22.3)	20.8 (17.5,24.5)	2.2 (1.5,3.3)	7.6 (5.7,9.9)	83.0 (80.5,85.3)	5.2 (4.0,6.7)
75-79/45-54	15.7 (12.9,19.1)	33.1 (28.3,38.3)	2.6 (1.2,5.8)	17.7 (14.8,21.1)	17.4 (13.2,22.7)	2.1 (1.2,3.4)	8.3 (6.8,9.9)	80.3 (77.8,82.6)	4.0 (3.1,5.1)
80+/55-64	19.3 (16.1,22.9)	28.4 (24.3,32.9)	1.2 (0.6,2.2)	23.2 (19.4,27.4)	16.9 (13.2,21.2)	2.7 (1.4,5.2)	9.6 (8.3,11.0)	64.2 (61.6,66.8)	3.9 (3.1,4.8)
Visible Minority									
Yes	23.7 (18.6,29.6)	25.0 (19.5,31.4)	6.4 (3.7,10.8)	15.1 (6.9,29.9)	243.7 (12.3,40.7)	7.3 (2.7,18.3)	17.0 (13.4,21.2)	70.8 (65.3,75.8)	7.4 (5.4,10.2)
No	15.6 (14.3,17.0)	35.2 (33.1,37.4)	2.7 (2.0,3.6)	18.2 (16.7,19.7)	20.5 (18.7,22.5)	2.3 (1.9,2.9)	7.7 (6.9,8.7)	75.2 (73.7,76.6)	5.1 (4.4,5.8)
Immigrant									
Yes	21.2 (18.3,24.3)	29.1 (25.5,33.0)	4.9 (3.3,7.2)	17.4 (11.9,24.6)	25.0 (18.2,33.3)	4.0 (2.0,7.9)	17.3 (14.1,21.1)	68.9 (63.9,73.6)	6.2 (4.4,8.5)
No	14.2 (12.9,15.7)	36.3 (33.9,38.7)	2.3 (1.7,3.1)	18.1 (16.7,19.6)	20.1 (18.2,22.0)	2.3 (1.9,2.9)	7.2 (6.4,8.1)	75.7 (74.3,77.0)	5.2 (4.5,5.9)
Marital Status									
Married/Common-Law	15.6 (13.8,17.6)	36.9 (34.2,39.6)	2.9 (2.0,4.3)	15.7 (13.9,17.8)	24.4 (21.7,27.2)	1.7 (1.2,2.4)	7.0 (6.1,8.1)	80.8 (79.3,82.3)	4.2 (2.6,5.0)
Widowed/Divorced/Separated	20.3 (17.9,22.9)	25.4 (22.6,28.4)	3.6 (2.5,5.1)	22.1 (19.7,24.7)	13.7 (11.5,16.3)	4.1 (3.0,5.6)	11.5 (9.2,14.2)	62.4 (57.7,66.8)	6.6 (4.9,8.9)
Single	15.8 (10.6,22.8)	35.6 (25.1,47.8)	7.0 (2.7,17.1)	19.2 (14.4,25.1)	18.6 (13.7,24.7)	2.3 (0.8,6.3)	13.6 (11.3,16.2)	57.9 (54.4,61.3)	8.5 (6.7,10.9)
Education									
Less than post-secondary graduation)	20.1 (17.1,23.6)	25.0 (20.9,29.7)	2.9 (1.5,5.3)	22.9 (20.2,25.8)	11.1 (8.9,13.7)	2.9 (2.2,3.9)	15.0 (12.2,18.2)	53.5 (48.7,58.2)	5.9 (4.4,7.8)
Secondary school graduation	18.6 (15.6,22.1)	33.3 (29.1,37.8)	4.3 (2.5,7.4)	18.9 (16.1,22.1)	25.3 (20.9,30.2)	3.7 (2.2,6.2)	9.1 (7.4,11.2)	68.7 (65.1,72.1)	5.6 (4.4,7.2)
Post-secondary certificate diploma or university degree	15.2 (13.3,17.2)	36.7 (33.9,39.6)	3.1 (2.2,4.3)	14.1 (12.1,16.4)	25.3 (22.4,28.5)	1.8 (1.3,2.7)	7.9 (6.9,9.0)	78.8 (77.2,80.3)	5.2 (4.4,6.1)
BMI									
Underweight	25.7 (10.7,50.0)	30.1 (15.7,49.9)	5.7 (1.7,17.6)	21.9 (10.4,40.5)	20.2 (7.9,42.9)	0.8 (0.1,5.5)	8.1 (2.9,20.8)	55.8 (36.2,73.8)	6.7 (2.5,17.0)
Normal weight	17.9 (15.0,21.2)	33.2 (29.1,37.5)	3.5 (2.2,5.7)	18.1 (15.5,21.0)	20.1 (17.2,23.5)	2.9 (1.9,4.4)	9.7 (8.1,11.6)	74.2 (71.6,76.6)	5.7 (4.5,7.3)
Overweight	16.0 (14.0,18.2)	33.4 (30.4,36.6)	2.6 (1.6,4.1)	18.7 (16.3,21.3)	21.0 (18.1,24.3)	2.2 (1.6,3.1)	8.2 (6.9,9.7)	76.7 (74.5,78.8)	4.4 (3.6,5.4)

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Obese	17.1 (14.5,20.1)	31.8 (28.2,35.5)	4.0 (2.4,6.5)	16.6 (14.3,19.2)	21.2 (17.6,25.4)	2.7 (1.9,3.9)	8.2 (6.8,9.7)	73.3 (70.6,75.9)	5.4 (4.4,6.6)
Cancer									
Yes	21.1 (14.6,29.4)	31.5 (24.2,39.9)	1.3 (0.6,2.9)	17.8 (12.3,25.1)	17.4 (10.1,28.3)	4.1 (1.6,10.2)	10.9 (5.9,19.1)	61.2 (48.1,72.8)	6.3 (2.9,13.1)
No	16.8 (15.4,18.4)	33.6 (31.5,35.8)	3.4 (2.6,4.4)	18.0 (16.6,19.6)	20.8 (18.9,22.8)	2.5 (2.0,3.1)	8.8 (7.9,9.7)	74.9 (73.5,76.3)	5.3 (4.7,6.1)
Chronic condition									
Yes	16.8 (15.3,18.4)	32.8 (30.7,35.0)	3.4 (2.6,4.5)	18.0 (16.4,19.7)	20.1 (18.1,22.1)	2.6 (2.1,3.3)	8.4 (7.4,9.5)	72.7 (71.0,74.3)	5.9 (5.1,6.9)
No	19.2 (14.4,25.3)	42.3 (34.3,50.7)	1.8 (0.5,5.6)	18.4 (14.7,22.7)	25.9 (19.9,32.9)	2.1 (1.0,4.6)	9.7 (8.2,11.5)	79.2 (76.6,81.5)	4.1 (3.2,5.2)
Mental Health Condition									
Yes	12.9 (9.9,16.6)	35.5 (29.4,42.1)	6.4 (3.5,11.3)	17.5 (13.6,22.4)	14.8 (10.4,20.7)	3.9 (2.1,7.2)	8.6 (6.2,11.8)	64.5 (60.6,68.2)	10.3 (7.7,13.6)
No	17.4 (15.9,19.1)	33.3 (31.2,35.6)	3.0 (2.2,4.0)	18.1 (16.6,19.7)	21.2 (19.2,23.3)	2.4 (1.9,3.1)	8.8 (7.9,9.8)	76.3 (74.8,77.7)	4.6 (4.0,5.3)
Smoking Status									
Life-time abstainer	17.5 (15.1,20.2)	33.4 (29.9,37.0)	4.2 (2.7,6.4)	19.1 (16.1,22.6)	21.7 (18.2,25.8)	3.0 (1.9,4.7)	9.1 (7.6,10.9)	77.5 (74.9,79.9)	5.5 (4.3,6.8)
Former smoker	16.7 (14.8,18.7)	35.1 (32.4,38.0)	2.1 (1.6,3.0)	17.1 (15.4,18.9)	20.6 (18.3,23.1)	1.9 (1.5,2.6)	7.3 (6.3,8.5)	77.3 (75.3,79.1)	3.8 (3.1,4.7)
Current smoker	16.6 (12.7,21.5)	24.8 (19.6,30.9)	6.4 (3.2,12.3)	20.4 (16.4,25.2)	18.0 (13.0,24.4)	4.8 (33.1,7.3)	11.7 (9.6,14.1)	64.6 (61.4,67.7)	8.5 (6.7,10.6)
Flu Shot - 12 months									
Yes	15.7 (14.2,17.4)	33.5 (31.3,35.8)	3.1 (2.4,4.1)	17.2 (15.5,19.0)	20.9 (18.8,23.3)	2.4 (1.8,3.2)	7.2 (6.0,8.5)	76.6 (74.6,78.5)	4.6 (3.7,5.7)
No	22.6 (18.9,26.8)	33.7 (28.6,39.2)	4.1 (2.1,8.1)	20.5 (17.7,23.6)	19.9 (16.6,23.7)	2.9 (2.0,4.2)	10.2 (9.0,11.5)	73.1 (71.1,74.9)	6.0 (5.1,7.0)
GP Visit									
Yes	16.1 (14.6,17.8)	33.0 (30.8,35.2)	3.6 (2.7,4.8)	17.4 (15.8,19.2)	20.1 (18.2,22.1)	2.4 (1.8,3.1)	7.0 (6.2,7.9)	75.6 (74.0,77.1)	5.4 (4.7,6.2)
No	21.2 (17.6,25.5)	36.5 (31.0,42.4)	2.1 (1.3,3.3)	20.1 (17.4,23.2)	22.8 (18.2,22.1)	3.1 (2.1,4.6)	12.8 (10.9,15.0)	72.6 (69.8,75.3)	5.1 (3.8,6.8)
Income									
Bottom 30%	24.2 (21.3,27.4)	20.6 (17.1,24.5)	5.1 (3.6,7.1)	22.8 (20.5,25.3)	7.4 (6.0,9.1)	3.8 (2.8,5.1)	19.2 (16.7,22.0)	41.8 (37.8,45.9)	9.5 (7.9,11.4)
Middle 40%	14.2 (12.3,16.3)	34.4 (31.3,37.5)	3.2 (1.9,5.1)	16.3 (14.1,18.8)	26.0 (22.7,29.5)	2.0 (1.4,2.9)	7.2 (6.0,8.6)	77.5 (75.4,79.5)	5.4 (4.3,6.8)
Top 30%	12.5 (10.0,15.6)	46.9 (43.0,50.9)	1.3 (0.8,2.1)	11.2 (8.3,14.9)	35.2 (30.3,40.4)	1.0 (0.5,1.9)	4.2 (3.3,5.2)	88.8 (87.3,90.2)	2.6 (2.0,3.5)
Self-reported health									
Excellent/Very Good	15.5 (13.6,17.6)	38.5 (35.4,41.7)	1.9 (1.2,3.1)	17.3 (15.2,19.6)	24.5 (21.6,27.5)	2.3 (1.7,3.2)	7.5 (6.4,8.7)	79.1 (77.3,80.8)	4.3 (3.5,5.2)
Good	18.0 (15.4,21.0)	30.7 (27.3,34.2)	4.2 (2.7,6.5)	16.5 (14.4,18.9)	19.2 (16.2,22.5)	2.4 (1.6,3.5)	10.0 (8.5,11.9)	72.3 (69.7,74.8)	5.9 (4.8,7.2)
Fair	18.9 (15.1,23.3)	27.2 (22.3,32.7)	5.6 (3.2,9.5)	24.8 (20.3,30.0)	13.3 (9.9,17.6)	2.3 (1.2,3.9)	12.4 (9.7,15.7)	53.7 (48.3,59.0)	10.2 (7.6,13.5)
Poor	20.1 (14.2,27.5)	19.4 (13.8,26.6)	5.1 (2.6,9.8)	18.2 (11.5,27.5)	8.5 (4.7,15.1)	9.7 (4.3,20.2)	20.5 (13.7,29.4)	35.2 (26.6,45.0)	14.3 (9.3,21.3)
Living arrangement									
Unattached living alone or with others	18.1 (16.1,20.4)	28.3 (25.2,31.7)	3.9 (2.6,5.7)	20.6 (18.7,22.7)	15.2 (13.0,17.6)	3.3 (2.6,4.3)	13.9 (11.8,16.3)	55.8 (52.8,58.7)	8.4 (6.7,10.6)

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Living with spouse/partner	15.4 (13.5,17.4)	37.7 (34.9,40.5)	2.7 (1.8,4.2)	15.6 (13.7,17.7)	23.9 (21.3,26.7)	1.7 (1.2,2.4)	8.9 (7.4,10.6)	76.9 (74.7,79.0)	4.8 (3.8,6.1)
Parent and child living together or other	20.1 (15.7,25.4)	29.4 (23.4,36.3)	4.2 (2.2,7.7)	21.6 (15.1,29.9)	22.6 (14.5,33.4)	4.0 (1.7,9.4)	6.7 (5.7,8.0)	80.4 (78.3,82.3)	4.4 (3.6,5.4)
CRNA									
Yes	16.9 (15.4,18.4)	19.8 (9.6,36.5)	N/A	23.3 (15.8,33.0)	8.1 (3.5,17.8)	N/A	20.1 (14.2,27.8)	56.2 (49.6,62.6)	N/A
No	20.3 (13.0, 30.5)	34.0 (31.9,36.1)	N/A	17.9 (16.4,19.5)	21.0 (19.1,23.0)	N/A	8.2 (7.4,9.0)	75.6 (74.2,77.0)	N/A
Any form of drug insurance									
Yes	N/A	N/A	3.2 (2.3,4.4)	N/A	N/A	2.4 (1.8,3.1)	N/A	N/A	4.7 (4.1,5.3)
No	N/A	N/A	4.0 (2.6,6.1)	N/A	N/A	3.3 (2.2,4.9)	N/A	N/A	12.2 (8.4,17.4)
Worked in past 12 months									
Yes	N/A	N/A	N/A	N/A	N/A	N/A	7.7 (6.8,8.6)	80.5 (79.1,81.9)	5.0 (4.3,5.8)
No	N/A	N/A	N/A	N/A	N/A	N/A	14.4 (12.0,17.1)	43.8 (40.4,47.3)	6.8 (5.3,8.6)
Overall	17.0 (15.6,18.5)	33.5 (31.5,36.7)	3.3 (2.5,4.3)	18.0 (16.6,19.6)	20.7 (18.8,22.7)	2.5 (2.0,3.2)	8.8 (7.9,9.7)	74.7 (73.3,76.1)	5.3 (4.7,6.1)
N	6942	5569	6697	4988	3980	4988	9088	8272	9088
% (95% CI)									

Table 3: Characteristics associated with the odds of not reporting drug insurance using CCHS 2015/2016 - Ontario 65+, Quebec 65+, Quebec 25-64

	Any insurance (public or private)						Public Insurance					
	ON 65+		QC 65+		QC 25-64		ON 65+		QC 65+		QC 25-64	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
CRNA (ref: no CRNA to prescribed drugs)												
CRNA to prescribed drugs	1.0	0.56,1.79	1.1	0.63,1.97	2.1**	1.30,3.39	0.6	0.26,1.29	0.5	0.19,1.26	0.6**	0.43,0.84
Income (ref: top 30%)												
Middle 40%	1.1	0.77,1.44	1.4	0.94,1.96	1.6**	1.16,2.17	0.7* **	0.55,0.83	0.7*	0.54,0.95	0.5***	0.39,0.59
Bottom 30%	1.8***	1.27,2.57	1.7**	1.17,2.60	3.4***	2.32,5.05	0.4* **	0.28,0.51	0.2* **	0.13,0.27	0.1***	0.10,0.17
Education (ref: post-secondary certificate diploma or univ degree)												
Secondary school graduation	1.2	0.91,1.54	1.3	0.96,1.63	1.1	0.85,1.50	0.9	0.75,1.18	1.2	0.88,1.60	0.8**	0.60,0.92
Less than secondary school graduation	1.2	0.94,1.62	1.4**	1.09,1.83	1.5*	1.09,2.07	0.9	0.64,1.11	0.6* *	0.43,0.83	0.6***	0.48,0.77
Sex (ref: male)												
Female	1.0	0.80,1.28	0.9	0.70,1.09	1.0	0.79,1.28	1.1	0.85,1.29	1.0	0.79,1.32	1.2	0.99,1.40
Age (ref: 65-69 or 25-34)												
70-74/35-44	0.9	0.66,1.18	1.4*	1.05,1.77	1.0	0.67,1.51	0.6* **	0.48,0.79	1.0	0.76,1.35	1.5**	1.17,2.03
75-79/45-54	0.9	0.63,1.20	1.1	0.81,1.52	1.3	0.91,1.84	0.8	0.61,1.05	0.9	0.64,1.37	1.1	0.84,1.43
80+/55-64	1.1	0.80,1.50	1.4	0.99,2.03	1.3	0.89,1.83	0.6* *	0.49,0.84	1.2	0.84,1.77	0.6**	0.49,0.85
Visible Minority (ref: non-visible minority)												
Visible Minority	1.2	0.84,1.75	0.8	0.29,1.91	1.2	0.70,1.92	0.8	0.53,1.17	0.9	0.39,2.13	1.7*	1.09,2.52
Immigration Status (ref: non-immigrant)												
Immigrant	1.5***	1.17,1.83	1.0	0.64,1.65	2.2***	1.42,3.49	0.8	0.66,1.05	1.4	0.92,2.25	0.6**	0.44,0.88
Marital Status (ref: married/common-law)												
Widowed/Divorced/Separated	1.5	0.89,2.60	1.8	0.90,3.71	1.6*	1.05,2.54	0.7	0.41,1.05	0.6	0.30,1.04	0.7*	0.51,0.98
Single	1.2	0.61,2.54	1.7	0.79,3.77	1.9**	1.23,2.89	0.8	0.42,1.45	0.7	0.35,1.49	0.4***	0.32,0.61
BMI (ref: normal weight)												

Underweight	1.3	0.49,3.57	1.1	0.45,2.47	0.4	0.15,1.09	1.1	0.40,3.15	1.2	0.35,4.03	1.2	0.65,2.34
Overweight	0.9	0.71,1.20	1.1	0.86,1.42	0.9	0.66,1.14	1.0	0.74,1.22	1.0	0.78,1.37	1.1	0.92,1.38
Obesity	1.1	0.81,1.45	1.0	0.73,1.23	0.8	0.60,1.07	0.9	0.66,1.12	1.2	0.88,1.64	1.2	0.95,1.48
Cancer (ref: no cancer)												
Has cancer	1.4	0.84,2.33	0.9	0.58,1.45	1.0	0.47,2.20	1.0	0.67,1.43	0.9	0.44,1.69	0.7	0.39,1.17
Chronic condition (ref: no chronic conditions)												
≥1 chronic condition(s)	0.8	0.55,1.17	1.0	0.75,1.36	0.8	0.60,1.03	0.8	0.60,1.15	0.8	0.56,1.14	1.0	0.77,1.17
Mental health (ref: no mental health condition)												
≥1 mental health condition	0.7	0.53,1.05	0.9	0.63,1.25	0.8	0.50,1.15	1.3	0.90,1.75	0.9	0.56,1.36	0.9	0.73,1.14
Smoking Status (ref: life-time abstainer)												
Former smoker	1.1	0.88,1.43	0.9	0.72,1.17	1.0	0.77,1.39	0.9	0.76,1.15	0.9	0.65,1.12	1.0	0.84,1.28
Current smoker	0.9	0.62,1.44	1.1	0.73,1.51	1.2	0.86,1.60	0.7	0.47,1.02	1.0	0.60,1.50	0.8*	0.61,0.98
Flu Shot (ref: no flu shot - 12 months)												
Flu shot - 12 months	0.7**	0.51,0.87	0.8	0.66,1.04	0.8	0.60,1.02	1.1	0.81,1.35	1.1	0.81,1.41	1.2	0.99,1.40
GP Visit (ref: no GP visit - 12 months)												
GP Visit - 12 months	0.8	0.61,1.05	0.8	0.68,1.05	0.6***	0.45,0.77	0.8	0.63,1.07	0.9	0.62,1.18	1.1	0.93,1.37
Self-reported health (ref: excellent or very good)												
Good	1.0	0.80,1.34	0.8	0.66,1.05	1.2	0.91,1.59	0.9	0.71,1.09	0.9	0.70,1.20	1.0	0.80,1.20
Fair	1.1	0.78,1.52	1.3	0.93,1.84	1.1	0.72,1.69	0.8	0.57,1.08	0.8	0.54,1.21	0.8	0.61,1.07
Poor	1.0	0.61,1.63	1.0	0.56,1.78	1.9	0.99,3.58	0.6	0.39,1.02	0.5	0.18,1.27	0.7	0.44,1.09
Living arrangement (ref: unattached living alone or with others)												
Living with spouse/partner	1.4	0.81,2.46	1.5	0.73,3.10	1.8*	1.08,2.88	0.8	0.48,1.26	0.7	0.37,1.29	0.9	0.64,1.31
Parent and child living together or other	1.4	0.91,2.09	1.7	0.98,2.97	0.8	0.54,1.17	0.8	0.50,1.16	0.8	0.43,1.34	1.2	0.89,1.57
Worked (ref: no work - 12 months)												
Worked in past 12 months					0.8	0.63,1.13					2.9***	2.37,3.55
Cons	0.5	0.13,1.73	0.2*	0.08,0.79	0.1***	0.04,0.36	0.9	0.25,3.05	0.2*	0.03,0.67	0.3**	0.14,0.75

N	6697	4988	9088	556 9	398 0	8272
OR = adjusted odds ratios *, **, *** denote significance at the 10%, 5% and 1% levels respectively						

c. Reporting CRNA to prescribed drugs

Table 2 illustrates 3.3% (95% CI 2.5,4.3) of Ontario seniors reported CRNA to prescribed drugs in the past year. Prevalence among Quebec seniors was 2.5% (95% CI 2.0, 3.2). CRNA to prescribed drugs was highest among Quebec adults 25-64 at 5.3% (95% CI 4.7, 6.1).

The effect of not reporting drug insurance on CRNA was only significant among Quebec adults 25-64. These respondents had over twice the odds of reporting CRNA to prescribed drugs (OR 2.1, 95% CI 1.3-3.2).

Income was significantly associated with CRNA to prescribed drugs among respondents in Ontario seniors, and Quebec adults 25-64. Compared to those in the top 30% of income-earners, Ontario respondents aged 65 and over who were in the bottom 30% of income earners had nearly three times the odds of reporting CRNA to prescribed drugs (OR 2.9, 95% CI 1.5, 5.7). Among Quebec respondents aged 25-64, those who were middle income-earners were nearly twice as likely to have reported CRNA to prescribed drugs (OR 1.9, 95% CI-1.3-2.8), while bottom income-earners had even greater odds (OR 2.5, 95% CI 1.6, 3.8). Compared to those 65-69 in Ontario, those 80 years and older were nearly 75% less likely to have reported CRNA to prescribed drugs. Compared to those 25-64 in Quebec, respondents aged 35-44 (OR 0.58, 95% CI 0.40-0.84), 45-54 (OR 0.43, 95% CI 0.29, 0.65), and 55-64 (OR 0.35, 95% CI 0.23-0.54) were less likely to have reported CRNA to prescribed drugs.

The effect of sex was only significant among respondents from Quebec seniors, where females were nearly 2.5 times more likely to have reported CRNA to prescribed drugs (OR 2.5, 95% CI 1.5, 4.2). The effect of having a chronic condition was significant among Quebec respondents aged 25-64 (OR 1.7, 95% CI 1.2, 2.4). Quebec respondents 25-64 had over twice the odds of reporting CRNA if they had self-reported poor health (OR 2.4, 95% CI 1.3, 4.4).

Table 4: Characteristics associated with the odds of reporting CRNA to prescribed drugs using CCHS 2015/2016 - Ontario 65+, Quebec 65+, Quebec 25-64

	ON 65+		QC 65+		QC 25-64	
	OR	95% CI	OR	95% CI	OR	95% CI
Self-reported drug coverage (ref: declared a form of drug coverage)						
Declared no form of drug insurance	1.0	0.59,1.83	1.1	0.63,1.91	2.1**	1.31,3.21
Income (ref: Top 30%)						
Middle 40%	2.1*	1.02,4.18	1.7	0.73,3.78	1.9***	1.30,2.75
Bottom 30%	2.9**	1.50,5.73	2.7*	1.20,6.05	2.5***	1.61,3.78
Education (ref: post-secondary certificate diploma or univ degree)						
Secondary school graduation	1.3	0.67,2.52	1.7	0.91,3.08	1.1	0.77,1.50
Less than secondary school graduation	0.8	0.32,1.86	1.3	0.78,2.27	0.8	0.55,1.23
Sex (ref: male)						
Female	2.0*	1.14,3.45	2.5***	1.46,4.22	1.1	0.85,1.47
Age (ref: 65-69 or 25-34)						
70-74/35-44	0.7	0.33,1.34	0.8	0.48,1.32	0.6**	0.40,0.84
75-79/45-54	0.5	0.23,1.08	0.7	0.36,1.32	0.4***	0.29,0.65
80+/55-64	0.3**	0.11,0.61	0.7	0.40,1.35	0.4***	0.23,0.54
Visible Minority (ref: non-visible minority)						
Visible Minority	1.3	0.61,2.76	3.4*	1.09,10.75	1.7*	1.07,2.65
Immigration Status (ref: non-immigrant)						
Immigrant	1.6	0.89,3.03	1.3	0.62,2.75	0.7	0.42,1.02
Marital Status (ref: married/common-law)						
Widowed/Divorced/Separated	1.2	0.41,3.37	4.3	0.96,19.31	1.3	0.77,2.17
Single	2.3	0.61,9.04	2.8	0.38,21.49	1.3	0.79,2.01
BMI (ref: normal weight)						
Underweight	1.0	0.21,4.56	0.2	0.03,1.82	0.7	0.21,2.29
Overweight	0.8	0.37,1.53	0.8	0.48,1.42	0.9	0.65,1.22
Obese	1.1	0.47,2.77	0.9	0.56,1.55	1.0	0.71,1.31
Cancer (ref: no cancer)						
Has cancer	0.4	0.15,1.05	1.6	0.66,3.70	1.1	0.45,2.52
Chronic condition (ref: no chronic conditions)						
≥1 chronic condition(s)	1.4	0.40,4.80	1.2	0.48,3.18	1.7**	1.17,2.35
Mental health (ref: no mental health condition)						
≥1 mental health condition	1.7	0.74,3.90	1.2	0.68,2.18	1.6*	1.07,2.30
Smoking Status (ref: life-time abstainer)						
Former smoker	0.7	0.39,1.27	1.0	0.59,1.53	0.9	0.64,1.29
Current smoker	1.3	0.49,3.57	1.6	0.86,3.00	1.4	0.96,1.96
Flu Shot (ref: no flu shot - 12 months)						

Flu shot - 12 months	0.8	0.35,1.64	0.9	0.56,1.36	0.8	0.61,1.11
GP Visit (ref: no GP visit - 12 months)						
GP Visit - 12 months	1.8	0.95,3.43	0.7	0.43,1.20	1.2	0.86,1.75
Self-reported health (ref: excellent or very good)						
Good	1.9	0.92,3.95	0.8	0.52,1.36	1.1	0.83,1.56
Fair	2.2	0.97,4.89	0.7	0.36,1.37	1.6*	1.03,2.54
Poor	2.1	0.67,6.54	3.0*	1.26,7.22	2.4**	1.30,4.39
Living arrangement (ref: unattached living alone or with others)						
Living with spouse/partner	1.2	0.37,4.20	3.3	0.68,16.05	1.3	0.76,2.23
Parent and child living together or other	1.4	0.62,3.10	1.8	0.63,5.11	0.8	0.54,1.24
Worked in past 12 months					1.1	0.77,1.47
Cons	0.01***	0.00,0.11	0.00***	0.00,0.03	0.03***	0.01,0.13
N	6697		4988		9088	
OR = adjusted odds ratios						
*, **, *** denote significance at the 10%, 5% and 1% levels respectively						

Discussion

a. Main Findings

There was a degree of misreporting of drug insurance coverage across all study populations. These findings could be interpreted as measurement error – the gap between the true value and the reported value. In this instance, a subset of respondents reported no drug coverage despite a high likelihood of being covered. Given the information we have, it is difficult to distinguish those who don't understand their cover versus those who don't have cover. This measurement error has the potential to impact research conclusions and ultimately could influence health policy.

A key finding in this analysis was that reporting CRNA to prescribed medicines increases the odds of reporting no form of drug coverage among Quebec adults 25-64. Similarly, reporting no form of drug coverage increases odds of reporting CRNA to prescribed medicines. Our analysis used CRNA as an outcome variable and explanatory variable in separate regressions. The justification for using CRNA as an explanatory variable when drug misreporting was the outcome variable stemmed from the hypothesis that CRNA may be associated with misreporting, and indirectly, measurement error.

Declaring no form of drug insurance and CRNA was also high among low-income adults in Quebec. Although all Quebec residents have the legal requirement of prescription drug insurance, there appears a subset of the population who feel that they do not have coverage, and/or they do not have sufficient coverage needed to pay for their prescription medication. The public co-pay system in Quebec requires residents to pay a monthly deductible and a portion of the co-insurance up to a maximum contribution. For low-income earners, this deductible and co-payment will inevitably account for a larger proportion of disposable income when compared to high-income earners. Seniors on the guaranteed income scheme have a lesser maximum monthly and annual co-pay contribution. As socio-economic status has been repeatedly shown as an indicator of health, an argument could be made that low-income earners may also be more likely to have to fill prescriptions due to poorer health, thus increasing the burden. High income-earners had higher odds of having drug insurance but were less likely to report public coverage. Unsurprisingly, almost 75% of Quebec adults reported no form of public coverage. This is most likely a reflection of high

employment rates among this cohort, with the majority likely having coverage under an employer-based plan. Although the prevalence of misreporting drug insurance (public or private) was lowest among Quebec adults, this age cohort did have the highest prevalence of CRNA to prescribed drugs of the three study populations. A possible reason for this high prevalence could be that private drug coverage may, in some cases, not be as generous as public drug coverage.

Almost 17% of Ontario seniors reported having no form of prescription drug coverage, similar to the 18% of Quebec seniors who reported no form of drug insurance. This is a lower prevalence than previous 1996/1997 estimates by Grootendorst et al. (11). Guo et al. have previously discussed potential reasons for misreporting among the insured in Canada (12). Firstly, there may be a lack of information and knowledge surrounding the ODB, specifically for residents who are turning 65 and becoming eligible for the program. CRNA to prescribed drugs was significantly lower among Ontario seniors 80 and over when compared to the 65-69 age cohort. Because it is unlikely respondents are on fewer prescription drugs at an older age, it is perhaps familiarity with the program and knowledge of coverage that reflects a lower odds of reporting CRNA at an older age. It is also possible that Ontario seniors may not consider ODB a type of insurance i.e. they know they have coverage but do not label it rhetorically as insurance, in which case misreporting of drug insurance may be overestimated. As ODB also has a co-pay system whereby Ontario seniors pay an annual deductible and co-payment, Ontario seniors may not realize that they only pay for a portion of the drug cost (co-payment) and may be underestimating the actual cost of their drugs. It is also possible that some respondents did not exceed the \$100 deductible that is required before co-payment begins.

When Ontario seniors who reported drug insurance coverage were asked specifically about whether they had coverage that was public, almost 33% of Ontario seniors reported no public drug insurance. It should be considered that the phrasing of this question could be misleading. Ontario seniors may have coverage under a combination of public and private plans and asking specifically about public may persuade the responder to say 'no', waiting instead for a question that reflects their insurance status more accurately i.e., a question that asks if coverage comes from a combination of public and private sources.

For those who have coverage under public and private plans, this high prevalence may also stem from respondents working past the age of 65 and thinking the employer benefits are the first payee of their prescription medications. Likewise, retired Ontario seniors may have a private drug plan and think that private drug insurance is the first payee. Despite relatively high misreporting of prescription drug insurance among Ontario seniors, only 3.3% reporting CRNA to prescribed drugs in the past year. This low prevalence may reflect the affordability of drugs under the ODB. Further, Ontario seniors who have a private drug plan as a second payee may find drugs even more affordable. The take-home message is that most Ontario seniors are not reporting CRNA to prescribed drugs despite a modest prevalence of misreporting of drug coverage.

Low income-earners were more likely to report that they have no drug insurance (public or private) compared to top income-earners. This held true among all three study populations. Particularly striking was misreporting among bottom income-earners aged 25-64 in Quebec, these respondents were almost 3.5 times more likely to misreport coverage. On one hand, there is an argument that low-income earners may not have a full understanding of their coverage. On the other hand, both Ontario and Quebec have policies in place to ensure full or partial coverage for low-income earners. This analysis does not address how misreporting coverage influences healthcare and drug utilization among these cohorts. In contrast, when asked specifically if drug coverage came from a public source, bottom income-earners were more likely to report coverage when compared to top income-earners. This is presumably because high income-earners are more likely to have access to employer or private drug insurance. Ontario seniors in the bottom 30% of income earners had almost 3 times the odds of reporting CRNA to prescribed drugs when compared to the top income-earners. This may be the result of low income-earners not being able to afford even low deductibles and/or not having a second payee in the form of private drug insurance.

Ontario seniors and Quebec adults (25-64) who are immigrants were more likely to misreport coverage compared to non-immigrants. There are several reasons why this may

be the case. Firstly, they may not have coverage; for instance, they arrived in Canada less than 3 months prior and are currently not covered under a provincial plan. On the other hand, immigrants may have the provincial coverage, but are unaware of this coverage due to unfamiliarity with a new health system, health literacy, or language barriers. Ontario seniors who had a flu shot, and Quebec adults (25-64) who had visited a GP or family doctor in the previous 12 months were less likely to misreport coverage. This may be a result of increased familiarity of the healthcare system. Similarly, those that have visited a doctor may be more likely to be given a prescription to fill, and therefore more likely to have knowledge and experience with their coverage. Quebec adults (25-64) were more likely to misreport coverage if they were single, compared to if they were married or in a common-law relationship. Those in a relationship may have more experience with the health system than those who are single; perhaps this extra exposure makes them more familiar with the system. Respondents in this cohort who had reported at least one chronic condition were also more likely to report CRNA to drugs. This is consistent with previous studies showing that those with chronic conditions are more likely to report CRNA to prescribed drugs.

Further, Quebec adults (25-64) who had declared CRNA to prescribed drugs had greater than twice the odds of misreporting drug coverage. This is quite logical; those who think they have no drug coverage are more likely to experience CRNA. Perhaps among this cohort there is a lack of understanding around their cover. It could also be attributed to high co-pays in Quebec. There is also the potential that some Quebec adults do not have cover for certain medications under private policies. When making CRNA the outcome variable, reporting no drug insurance was also found to significantly increase the odds of declaring CRNA. The effect of CRNA was not significantly associated with misreporting among Ontario seniors or Quebec seniors, nor was the effect of declaring no drug insurance on the odds of reporting CRNA.

b. Strengths and limitations

To our knowledge, this is the first study that investigated the role of CRNA as a predictor for reporting prescription drug insurance in Canada. Taking it a step further, our analysis also looked at self-reported insurance status as an explanatory variable in CRNA, thus using insurance status and CRNA as both dependant and independent variables across multiple

regression models. The analysis has suggested multiple variables that may increase the odds of reporting drug insurance or CRNA among Ontario seniors, Quebec seniors, or Quebec adults 25-64.

However, this study also has its limitations. Only a small proportion of respondents reported CRNA to prescription drugs i.e., answered “yes” when asked “during the last 12 months, was there a time when you did not fill or collect a prescription for medicine, or you skipped doses or your medicine because of cost?”. As such, when CRNA was used as the outcome variable, large confidence intervals were observed.

Moreover, this study assumed that all respondents from the three study populations (Ontario 65+, Quebec 65+, Quebec 25-64) had prescription drug coverage. Although most of our study respondents do have drug insurance coverage, there is a relatively small proportion who will have no coverage at the time of survey. For instance, newly arrived documented international immigrants may not qualify for provincial coverage until three months after date of arrival, nor would undocumented migrants. Most government-assisted refugees would have provincial drug coverage. Respondents who moved from another province to Quebec or Ontario in the last three months would also not have provincial coverage.

Analysis of CCHS allows for monitoring of several indicators of health and brings to light gaps in health service delivery. It is a valued instrument in research and provides excellent aid for policy studies that, by and large, represent the Canadian population. Because CCHS is a national survey that can be stratified by province, it is a useful tool for inter-provincial studies. However, using self-reported data carries the inherent risk of measurement error and bias. There is also the risk of recall bias or selective recall. Further, respondents may not give an accurate response or lack honesty due to social desirability bias. Although the CCHS intends to gather a sample representative of the Canadian population, there will be nonetheless elements of sampling bias. For instance, there may be a trend towards selecting respondents who are unwilling to complete the questionnaire, as this would lead to sample attrition.

For all cohorts, questions asked in CCHS 2015/2016 may have been misunderstood or misinterpreted. Casual relationships between the explanatory variables and the outcome variables cannot be established due to the nature of the data. This study provided associations between misreporting of insurance and CRNA to prescribed drugs for 2015 and 2016, and this is not to say the same holds true for other points in time.

c. Implications for Research and Policy

We now have a better understanding of the effect of CRNA on reporting of drug insurance, and vice versa. This study has added to Grootendorst et al. who investigated the extent and predictors of misreporting of drug insurance in Canada. Guo et al. added to this narrative but exploring the socioeconomic differences in reporting drug coverage.

These findings may be hard to translate to other provinces given variations in provincial coverage. In saying that, we have observed a trend whereby respondents who have coverage are not reporting this coverage – measurement error. Several factors have been shown to influence misreporting of drug insurance (public or private), particularly low-income respondents more likely to misreport insurance and declare CRNA. We could hypothesize that a similar pattern may be observed in other provinces, and responses will continue to be affected by measurement error.

Health policy should target individuals who have higher odds of reporting CRNA to prescription drug insurance, such as low-income earners. Future research should ask whether those who report no insurance despite having coverage, are less likely to use the healthcare system. There remains a proportion of Canadians who have no prescription drug coverage, neither public nor private, future studies should explore any unmet healthcare needs. Improving knowledge of coverage may also reduce CRNA, especially among Quebec adults. There remains a gap, even among the insured, whereby individuals may not access prescription medications under the incorrect assumption that they do not have coverage.

Conclusions

There is a surprisingly high prevalence of misreporting of drug insurance status among Ontario seniors, Quebec seniors, and Quebec adults 25-64. Despite this, a relatively small prevalence of CRNA to prescribed drugs was reported. This misreporting is likely due to measurement error among respondents. Several variables have been associated with misreporting of drug coverage and CRNA to prescribed drugs and low-income being significant and consistent predictors. Improving health literacy, with particular emphasis on improving knowledge of prescription drug coverage, should be a priority for provincial governments. Even better, making prescription drug coverage consistent across provinces is likely to reduce misreporting. This move would also increase equity in drug coverage across provinces; Canadians should not have to choose which province to live in based on which drugs are covered. Variations of provincial prescription drug coverage may also be solved by the introduction of a universal drug coverage program - Pharmacare. Pharmacare would undoubtedly reduce the prevalence of misreporting drug coverage and more importantly, translate into more Canadians being able to afford their prescribed drugs. Going forward, health policy should aim to create prescription drug coverage that is equitable, accessible, and universal - one where Canadians can access their prescription drugs without barriers.

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Appendix

Appendix 1 - Independent Variables used in Regressions

Variable	Question in CCHS 2015/2016	Endogenous/Exogenous
Sex	DHH_SEX	Exogenous
Age	DHHGAGE	Exogenous
Visible Minority	SDCDGCGT	Exogenous
Immigrant	SDCDVIMM	Exogenous
Marital status	DHHGMS	Endogenous
Highest level of education	EHG2DVR3	Endogenous
BMI	HWTDBCC	Endogenous
Cancer	CCC_130	Endogenous
Perceived mental health	GENDVMHI	Endogenous
Physical chronic condition	CCC_005, CCC_015, CCC_030, CCC_035, CCC_040, CCC_045, CCC_050, CCC_055, CCC_060, CCC_065, CCC_075, CCC_085, CCC_095	Endogenous
Mental health condition	CCC_195, CCC_200	Endogenous
Smoking Status	SMK_005	Endogenous
Flu shot	FLU_005	Endogenous
Visited GP/Family doctor in past 12 months	CHP_040	Endogenous
Income (Provincial Decile)	INCDVRCAPR	Endogenous
Self-reported health status	GEN_005	Endogenous
Living arrangement	DHHDGLVG	Endogenous
Cost-related nonadherence to prescribed drug(s)	PEX_090	Endogenous
Reporting any form of drug insurance	INS_005	Endogenous
Worked at job in past 12 months	MAC_010	Endogenous

Appendix 2 – Characteristics associated with the odds of reporting any form of drug insurance (public or private) using CCHS 2015/2016, **Ontario 65+ – reduced model – exogenous variables only**

```
. svy:logit noins i.sex i.age i.visminority i.immigrant if sample1, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 6,942
Number of obs = 6,942
Population size = 1,494,016
Design df = 6,941
F( 6, 6936) = 3.91
Prob > F = 0.0007
```

noins	Linearized					[95% Conf. Interval]	
	Odds Ratio	Std. Err.	t	P> t			
sex							
female	1.076754	.1167522	0.68	0.495	.870572	1.331767	
age							
70	.9316214	.1321883	-0.50	0.618	.7054088	1.230377	
75	.9237998	.1400865	-0.52	0.601	.6862427	1.243592	
80	1.236256	.1813442	1.45	0.148	.9273112	1.64813	
visminority							
non-white	1.373748	.2450143	1.78	0.075	.9684223	1.948719	
immigrant							
yes	1.435361	.1635068	3.17	0.002	1.148103	1.794491	
_cons	.1561945	.0181801	-15.95	0.000	.1243293	.1962265	

Note: **_cons** estimates baseline odds.

```
.
. svylogitgof
Number of observations = 6942
F-adjusted test statistic = F(9,6933) = 1.183
Prob > F = 0.301
```

Appendix 3 – Characteristics associated with the odds of reporting any form of drug insurance (public or private) using CCHS 2015/2016, **Ontario 65+ – reduced model – exogenous variables + CRNA variable**

```
. svy:logit noins i.sex i.age i.visminority i.immigrant i.skpcost if sample1, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 6,942
Number of obs = 6,942
Population size = 1,494,016
Design df = 6,941
F( 7, 6935) = 3.38
Prob > F = 0.0013
```

noins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	1.073357	.1164415	0.65	0.514	.8677339	1.327705
age						
70	.9326571	.1325605	-0.49	0.624	.7058588	1.232328
75	.9255004	.1409057	-0.51	0.611	.6866891	1.247363
80	1.240857	.1828583	1.46	0.143	.9295289	1.656458
visminority						
non-white	1.369717	.2445739	1.76	0.078	.9651956	1.943776
immigrant						
yes	1.432539	.1636448	3.15	0.002	1.145126	1.792089
skpcost						
yes	1.125784	.319619	0.42	0.676	.6452831	1.964084
_cons	.155831	.0182295	-15.89	0.000	.1238971	.1959958

Note: **_cons** estimates baseline odds.

```
. svylogitgof
Number of observations = 6942
F-adjusted test statistic = F(9,6933) = 1.020
Prob > F = 0.421
```

Appendix 4 – Characteristics associated with the odds of reporting any form of drug insurance (public or private) using CCHS 2015/2016, Ontario 65+ – full model – exogenous variables + endogenous variables

```
. svy:logit noins i.sex i.age i.visminority i.immigrant i.marital i.education i.bmi i.cancer i.chronic i.mental i.smokes
> tatus i.flushot i.docgp12 i.income i.perceivedhealth i.livingarrangement i.skpcost if sample1, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1          Number of obs = 6,697
Number of PSUs = 6,697      Population size = 1,443,266
Design df = 6,696          F( 28, 6669) = 3.82
Prob > F = 0.0000
```

	noins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]
sex						
female		1.012347	.1201245	0.10	0.918	.802247 1.27747
age						
70		.8806077	.1297784	-0.86	0.388	.6596523 1.175574
75		.8711935	.1424844	-0.84	0.399	.6322295 1.200479
80		1.098735	.1745223	0.59	0.553	.8047555 1.500105
visminority						
non-white		1.212294	.2274593	1.03	0.305	.8392095 1.751239
immigrant						
yes		1.459367	.1669628	3.30	0.001	1.166173 1.826275
marital						
widowed/divorced/separated		1.524823	.4151853	1.55	0.121	.8941464 2.60034
single		1.244497	.4528387	0.60	0.548	.6098298 2.53968
education						
secondary school graduation, no post-secondary edu.. less than secondary school graduation		1.18459	.1604456	1.25	0.211	.9083584 1.544825
bmi						
Underweight		1.321814	.6691405	0.55	0.582	.489993 3.565752
Overweight		.920759	.1244771	-0.61	0.541	.7064014 1.200164
Obese		1.08117	.1619401	0.52	0.602	.8060758 1.450146
cancer						
yes		1.398714	.3639762	1.29	0.197	.8398228 2.329541
chronic						
yes		.8064479	.1542975	-1.12	0.261	.5542258 1.173454
mental						
yes		.7437811	.1304308	-1.69	0.091	.527412 1.048915
smokestatus						
former smoker		1.118028	.139757	0.89	0.372	.8750458 1.428483
current smoker		.9448903	.2044351	-0.26	0.793	.6182774 1.444041
flushot						
yes		.6651987	.0913942	-2.97	0.003	.5081366 .8708079
docgp12						
yes		.8005621	.1124699	-1.58	0.113	.60784 1.054389
income						
Middle 40%		1.055444	.169057	0.34	0.736	.7710248 1.444781
Bottom 30%		1.80746	.322882	3.31	0.001	1.273455 2.565391
perceivedhealth						
Good		1.038257	.1367947	0.28	0.776	.8019277 1.344233
Fair		1.090054	.1849166	0.51	0.611	.7816712 1.520099
Poor		.9946414	.2495816	-0.02	0.983	.6081898 1.626649
livingarrangement						
Living with spouse/partner		1.408733	.400915	1.20	0.229	.806379 2.461037
Parent and child living together or other		1.380063	.2931359	1.52	0.129	.9100482 2.092827
skpcost						
yes		.9977735	.2975183	-0.01	0.994	.5561257 1.790156
_cons		1.621207	.0658935	-4.48	0.000	.0730815 .3596412

Note: _cons estimates baseline odds.

```
. svylogitgof
Number of observations = 6697
F-adjusted test statistic = F(9,6688) = 0.916
Prob > F = 0.510
```

Appendix 5 – Characteristics associated with the odds of reporting any form of drug insurance (public or private) using CCHS 2015/2016, **Quebec 65+ – reduced model – exogenous variables only**

```
. svy:logit noins i.sex i.age i.visminority i.immigrant if sample2, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 5,057
Number of obs = 5,057
Population size = 1,082,690
Design df = 5,056
F( 6, 5051) = 2.81
Prob > F = 0.0098
```

noins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	1.00661	.1131809	0.06	0.953	.8074792	1.254849
age						
70	1.401198	.1867886	2.53	0.011	1.078951	1.81969
75	1.24317	.1859946	1.45	0.146	.9271476	1.666909
80	1.743409	.2716627	3.57	0.000	1.284491	2.366288
visminority						
non-white	.8649273	.4243483	-0.30	0.767	.3305715	2.263048
immigrant						
yes	.9857628	.2447693	-0.06	0.954	.6058494	1.603911
_cons	.1732912	.0166323	-18.26	0.000	.1435687	.2091671

Note: **_cons** estimates baseline odds.

```
.
. svylogitgof
Number of observations = 5057
F-adjusted test statistic = F(7,5050) = 0.110
Prob > F = 0.998
```

Appendix 6 – Characteristics associated with the odds of reporting any form of drug insurance (public or private) using CCHS 2015/2016, **Quebec 65+ – reduced model – exogenous variables + CRNA variable**

```
. svy:logit noins i.sex i.age i.visminority i.immigrant i.skpcost if sample2, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 5,057
Number of obs = 5,057
Population size = 1,082,690
Design df = 5,056
F( 7, 5050) = 2.65
Prob > F = 0.0098
```

noins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	.9973115	.1129593	-0.02	0.981	.7987252	1.245272
age						
70	1.405905	.1877816	2.55	0.011	1.082024	1.826734
75	1.247487	.1869263	1.48	0.140	.9299503	1.67345
80	1.746991	.2731174	3.57	0.000	1.285835	2.373536
visminority						
non-white	.8441155	.4204832	-0.34	0.734	.3178977	2.241385
immigrant						
yes	.9848317	.2452374	-0.06	0.951	.6044351	1.604628
skpcost						
yes	1.44054	.3827449	1.37	0.170	.855679	2.425157
_cons	.1722599	.0165454	-18.31	0.000	.1426947	.2079508

Note: **_cons** estimates baseline odds.

```
.
. svylogitgof
Number of observations = 5057
F-adjusted test statistic = F(8,5049) = 0.603
Prob > F = 0.776
```


Appendix 7 – Characteristics associated with the odds of reporting any form of drug insurance (public or private) using CCHS 2015/2016, Ontario 65+ – full model – exogenous variables + endogenous variables

```
. svy:logit noins i.sex i.age i.visminority i.immigrant i.marital i.education i.bmi i.cancer i.chronic i.mental i.smokes
> tatus i.flushot i.docgp12 i.income i.perceivedhealth i.livingarrangement i.skpcost if sample2, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1          Number of obs = 4,993
Number of PSUs = 4,993      Population size = 1,069,390
Design df = 4,992
F( 28, 4965) = 3.81
Prob > F = 0.0000
```

noins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	.8684683	.098604	-1.24	0.214	.6951635	1.084978
age						
70	1.349976	.182593	2.22	0.027	1.035542	1.759886
75	1.108532	.1790622	0.64	0.524	.8076427	1.521517
80	1.418287	.2605788	1.90	0.057	.9893199	2.033253
visminority						
non-white	.7587444	.3648624	-0.57	0.566	.2955789	1.94768
immigrant						
yes	.9977916	.2417524	-0.01	0.993	.6205179	1.604447
marital						
widowed/divorced/separated	1.830055	.6604175	1.67	0.094	.9020158	3.712909
single	1.721893	.6874669	1.36	0.174	.7871926	3.766442
education						
secondary school graduation, no post-secondary edu..	1.2565	.1687151	1.70	0.089	.9656962	1.634874
less than secondary school graduation	1.404704	.1872694	2.55	0.011	1.08163	1.824279
bmi						
Underweight	1.053603	.4578777	0.12	0.904	.4494382	2.469928
Overweight	1.107751	.1408356	0.80	0.421	.8633702	1.421305
Obese	.9365653	.1247733	-0.49	0.623	.7212897	1.216092
cancer						
yes	.9308413	.2161505	-0.31	0.758	.5904326	1.467509
chronic						
yes	1.010548	.1546705	0.07	0.945	.7485893	1.364175
mental						
yes	.8922608	.15476	-0.66	0.511	.6350642	1.25362
smokestatus						
former smoker	.9147217	.1121406	-0.73	0.467	.7193005	1.163235
current smoker	1.053385	.1943369	0.28	0.778	.7336895	1.512382
flushot						
yes	.8226671	.0947089	-1.70	0.090	.6564573	1.03096
docgp12						
yes	.8524842	.094782	-1.44	0.151	.6855262	1.060104
income						
Middle 40%	1.355514	.2539951	1.62	0.105	.9387889	1.957222
Bottom 30%	1.737845	.3540204	2.71	0.007	1.165652	2.590916
perceivedhealth						
Good	.8360627	.0985508	-1.52	0.129	.6635585	1.053413
Fair	1.309432	.2282789	1.55	0.122	.9303648	1.842946
Poor	.9093753	.2755188	-0.31	0.754	.5020964	1.647021
livingarrangement						
Living with spouse/partner	1.499599	.5515994	1.10	0.271	.7291226	3.08425
Parent and child living together or other	1.712447	.4823212	1.91	0.056	.9858546	2.974551
skpcost						
yes	1.131134	.3266826	0.43	0.670	.6421241	1.992549
_cons	.095516	.0465691	-4.82	0.000	.0367257	.2484176

Note: _cons estimates baseline odds.

```
. svylogitgof
Number of observations = 4993
F-adjusted test statistic = F(9,4984) = 1.066
Prob > F = 0.385
```

Appendix 8 – Characteristics associated with the odds of reporting any form of drug insurance (public or private) using CCHS 2015/2016, **Quebec 25-64 – reduced model – exogenous variables only**

```
. svy:logit noins i.sex i.age i.visminority i.immigrant if sample3, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 9,336
Number of obs = 9,336
Population size = 3,025,334
Design df = 9,335
F( 6, 9330) = 11.94
Prob > F = 0.0000
```

noins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	.9870958	.1111563	-0.12	0.908	.7915778	1.230906
age						
35	.7302594	.1452089	-1.58	0.114	.4945355	1.078343
45	.9006573	.1557967	-0.60	0.545	.6416507	1.264213
55	1.13712	.1839713	0.79	0.427	.8280851	1.561484
visminority						
non-white	1.257896	.3120991	0.92	0.355	.7734355	2.045811
immigrant						
yes	2.460503	.5335278	4.15	0.000	1.608526	3.763741
_cons	.0813737	.0124015	-16.46	0.000	.0603591	.1097046

Note: **_cons** estimates baseline odds.

```
.
. svylogitgof
Number of observations = 9336
F-adjusted test statistic = F(7,9329) = 0.796
Prob > F = 0.590
```

Appendix 9 – Characteristics associated with the odds of reporting any form of drug insurance (public or private) using CCHS 2015/2016, **Quebec 25-64 – reduced model – exogenous variables + CRNA variable**

```
. svy:logit noins i.sex i.age i.visminority i.immigrant i.skpcost if sample3, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 9,336
Number of obs = 9,336
Population size = 3,025,334
Design df = 9,335
F( 7, 9329) = 14.76
Prob > F = 0.0000
```

noins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	.9709451	.1081441	-0.26	0.791	.7805044	1.207853
age						
35	.7628885	.1489979	-1.39	0.166	.5202276	1.118739
45	.9586257	.1605012	-0.25	0.801	.6904229	1.331015
55	1.216393	.1895942	1.26	0.209	.8961558	1.651066
visminority						
non-white	1.217141	.300196	0.80	0.426	.7505386	1.973825
immigrant						
yes	2.521723	.5395856	4.32	0.000	1.657822	3.835808
skpcost						
yes	2.848924	.642588	4.64	0.000	1.830895	4.433005
_cons	.0722191	.0106623	-17.80	0.000	.0540713	.096458

Note: **_cons** estimates baseline odds.

```
.
. svylogitgof
Number of observations = 9336
F-adjusted test statistic = F(9,9327) = 369.767
Prob > F = 0.000
```

Appendix 10 – Characteristics associated with the odds of reporting any form of drug insurance (public or private) using CCHS 2015/2016, Quebec 25-64 – full model – exogenous variables + endogenous variables

```
. svy:logit noins i.sex i.age i.visminority i.immigrant i.marital i.education i.bmi i.cancer i.chronic i.mental i.smokes
> tatus i.flushot i.docgp12 i.income i.perceivedhealth i.livingarrangement i.work i.skpcost if sample3, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 9,092
Number of obs = 9,092
Population size = 2,938,002
Design df = 9,091
F( 29, 9063) = 11.22
Prob > F = 0.0000
```

noins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]
sex					
female	1.005506	.1223975	0.05	0.964	.7920567 1.276476
age					
35	1.006246	.2084809	0.03	0.976	.6703833 1.510377
45	1.298401	.2328628	1.46	0.145	.9135434 1.845392
55	1.27405	.234021	1.32	0.187	.8888214 1.826242
visminority					
non-white	1.156442	.2978357	0.56	0.573	.6980271 1.915913
immigrant					
yes	2.230846	.510517	3.51	0.000	1.424462 3.493723
marital					
widowed/divorced/separated	1.630763	.3693511	2.16	0.031	1.046108 2.542172
single	1.885635	.4092847	2.92	0.003	1.232186 2.885619
education					
secondary school graduation, no post-secondary edu..	1.128296	.16426	0.83	0.407	.8481769 1.500926
less than secondary school graduation	1.503183	.2448442	2.50	0.012	1.092311 2.068604
bmi					
Underweight	.4083918	.2039753	-1.79	0.073	.1534191 1.087113
Overweight	.8653516	.1203976	-1.04	0.299	.6587915 1.136677
Obese	.8018666	.1181615	-1.50	0.134	.600695 1.07041
cancer					
yes	1.021646	.4002213	0.05	0.956	.4740293 2.201892
chronic					
yes	.7830765	.1077114	-1.78	0.075	.5980075 1.02542
mental					
yes	.7598513	.1613667	-1.29	0.196	.5011158 1.152177
smokestatus					
former smoker	1.034646	.1540345	0.23	0.819	.7727709 1.385264
current smoker	1.171425	.1864067	0.99	0.320	.8575241 1.600231
flushot					
yes	.7827241	.1057926	-1.81	0.070	.6005447 1.020169
docgp12					
yes	.587237	.0800016	-3.91	0.000	.4496094 .766993
income					
Middle 40%	1.589049	.2541055	2.90	0.004	1.161457 2.17406
Bottom 30%	3.420495	.6792488	6.19	0.000	2.317571 5.048296
perceivedhealth					
Good	1.202411	.1705639	1.30	0.194	.9105267 1.587864
Fair	1.101416	.2397463	0.44	0.657	.7188608 1.687555
Poor	1.880485	.6171408	1.92	0.054	.9882889 3.578128
livingarrangement					
Living with spouse/partner	1.760618	.4420723	2.25	0.024	1.07624 2.88019
Parent and child living together or other	.79497	.1555884	-1.17	0.241	.5416699 1.16672
work					
worked	.8431397	.1266215	-1.14	0.256	.6281311 1.131746
skpcost					
yes	2.100973	.5127285	3.04	0.002	1.302155 3.389832
_cons	.0534102	.0184873	-8.46	0.000	.0270989 .1052681

Note: _cons estimates baseline odds.

```
. svylogitgof
Number of observations = 9092
F-adjusted test statistic = F(9,9083) = 1.565
Prob > F = 0.120
```

Appendix 11 – Characteristics associated with the odds of reporting public drug insurance using CCHS 2015/2016, **Ontario 65+ – reduced model – exogenous variables only**

```
. svy:logit pubins i.sex i.age i.visminority i.immigrant if sample1, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 5,765
Number of obs = 5,765
Population size = 1,234,722
Design df = 5,764
F( 6, 5759) = 6.88
Prob > F = 0.0000
```

pubins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	.9515124	.0906019	-0.52	0.602	.7894908	1.146785
age						
70	.6112745	.0726549	-4.14	0.000	.4842202	.7716665
75	.7418829	.1011213	-2.19	0.029	.5679227	.9691289
80	.5728622	.0749194	-4.26	0.000	.4433084	.7402773
visminority						
non-white	.6763613	.1257431	-2.10	0.035	.4697834	.9737778
immigrant						
yes	.827819	.0989578	-1.58	0.114	.654879	1.046429
_cons	.7761419	.0711279	-2.77	0.006	.6485122	.9288895

Note: `_cons` estimates baseline odds.

```
. svylogitgof
Number of observations = 5765
F-adjusted test statistic = F(9,5756) = 1.217
Prob > F = 0.279
```

Appendix 12 – Characteristics associated with the odds of reporting public drug insurance using CCHS 2015/2016, **Ontario 65+ – reduced model – exogenous variables + CRNA variable**

```
. svy:logit pubins i.sex i.age i.visminority i.immigrant i.skpcost if sample1, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 5,765
Number of obs = 5,765
Population size = 1,234,722
Design df = 5,764
F( 7, 5758) = 6.98
Prob > F = 0.0000
```

pubins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	.9660584	.0917666	-0.36	0.716	.8019184	1.163795
age						
70	.6043347	.0716799	-4.25	0.000	.478956	.7625344
75	.728887	.0989413	-2.33	0.020	.5585875	.9511065
80	.5583118	.0729491	-4.46	0.000	.4321508	.721304
visminority						
non-white	.6807854	.1263686	-2.07	0.038	.4731245	.9795916
immigrant						
yes	.8373396	.0999362	-1.49	0.137	.6626583	1.058068
skpcost						
yes	.4681793	.1916205	-1.85	0.064	.2098708	1.044414
_cons	.7900913	.072359	-2.57	0.010	.6602452	.9454734

Note: **_cons** estimates baseline odds.

```
.
. svylogitgof
Number of observations = 5765
F-adjusted test statistic = F(8,5757) = 1.241
Prob > F = 0.270
```

Appendix 13 – Characteristics associated with the odds of reporting public drug insurance using CCHS 2015/2016, **Ontario 65+ – full model – exogenous variables + endogenous variables**

```
. svy:logit pubins i.sex i.age i.visminority i.immigrant i.marital i.education i.bmi i.cancer i.chronic i.mental i.smoke
> status i.flushot i.docgp12 i.income i.perceivedhealth i.livingarrangement i.skpcost if sample1, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1          Number of obs = 5,569
Number of PSUs = 5,569      Population size = 1,193,482
                             Design df = 5,568
                             F( 28, 5541) = 5.29
                             Prob > F = 0.0000
```

	pubins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex							
female		1.048785	.1099609	0.45	0.650	.8539296	1.288104
age							
70		.6159692	.0770685	-3.87	0.000	.4819875	.7871949
75		.8000476	.1124744	-1.59	0.113	.6073289	1.05392
80		.642164	.0877957	-3.24	0.001	.4911855	.8395494
visminority							
non-white		.7845166	.1590973	-1.20	0.231	.5271616	1.16751
immigrant							
yes		.8303249	.0977226	-1.58	0.114	.6592448	1.045802
marital							
widowed/divorced/separated		.6588892	.1577297	-1.74	0.081	.4120988	1.053473
single		.7787498	.2474271	-0.79	0.431	.4177268	1.451789
education							
secondary school graduation, no post-secondary edu.. less than secondary school graduation		.9380113	.1102046	-0.54	0.586	.7450422	1.18096
bmi							
Underweight		1.127382	.5904615	0.23	0.819	.4037954	3.147612
Overweight		.9548145	.1209464	-0.37	0.715	.7448585	1.223951
Obese		.859734	.1171135	-1.11	0.267	.6582453	1.122898
cancer							
yes		.9765932	.1907206	-0.12	0.903	.6659551	1.43213
chronic							
yes		.8269889	.1379553	-1.14	0.255	.5963132	1.146898
mental							
yes		1.258124	.2115487	1.37	0.172	.904828	1.749366
smokestatus							
former smoker		.9352411	.1001565	-0.63	0.532	.7581362	1.153719
current smoker		.6877424	.1370307	-1.88	0.060	.4653605	1.016394
flushot							
yes		1.048006	.1369919	0.36	0.720	.8110975	1.35411
docgp12							
yes		.8211151	.1120249	-1.44	0.149	.6284189	1.072899
income							
Middle 40%		.6734714	.0718621	-3.70	0.000	.5463524	.830167
Bottom 30%		.3728667	.0577747	-6.37	0.000	.2751906	.5052119
perceivedhealth							
Good		.8789515	.0975965	-1.16	0.245	.7070158	1.092699
Fair		.7846481	.1261899	-1.51	0.132	.5724689	1.075469
Poor		.6275436	.1543633	-1.89	0.058	.3874536	1.016408
livingarrangement							
Living with spouse/partner		.7781839	.1899447	-1.03	0.304	.4822473	1.255726
Parent and child living together or other		.7593948	.162997	-1.28	0.200	.4985692	1.156671
skpcost							
yes		.5794513	.23588	-1.34	0.180	.2608789	1.287049
_cons		2.453956	.8521598	2.59	0.010	1.242266	4.847512

Note: **_cons** estimates baseline odds.

```
. svylogitgof
Number of observations = 5569
F-adjusted test statistic = F(9,5560) = 2.384
Prob > F = 0.011
```

Appendix 14 – Characteristics associated with the odds of reporting public drug insurance using CCHS 2015/2016, **Quebec 65+ – reduced model – exogenous variables only**

```
. svy:logit pubins i.sex i.age i.visminority i.immigrant if sample2, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 4,034
Number of obs = 4,034
Population size = 884,382.57
Design df = 4,033
F( 6, 4028) = 2.53
Prob > F = 0.0192
```

pubins	Linearized				
	Odds Ratio	Std. Err.	t	P> t	[95% Conf. Interval]
sex					
female	.8068231	.0950045	-1.82	0.068	.6404985 1.016339
age					
70	.8538604	.1224816	-1.10	0.271	.6445403 1.131159
75	.6783537	.126452	-2.08	0.037	.4706912 .9776342
80	.6707479	.1146001	-2.34	0.019	.4798265 .9376362
visminority					
non-white	.8288056	.3582554	-0.43	0.664	.3551453 1.93419
immigrant					
yes	1.39214	.3181322	1.45	0.148	.8894215 2.179004
_cons	.3326204	.0371374	-9.86	0.000	.2672286 .4140139

Note: **_cons** estimates baseline odds.

```
.
. svylogitgof
Number of observations = 4034
F-adjusted test statistic = F(6,4028) = 0.303
Prob > F = 0.936
```


Appendix 15 – Characteristics associated with the odds of reporting public drug insurance using CCHS 2015/2016, **Quebec 65+ – reduced model – exogenous variables + CRNA variable**

```
. svy:logit pubins i.sex i.age i.visminority i.immigrant i.skpcost if sample2, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 4,034
Number of obs = 4,034
Population size = 884,382.57
Design df = 4,033
F( 7, 4027) = 2.99
Prob > F = 0.0039
```

pubins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	.8215877	.097181	-1.66	0.097	.6515382	1.03602
age						
70	.8495757	.122293	-1.13	0.257	.6406757	1.12659
75	.6737401	.1256658	-2.12	0.034	.4673895	.9711937
80	.6719967	.1147492	-2.33	0.020	.48081	.9392058
visminority						
non-white	.8657968	.3765292	-0.33	0.740	.3690822	2.030995
immigrant						
yes	1.40612	.3213662	1.49	0.136	.898304	2.201007
skpcost						
yes	.334053	.1518944	-2.41	0.016	.1369798	.814656
_cons	.3351834	.0375051	-9.77	0.000	.2691594	.417403

Note: **_cons** estimates baseline odds.

```
. svylogitgof
```

```
Number of observations = 4034
F-adjusted test statistic = F(7,4027) = 0.367
Prob > F = 0.922
```

Appendix 16 – Characteristics associated with the odds of reporting public drug insurance using CCHS 2015/2016, **Quebec 65+ – full model – exogenous variables + endogenous variables**

```
. svy:logit pubins i.sex i.age i.visminority i.immigrant i.marital i.education i.bmi i.cancer i.chronic i.mental i.smoke
> status i.flushot i.docgp12 i.income i.perceivedhealth i.livingarrangement i.skpcost if sample2, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1          Number of obs = 3,984
Number of PSUs = 3,984      Population size = 874,132.08
                          Design df = 3,983
                          F( 28, 3956) = 7.12
                          Prob > F = 0.0000
```

pubins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	1.020502	.1337542	0.15	0.877	.7892514	1.319508
age						
70	1.007813	.1479692	0.05	0.958	.7557305	1.343981
75	.9350056	.1818694	-0.35	0.730	.6385506	1.369094
80	1.215285	.2295201	1.03	0.302	.8392098	1.759892
visminority						
non-white	.9097496	.3915354	-0.22	0.826	.3912667	2.115295
immigrant						
yes	1.429772	.3244071	1.58	0.115	.9163796	2.230788
marital						
widowed/divorced/separated	.5629832	.1776943	-1.82	0.069	.3032139	1.045302
single	.7272792	.2688287	-0.86	0.389	.3523471	1.501176
education						
secondary school graduation, no post-secondary edu. less than secondary school graduation	1.191762 .6006467	.1811059 .0997851	1.15 -3.07	0.248 0.002	.8847035 .4336771	1.605394 .8319011
bmi						
Underweight	1.193311	.744746	0.28	0.777	.35104	4.05649
Overweight	1.037406	.1504248	0.25	0.800	.7807034	1.378514
Obese	1.199294	.1915969	1.14	0.255	.8767945	1.640413
cancer						
yes	.8603792	.2976632	-0.43	0.664	.4366288	1.695381
chronic						
yes	.8009002	.14371	-1.24	0.216	.5633731	1.138573
mental						
yes	.8664066	.1949862	-0.64	0.524	.557313	1.346928
smokestatus						
former smoker	.8529418	.1189484	-1.14	0.254	.6488997	1.121143
current smoker	.9522805	.2211477	-0.21	0.833	.6039912	1.50141
flushot						
yes	1.066272	.1497126	0.46	0.648	.8096856	1.404169
docgp12						
yes	.861828	.1411001	-0.91	0.364	.6251985	1.188019
income						
Middle 40%	.7168222	.1044779	-2.28	0.022	.5386539	.9539225
Bottom 30%	.1886177	.0340038	-9.25	0.000	.1324593	.2685856
perceivedhealth						
Good	.9148019	.1269975	-0.64	0.521	.6968238	1.200967
Fair	.8146551	.1660934	-1.01	0.315	.5462311	1.214985
Poor	.4541261	.2224883	-1.61	0.107	.1737896	1.186668
livingarrangement						
Living with spouse/partner	.6904715	.2207427	-1.16	0.247	.3689226	1.292279
Parent and child living together or other	.7622329	.2198446	-0.94	0.347	.4330199	1.341737
skpcost						
yes	.4912051	.2367056	-1.48	0.140	.1909654	1.263488
_cons	1.105183	.4562202	0.24	0.809	.4919841	2.482661

Note: _cons estimates baseline odds.

```
. svylogitof
Number of observations = 3984
F-adjusted test statistic = F(9,3975) = 1.168
Prob > F = 0.311
```

Appendix 17 – Characteristics associated with the odds of reporting public drug insurance using CCHS 2015/2016, **Quebec 25-64 – reduced model – exogenous variables only**

```
. svy:logit pubins i.sex i.age i.visminority i.immigrant if sample3, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 8,492
Number of obs = 8,492
Population size = 2,752,359
Design df = 8,491
F( 6, 8486) = 23.26
Prob > F = 0.0000
```

pubins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	.958332	.0715943	-0.57	0.569	.827782	1.109471
age						
35	1.816713	.2202433	4.92	0.000	1.432448	2.304059
45	1.461962	.1669406	3.33	0.001	1.168757	1.828724
55	.6282018	.0644936	-4.53	0.000	.5136876	.7682441
visminority						
non-white	.9862024	.195041	-0.07	0.944	.6692681	1.453222
immigrant						
yes	.6319702	.1111171	-2.61	0.009	.4477252	.8920344
_cons	3.051979	.2916048	11.68	0.000	2.530701	3.680629

Note: **_cons** estimates baseline odds.

```
.
. svylogitgof
Number of observations = 8492
F-adjusted test statistic = F(7,8485) = 0.684
Prob > F = 0.685
```

Appendix 18 – Characteristics associated with the odds of reporting public drug insurance using CCHS 2015/2016, **Quebec 25-64 – reduced model – exogenous variables + CRNA variable**

```
. svy:logit pubins i.sex i.age i.visminority i.immigrant i.skpcost if sample3, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 8,492
Number of obs = 8,492
Population size = 2,752,359
Design df = 8,491
F( 7, 8485) = 25.42
Prob > F = 0.0000
```

pubins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	.9666252	.0726291	-0.45	0.651	.8342428	1.120015
age						
35	1.753066	.2130575	4.62	0.000	1.381445	2.224658
45	1.390917	.1597066	2.87	0.004	1.110584	1.742011
55	.596466	.0617686	-4.99	0.000	.4868831	.7307127
visminority						
non-white	1.007999	.2016605	0.04	0.968	.6809952	1.492024
immigrant						
yes	.6196992	.1104531	-2.68	0.007	.4369623	.8788562
skpcost						
yes	.3999463	.0574765	-6.38	0.000	.3017572	.5300854
_cons	3.315981	.3244716	12.25	0.000	2.737218	4.01712

Note: **_cons** estimates baseline odds.

```
. svylogitgof
Number of observations = 8492
F-adjusted test statistic = F(8,8484) = 1.123
Prob > F = 0.344
```

Appendix 19 – Characteristics associated with the odds of reporting public drug insurance using CCHS 2015/2016, **Quebec 25-64 – full model – exogenous variables + endogenous variables**

```
. svy:logit pubins i.sex i.age i.visminority i.immigrant i.marital i.education i.bmi i.cancer i.chronic i.mental i.smoke
> status i.flushot i.docgp12 i.income i.perceivedhealth i.livingarrangement i.work i.skpcost if sample3, or
(running Logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 8,276
Number of obs = 8,276
Population size = 2,675,064
Design df = 8,275
F( 29, 8247) = 29.08
Prob > F = 0.0000
```

pubins	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	1.181361	.1042386	1.89	0.059	.9937221	1.40443
age						
35	1.54074	.2187929	3.04	0.002	1.166371	2.03527
45	1.097813	.147702	0.69	0.488	.8433134	1.429116
55	.6409248	.0906729	-3.14	0.002	.4857003	.8457575
visminority						
non-white	1.654081	.3545611	2.35	0.019	1.086602	2.517926
immigrant						
yes	.6216066	.110839	-2.67	0.008	.4382432	.8816902
marital						
widowed/divorced/separated	.7077643	.1174882	-2.08	0.037	.5111747	.9799592
single	.4407178	.0735586	-4.91	0.000	.3177378	.611297
education						
secondary school graduation, no post-secondary edu..	.7469615	.0813727	-2.68	0.007	.6033318	.9247838
less than secondary school graduation	.6076751	.0743095	-4.07	0.000	.4781533	.7722818
bmi						
Underweight	1.230375	.4022031	0.63	0.526	.6482513	2.33524
Overweight	1.125256	.1150766	1.15	0.249	.9208501	1.375036
Obese	1.183729	.135025	1.48	0.139	.9465507	1.480338
cancer						
yes	.6774058	.1901903	-1.39	0.165	.3906864	1.174545
chronic						
yes	.9500657	.1005123	-0.48	0.628	.7721249	1.169014
mental						
yes	.9117453	.1028838	-0.82	0.413	.7308152	1.137469
smokestatus						
former smoker	1.037344	.1093112	0.35	0.728	.8437493	1.275358
current smoker	.7725968	.0931651	-2.14	0.032	.6099498	.9786147
flushot						
yes	1.173351	.1036755	1.81	0.070	.9867476	1.395243
docgp12						
yes	1.127427	.1114693	1.21	0.225	.9287894	1.368546
income						
Middle 40%	.482519	.05097	-6.90	0.000	.392271	.59353
Bottom 30%	.1309576	.0164071	-16.23	0.000	.1024405	.1674132
perceivedhealth						
Good	.9793771	.099882	-0.20	0.838	.801913	1.196114
Fair	.8065647	.1147897	-1.51	0.131	.6102098	1.066103
Poor	.6888343	.1617941	-1.59	0.113	.4346647	1.091629
livingarrangement						
Living with spouse/partner	.9137849	.1668407	-0.49	0.621	.6388621	1.307016
Parent and child living together or other	1.178765	.1719359	1.13	0.260	.8856295	1.568927
work						
worked	2.894721	.2977764	10.33	0.000	2.366093	3.541453
skpcost						
yes	.6026601	.103093	-2.96	0.003	.4309649	.8427583
_cons	3.367143	.866814	4.72	0.000	2.032834	5.577262

Note: _cons estimates baseline odds.

```
. svylogitgof
Number of observations = 8276
F-adjusted test statistic = F(9,8267) = 1.161
Prob > F = 0.315
```

Appendix 20 – Characteristics associated with the odds of reporting CRNA to prescribed drugs using CCHS 2015/2016, **Ontario 65+ – reduced model – exogenous variables only**

```
. svy:logit skpcost i.sex i.age i.visminority i.immigrant if sample1, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata   =          1          Number of obs   =       6,942
Number of PSUs    =       6,942        Population size =  1,494,016
Design df         =       6,941        F( 6, 6936)    =       7.65
Prob > F          =       0.0000
```

skpcost	Linearized		t	P> t	[95% Conf. Interval]	
	Odds Ratio	Std. Err.				
sex						
female	2.240902	.6565754	2.75	0.006	1.261772	3.979835
age						
70	.7065653	.2356301	-1.04	0.298	.367484	1.358521
75	.5463623	.2527771	-1.31	0.191	.220597	1.3532
80	.2665356	.1035027	-3.40	0.001	.1244956	.5706325
visminority						
non-white	1.682146	.6710011	1.30	0.192	.7695972	3.676747
immigrant						
yes	1.740099	.5503096	1.75	0.080	.9361225	3.234558
_cons	.0195508	.0056442	-13.63	0.000	.0111016	.0344304

Note: **_cons** estimates baseline odds.

```
.
. svylogitgof
Number of observations =          6942
F-adjusted test statistic = F(8,6934) =          2.645
Prob > F =          0.007
```

Appendix 21 – Characteristics associated with the odds of reporting CRNA to prescribed drugs using CCHS 2015/2016, **Ontario 65+ – reduced model – exogenous variables + drug insurance (public or private) variable**

```
. svy:logit skpcost i.sex i.age i.visminority i.immigrant i.noins if sample1,or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 6,942
Number of obs = 6,942
Population size = 1,494,016
Design df = 6,941
F( 7, 6935) = 6.94
Prob > F = 0.0000
```

skpcost	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	2.24291	.6579324	2.75	0.006	1.262054	3.986078
age						
70	.7079562	.2363065	-1.03	0.301	.3679908	1.361996
75	.5473111	.2534714	-1.30	0.193	.2207781	1.35679
80	.2652598	.1022104	-3.44	0.001	.1246315	.5645665
visminority						
non-white	1.673514	.6676949	1.29	0.197	.7655256	3.658467
immigrant						
yes	1.726671	.5530396	1.71	0.088	.9215707	3.235121
noins						
no	1.139083	.3264575	0.45	0.650	.6494736	1.997789
_cons	.0191635	.0057069	-13.28	0.000	.0106891	.0343565

Note: **_cons** estimates baseline odds.

```
. svylogitgof
Number of observations = 6942
F-adjusted test statistic = F(9,6933) = 1.767
Prob > F = 0.069
```

Appendix 22– Characteristics associated with the odds of reporting CRNA to prescribed drugs using CCHS 2015/2016, **Ontario 65+ – full model – exogenous variables + endogenous variables**

```
. svy:logit skpcost i.sex i.age i.visminority i.immigrant i.marital i.education i.bmi i.cancer i.chronic i.mental i.smok
> estatus i.flushot i.docgp12 i.income i.perceivedhealth i.livingarrangement i.noins if sample1, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1          Number of obs = 6,697
Number of PSUs = 6,697      Population size = 1,443,266
Design df = 6,696
F( 28, 6669) = 4.73
Prob > F = 0.0000
```

skpcost	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	1.982905	.5616756	2.42	0.016	1.138014	3.455063
age						
70	.664772	.2371345	-1.14	0.252	.3303551	1.337717
75	.4991061	.1969973	-1.76	0.078	.2302304	1.08199
80	.2590451	.1133366	-3.09	0.002	.1098735	.6107418
visminority						
non-white	1.301026	.5003874	0.68	0.494	.6121335	2.765194
immigrant						
yes	1.641646	.5133738	1.59	0.113	.8892921	3.030501
marital						
widowed/divorced/separated	1.169371	.6320124	0.29	0.772	.4053387	3.373543
single	2.341779	1.613992	1.23	0.217	.6064261	9.043028
education						
secondary school graduation, no post-secondary edu..	1.2998	.4394925	0.78	0.438	.6699059	2.521968
less than secondary school graduation	.7687291	.3473807	-0.58	0.561	.3169966	1.864198
bmi						
Underweight	.976894	.7673783	-0.03	0.976	.2094514	4.556292
Overweight	.7556424	.2729951	-0.78	0.438	.372171	1.534229
Obese	1.14205	.5154177	0.29	0.769	.4714772	2.766366
cancer						
yes	.3917882	.1968817	-1.86	0.062	.1462944	1.049241
chronic						
yes	1.379547	.8770999	0.51	0.613	.3966929	4.797537
mental						
yes	1.704702	.7208409	1.26	0.207	.7441302	3.905242
smokestatus						
former smoker	.7090944	.2122636	-1.15	0.251	.394326	1.275125
current smoker	1.322098	.6699663	0.55	0.582	.4896029	3.570126
flushot						
yes	.7602886	.2986068	-0.70	0.485	.3520503	1.641921
docgp12						
yes	1.809646	.5905142	1.82	0.069	.9545171	3.430864
income						
Middle 40%	2.060101	.7438685	2.00	0.045	1.015028	4.18118
Bottom 30%	2.927868	1.003967	3.13	0.002	1.494932	5.734315
perceivedhealth						
Good	1.904074	.7092534	1.73	0.084	.9174031	3.951913
Fair	2.179867	.8990884	1.89	0.059	.971153	4.892969
Poor	2.094848	1.216423	1.27	0.203	.6711091	6.539012
livingarrangement						
Living with spouse/partner	1.244577	.7726937	0.35	0.725	.368518	4.203243
Parent and child living together or other	1.389752	.5694389	0.80	0.422	.622446	3.102936
noins						
no	1.042637	.2986813	0.15	0.884	.5946312	1.828178
_cons	.0033741	.003882	-4.95	0.000	.0003537	.0321861

Note: **_cons** estimates baseline odds.

```
. svylogitgof
Number of observations = 6697
F-adjusted test statistic = F(9,6688) = 6.158
Prob > F = 0.000
```


Appendix 23 – Characteristics associated with the odds of reporting CRNA to prescribed drugs using CCHS 2015/2016, **Quebec 65+ – reduced model – exogenous variables only**

```
. svy:logit skpcost i.sex i.age i.visminority i.immigrant if sample2, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 5,057
Number of obs = 5,057
Population size = 1,082,690
Design df = 5,056
F( 6, 5051) = 3.70
Prob > F = 0.0011
```

skpcost	Linearized		t	P> t	[95% Conf. Interval]	
	Odds Ratio	Std. Err.				
sex						
female	2.89153	.7441812	4.13	0.000	1.745843	4.789062
age						
70	.7420202	.2048593	-1.08	0.280	.431874	1.274895
75	.701911	.2253799	-1.10	0.270	.3740247	1.317237
80	.8588783	.3345436	-0.39	0.696	.4002201	1.843166
visminority						
non-white	3.670683	2.276239	2.10	0.036	1.088376	12.37983
immigrant						
yes	1.144049	.4406479	0.35	0.727	.5376666	2.434313
_cons	.0135161	.0036969	-15.74	0.000	.0079063	.0231061

Note: **_cons** estimates baseline odds.

```
.
. svylogitgof
Number of observations = 5057
F-adjusted test statistic = F(7,5050) = 0.280
Prob > F = 0.962
```

Appendix 24 – Characteristics associated with the odds of reporting CRNA to prescribed drugs using CCHS 2015/2016, **Quebec 65+ – reduced model – exogenous variables + drug insurance (public or private) variable**

. svy:logit skpcost i.sex i.age i.visminority i.immigrant i.noins if sample2, or
(running logit on estimation sample)

Survey: Logistic regression

Number of strata	=	1	Number of obs	=	5,057
Number of PSUs	=	5,057	Population size	=	1,082,690
			Design df	=	5,056
			F(7, 5050)	=	3.39
			Prob > F	=	0.0013

skpcost	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex						
female	2.864199	.7388816	4.08	0.000	1.727289	4.74943
age						
70	.7342634	.2044979	-1.11	0.267	.4253329	1.267578
75	.7011042	.2257561	-1.10	0.270	.3729318	1.318062
80	.8383934	.3367022	-0.44	0.661	.3815223	1.842365
visminority						
non-white	3.65599	2.311133	2.05	0.040	1.05874	12.62469
immigrant						
yes	1.138634	.4441474	0.33	0.739	.5300003	2.446201
noin						
no	1.388552	.381619	1.19	0.232	.8101559	2.379885
_cons	.0128375	.0034052	-16.42	0.000	.007632	.0215933

Note: _cons estimates baseline odds.

```
. svylogitgof
Number of observations = 5057
F-adjusted test statistic = F(9,5048) = 2.806e+31
Prob > F = 0.000
```

Appendix 25– Characteristics associated with the odds of reporting CRNA to prescribed drugs using CCHS 2015/2016, **Quebec 25-64 – full model – exogenous variables + endogenous variables**

```
. svy:logit skpcost i.sex i.age i.visminority i.immigrant i.marital i.education i.bmi i.cancer i.chronic i.mental i.smok
> estatus i.flushot i.docgp12 i.income i.perceivedhealth i.livingarrangement i.noins if sample2, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1          Number of obs = 4,993
Number of PSUs = 4,993      Population size = 1,069,390
Design df = 4,992
F( 28, 4965) = 3.41
Prob > F = 0.0000
```

	skpcost	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]
sex						
female		2.426763	.6577701	3.27	0.001	1.426444 4.128574
age						
70		.7682258	.2013984	-1.01	0.315	.4594978 1.284382
75		.6963235	.2291294	-1.10	0.271	.3653004 1.327309
80		.7348133	.2272454	-1.00	0.319	.4007505 1.347349
visminority						
non-white		3.657158	2.15152	2.20	0.028	1.154136 11.58858
immigrant						
yes		1.186054	.461961	0.44	0.661	.5526954 2.545205
marital						
widowed/divorced/separated		4.192942	3.226947	1.86	0.063	.9273917 18.95721
single		2.756839	2.848973	0.98	0.326	.3635375 20.90612
education						
secondary school graduation, no post-secondary edu..		1.684123	.5230563	1.68	0.093	.9161 3.096028
less than secondary school graduation		1.313388	.360121	0.99	0.320	.767262 2.24824
bmi						
Underweight		.2276209	.2409367	-1.40	0.162	.0285757 1.813123
Overweight		.8312151	.2277834	-0.67	0.500	.4857317 1.422428
Obese		.912111	.237763	-0.35	0.724	.5471525 1.520502
cancer						
yes		1.64069	.737048	1.10	0.270	.6800616 3.958266
chronic						
yes		1.236937	.5927413	0.44	0.657	.4834504 3.164777
mental						
yes		1.248037	.3741782	0.74	0.460	.693368 2.24642
smokestatus						
former smoker		.927858	.2257801	-0.31	0.758	.5758434 1.49506
current smoker		1.596948	.5088422	1.47	0.142	.8550726 2.982486
flushot						
yes		.8610324	.1941663	-0.66	0.507	.5533801 1.339724
docgp12						
yes		.7439027	.1956402	-1.12	0.261	.4442249 1.245746
income						
Middle 40%		1.65772	.6961091	1.20	0.229	.7277598 3.776018
Bottom 30%		2.657344	1.097917	2.37	0.018	1.182163 5.973354
perceivedhealth						
Good		.8396606	.2081977	-0.70	0.481	.5164083 1.365257
Fair		.7067716	.241523	-1.02	0.310	.3616846 1.38111
Poor		2.730938	1.245857	2.20	0.028	1.116602 6.679213
livingarrangement						
Living with spouse/partner		3.124369	2.533775	1.40	0.160	.6372272 15.31899
Parent and child living together or other		1.791997	.955281	1.09	0.274	.6301838 5.095741
noins						
no		1.106781	.3142509	0.36	0.721	.6343358 1.931096
_cons		.0021357	.0021019	-6.25	0.000	.0003102 .0147058

Note: _cons estimates baseline odds.

```
. svylogitgof
Number of observations = 4993
F-adjusted test statistic = F(9,4984) = 0.528
Prob > F = 0.855
```

Appendix 26 – Characteristics associated with the odds of reporting CRNA to prescribed drugs using CCHS 2015/2016, **Quebec 25-64 – reduced model – exogenous variables only**

```
. svy:logit skpcost i.sex i.age i.visminority i.immigrant if sample3, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 9,336
Number of obs = 9,336
Population size = 3,025,334
Design df = 9,335
F( 6, 9330) = 6.03
Prob > F = 0.0000
```

skpcost	Odds Ratio	Linearized Std. Err.	t	P> t	[95% Conf. Interval]	
sex female	1.242004	.1646665	1.63	0.102	.957756	1.610612
age 35	.5570837	.1075604	-3.03	0.002	.3815497	.8133731
45	.4362637	.0848629	-4.26	0.000	.2979547	.6387752
55	.4272091	.0776118	-4.68	0.000	.2992134	.6099579
visminority non-white	1.497771	.4522901	1.34	0.181	.8286482	2.707203
immigrant yes	.8536468	.2534232	-0.53	0.594	.4770328	1.527595
_cons	.082777	.0126471	-16.31	0.000	.0613538	.1116804

Note: _cons estimates baseline odds.

```
. svylogitgof
Number of observations = 9336
F-adjusted test statistic = F(8,9328) = 0.278
Prob > F = 0.973
```

Appendix 27 – Characteristics associated with the odds of reporting CRNA to prescribed drugs using CCHS 2015/2016, **Quebec 25-64 – reduced model – exogenous variables + drug insurance (public or private) variable**

```
. svy:logit skpcost i.sex i.age i.visminority i.immigrant i.noins if sample3,or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 9,336
Number of obs = 9,336
Population size = 3,025,334
Design df = 9,335
F( 7, 9329) = 7.43
Prob > F = 0.0000
```

skpcost	Linearized				
	Odds Ratio	Std. Err.	t	P> t	[95% Conf. Interval]
sex					
female	1.244829	.1643324	1.66	0.097	.9610061 1.612475
age					
35	.5741353	.108968	-2.92	0.003	.3957669 .8328925
45	.4372332	.0839426	-4.31	0.000	.300105 .6370198
55	.416898	.0759483	-4.80	0.000	.2917039 .5958232
visminority					
non-white	1.461742	.4329495	1.28	0.200	.8179429 2.612273
immigrant					
yes	.7404945	.2109243	-1.05	0.292	.4236742 1.29423
noins					
no	2.852335	.640957	4.66	0.000	1.836114 4.430997
_cons	.0737224	.0112065	-17.15	0.000	.0547258 .0993132

Note: **_cons** estimates baseline odds.

```
.
. svylogitgof
Number of observations = 9336
F-adjusted test statistic = F(9,9327) = 0.189
Prob > F = 0.995
```

Appendix 28– Characteristics associated with the odds of reporting CRNA to prescribed drugs using CCHS 2015/2016, **Quebec 25-64 – full model – exogenous variables + endogenous variables**

```
. svy:logit skpcost i.sex i.age i.visminority i.immigrant i.marital i.education i.bmi i.cancer i.chronic i.mental i.smok
> estatus i.flushot i.docgp12 i.income i.perceivedhealth i.livingarrangement i.work i.noins if sample3, or
(running logit on estimation sample)
```

Survey: Logistic regression

```
Number of strata = 1
Number of PSUs = 9,092
Number of obs = 9,092
Population size = 2,938,002
Design df = 9,091
F( 29, 9063) = 7.35
Prob > F = 0.0000
```

skpcost	Linearized				
	Odds Ratio	Std. Err.	t	P> t	[95% Conf. Interval]
sex					
female	1.11733	.1552372	0.80	0.425	.8509485 1.4671
age					
35	.5768325	.1108941	-2.86	0.004	.3957194 .8408375
45	.4343479	.0885412	-4.09	0.000	.2912717 .6477048
55	.3538949	.0758949	-4.84	0.000	.2324367 .5388202
visminority					
non-white	1.685819	.3897994	2.26	0.024	1.07144 2.652492
immigrant					
yes	.6576415	.1473291	-1.87	0.061	.4239085 1.020249
marital					
widowed/divorced/separated	1.291101	.341617	0.97	0.334	.7686133 2.168766
single	1.261466	.2996696	0.98	0.328	.7918451 2.009607
education					
secondary school graduation, no post-secondary edu..	1.075413	.1820785	0.43	0.668	.7716832 1.49869
less than secondary school graduation	.8223427	.1674261	-0.96	0.337	.5517318 1.225681
bmi					
Underweight	.6949429	.4224625	-0.60	0.549	.2110701 2.288082
Overweight	.8884701	.1429312	-0.74	0.462	.64817 1.217858
Obese	.9646378	.1525687	-0.23	0.820	.7074878 1.315254
cancer					
yes	1.070031	.4679099	0.15	0.877	.4540753 2.521533
chronic					
yes	1.660803	.2948676	2.86	0.004	1.172657 2.352149
mental					
yes	1.569576	.3042968	2.33	0.020	1.073338 2.295242
smokestatus					
former smoker	.9070025	.1623067	-0.55	0.585	.638656 1.288101
current smoker	1.370229	.2492752	1.73	0.083	.9592237 1.95734
flushot					
yes	.8274784	.1253949	-1.25	0.211	.6148223 1.113689
docgp12					
yes	1.228519	.2212543	1.14	0.253	.8631008 1.748648
income					
Middle 40%	1.892474	.3597115	3.36	0.001	1.303816 2.746903
Bottom 30%	2.463816	.537401	4.13	0.000	1.606652 3.778286
perceivedhealth					
Good	1.140732	.1838223	0.82	0.414	.8317621 1.564473
Fair	1.614365	.3733536	2.07	0.038	1.025932 2.5403
Poor	2.386475	.742162	2.80	0.005	1.297207 4.390404
livingarrangement					
Living with spouse/partner	1.300532	.3581837	0.95	0.340	.7579798 2.231436
Parent and child living together or other	.8163861	.174478	-0.95	0.343	.5369732 1.241191
work					
worked	1.063697	.1761736	0.37	0.709	.7688113 1.471689
noins					
no	2.052786	.4678099	3.16	0.002	1.313219 3.208854
_cons	.0234743	.0087036	-10.12	0.000	.0113488 .0485551

Note: _cons estimates baseline odds.

```
. svylogitgof
Number of observations = 9092
F-adjusted test statistic = F(9,9083) = 2.821
Prob > F = 0.003
```