Validity of self-reported prescription drug insurance coverage

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Abstract

Objectives

This article assesses the validity of prescription drug insurance coverage as self-reported in the 1996/97 National Population Health Survey (NPHS).

Data source

The data are from the cross-sectional household component of Statistics Canada's 1996/97 NPHS.

Analytical techniques

Most seniors and all social assistance recipients are entitled to prescription drug benefits from their provincial governments. For NPHS respondents eligible for such benefits, the percentage reporting coverage in 1996/97 was calculated. Logit regression was used to assess the determinants of self-reported coverage.

Main results

Only 51% of seniors and 46% of social assistance recipients who were eligible for provincial benefits reported drug insurance coverage in 1996/97. The probability of reporting coverage was generally higher in provinces with drug programs that did not impose deductibles.

Key words

survey validity, self-report, seniors, social assistance recipients

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The question of public subsidies for prescription drugs is being debated in both Canada[1] and the United States. Canada does have a national health program, but it covers only prescription drugs received in hospital. Provincial governments, however, provide drug benefits to most seniors, low-income individuals and other groups with high drug costs relative to income.[2] The recent National Forum on Health called for the extension of drug benefits to all residents, regardless of age or income.[3]

The increased policy interest in this area has created a need for data on the number and characteristics of those with different levels of prescription drug coverage. Statistics Canada's National Population Health Survey (NPHS) is a potentially useful source, because it represents the population of all provinces and contains recent information on prescription drug insurance, the use of health care services, health status and socio-economic characteristics (see *Data source*). Evidence from the United States, however, casts doubt on the validity of self-reported health insurance.[4-6]

To assess the quality of prescription drug insurance data from the 1996/97 NPHS, this article presents rates of self-reported coverage for those seniors and social assistance recipients who were eligible for premium-free drug benefits under provincial government programs (see *Analytical techniques, Definitions* and *Limitations*). If respondents were well informed, virtually all of them should have reported having some type of insurance, and the percentage should not differ substantially by province.

For several reasons, however, NPHS respondents who had provincial drug coverage might fail to report it. The NPHS asks about prescription medication "insurance," regardless of source, and some people might not realize that provincial drug coverage is a form of insurance. Respondents' awareness of coverage likely varies with their use of prescription drugs and receipt of benefits; those not using any medications might have less knowledge of the provincial program. And if provincial plans have high deductibles, individuals who purchased few drugs may not consider themselves to be covered. Therefore, in this analysis, factors associated with reporting coverage, such as socio-economic characteristics, the presence of chronic conditions, the number of medications taken and proxy reporting, are explored.

Provincial drug insurance programs

While most seniors and all social assistance recipients receive some coverage from their provincial prescription drug benefit programs, the level of coverage and cost-sharing requirements vary by province.

Data source

This article is based on data from Statistics Canada's National Population Health Survey (NPHS). The NPHS, which began in 1994/95, collects information about the health of the Canadian population every two years. It covers household and institutional residents in all provinces and territories, except persons on Indian reserves, on Canadian Forces bases, and in some remote areas. The NPHS has both a longitudinal and cross-sectional component.

This analysis of prescription drug insurance coverage among seniors and social assistance recipients uses cross-sectional NPHS data from cycle 2, conducted in 1996/97. The data pertain to the household population in the 10 provinces.

The 1996/97 cross-sectional sample is made up of longitudinal respondents and respondents who were selected as part of supplemental samples, or buy-ins, in three provinces. The supplemental respondents were chosen with random digit dialing (RDD) and were included for cross-sectional purposes only.

Individual data are organized into two files: General and Health. Socio-demographic and some health data were obtained for each member of all participating households. This information is found in the General file. Additional in-depth health information was collected for one randomly selected household member. The in-depth health information, as well as the information on the General file pertaining to that individual, is found in the Health file.

In households belonging to the cross-sectional buy-in component, one knowledgeable household member provided the socio-demographic and health information about everyone in the household for the General file. As well, one household member, not necessarily the same person, was randomly selected to provide in-depth health information about himself or herself for the Health file.

Among individuals belonging to the longitudinal component, the person providing in-depth health information about himself or herself for the Health file was the randomly selected person for the household in cycle 1 (1994/95) and was usually the person who provided information on all household members for the General file in cycle 2 (1996/97).

The 1996/97 cross-sectional response rates for the Health file were 93.1% for the longitudinal component and 75.8% for the RDD component, yielding an overall rate of 79.0%. Information in the Health file is available for 81,804 randomly selected respondents.

A more detailed description of the NPHS design, sample and interview procedures is available in published reports.[7,8]

The sample sizes for this analysis are 13,363 respondents who were aged 65 or older, and 2,033 respondents aged 18 to 64 who were social assistance recipients.

In 1996/97, all provinces required seniors to pay a portion of their drug costs (Appendix Table A). Except in Ontario, New Brunswick and Prince Edward Island, cost sharing was a percentage of the drug ingredient cost and/or dispensing fees. Newfoundland, Prince Edward Island, New Brunswick (high income), Ontario and Alberta did not stipulate a maximum beneficiary contribution, although with the exception of Newfoundland, each of these provinces limited beneficiary contributions per prescription.

Drug coverage for social assistance recipients is the most comprehensive of all beneficiary-specific provincial drug programs (Appendix Table B). In 1996/97, Newfoundland, Prince Edward Island, Manitoba and British Columbia required no cost sharing. Co-payments in other provinces ranged from $2 in Ontario, Saskatchewan and Alberta to $4 in New Brunswick. Québec imposed monthly deductibles and co-insurance rates subject to monthly out-of-pocket payment maximums.

Half report coverage

Just 51% of seniors who were eligible for premium-free provincial drug benefits reported to the 1996/97 NPHS that they had insurance to cover all or part of the cost of their prescription medications (Table 1). The figure was higher (73%) for seniors who were either ineligible for coverage (high-income seniors in Newfoundland), or who were required to pay premiums (Nova Scotian and high-income New Brunswick seniors). There were no systematic differences in rates of reported coverage among seniors who resided in provinces that required enrolment in the drug plan (Alberta, Manitoba, Nova Scotia and New Brunswick) relative to those who did not.

The percentage of seniors who were eligible for provincial benefits and who reported that they had prescription drug insurance was highest in Alberta (74%), British Columbia (69%) and New Brunswick (low income) (63%), and lowest in Québec (24%), Saskatchewan (30%) and Manitoba (34%).

Although social assistance recipients were eligible for drug benefits in each province, they also tended to under-report. Overall, in 1996/97, 46% reported having some form of insurance. Percentages ranged from a low of 29% in Québec to a high of 63% in Nova Scotia (Table 2).

Of course, the likelihood that people who are entitled to provincial drug benefits will report coverage depends on their awareness of the programs and provisions of the plans. This

Table1
Percentage of seniors reporting drug insurance coverage, 1996/97 National Population Health Survey, by province, household population

	Reporting coverage	Total seniors
	%	'000
Total (premium-free)	**51**	**3,262.5**
Newfoundland - low income	51	53.0
Prince Edward Island	55	16.9
New Brunswick - low income	63	86.1
Québec	24	832.6
Ontario	60	1,282.0
Manitoba	34	142.6
Saskatchewan	30	137.5
Alberta	74	252.9
British Columbia	69	458.9
Total (premium required or ineligible for provincial coverage)	**73**	**122.0**
Newfoundland - high income	81	3.8
Nova Scotia	73	113.5
New Brunswick - high income	66	4.7

Data source: *1996/97 National Population Health Survey, cross-sectional sample, Health file*

Table 2
Percentage of social assistance recipients aged 18 to 64 reporting drug insurance coverage, 1996/97 National Population Health Survey, by province, household population

	Reporting coverage	Total social assistance recipients
	%	'000
Total	**46**	**741.5**
Newfoundland	37	29.6
Prince Edward Island	33	1.8
Nova Scotia	63	33.0
New Brunswick	48	27.4
Québec	29	278.7
Ontario	59	222.0
Manitoba	55	21.5
Saskatchewan	54	23.2
Alberta	57	23.9
British Columbia	57	80.4

Data source: *1996/97 National Population Health Survey, cross-sectional sample, Health file*

Analytical techniques

The National Population Health Survey (NPHS) contains the question: "Do you have insurance that covers all or part of the cost of your prescription medications? (Include any private, government or employer-paid plans)." During the survey period of the 1996/97 NPHS (June 1996 to August 1997), all provinces provided drug coverage to social assistance recipients, and most did to seniors.[9]

To assess the validity of self-reported drug insurance status, all seniors (65 or older) and social assistance recipients (those who reported "provincial or municipal social assistance or welfare" as their primary source of household income over the previous 12 months and were 18 to 64 years of age) were selected. Each subject's provincial drug insurance program was identified, based on his or her province of residence. For each combination of provincial drug plan and beneficiary group (senior, social assistance), the proportion of subjects reporting drug insurance coverage was tabulated. Estimates were weighted to represent the populations at the date of the survey.

All the provincial drug plans automatically provide coverage to social assistance recipients without requiring special enrolment or registration. However, for seniors in Alberta, Manitoba, Nova Scotia and New Brunswick, the drug plans mail an application package to individuals before their 65th birthday, and eligibility for benefits is contingent on completion of these applications.

During the 1996/97 NPHS survey period, not all seniors were eligible for provincial coverage, and some who were eligible may not have enrolled because premiums were required, or because registration was required. Although these individuals may not have received public coverage, they were included in the analysis for comparison purposes. Newfoundland seniors who did not receive the Guaranteed Income Supplement (GIS) were part of this group, as they were ineligible for provincial coverage; those who were eligible were identified by the report of Old Age Security and GIS as their main source of household income over the previous 12 months. New Brunswick seniors who did not receive the GIS and whose household income exceeded marital status-specific income thresholds had the option of purchasing government-subsidized coverage through Blue Cross. Because this was voluntary and required the payment of premiums, not all seniors would have been covered. It was difficult to identify this group, because the NPHS income intervals do not coincide with the provincial income thresholds. Conservatively, for this analysis, seniors not receiving the GIS were categorized as ineligible for drug benefits, although some would have been. Premiums were also required of Nova Scotia seniors, although those receiving GIS benefits would have been reimbursed. Starting January 1, 1997, Québec required seniors to pay premiums for provincial drug coverage. Those who opted out were required to obtain insurance with minimum coverage standards elsewhere.

For several reasons, NPHS respondents who had provincial drug coverage might fail to report it. The NPHS asks about prescription medication "insurance," regardless of source, and some subjects might not realize that provincial drug coverage is, in fact, a form of insurance. Some respondents may not recall that they have coverage. Recall likely varies with an individual's use of prescription drugs and receipt of benefits; those not using prescription drugs may have less knowledge of the program. And if provincial coverage has high deductibles, individuals who have purchased relatively few drugs may be unaware of the availability of coverage.

To assess the determinants of reporting drug insurance coverage, models of the probability that it was reported were estimated as a function of the respondent's characteristics. Separate models were estimated for seniors and social assistance recipients. The models included covariates that are likely associated with awareness of provincial drug programs because of a medical need for prescription drugs: number of chronic conditions and use of prescription drugs in the two days before the interview (see *Definitions).* Provincial drug plan indicator variables were included to control for the comprehensiveness of provincial benefits, which varies widely.[9] Indicators for each of the previously identified groups of seniors that might not have received provincial coverage were also added.

Subjects with supplementary private insurance might respond positively to the drug insurance question. Categories of gross annual household income, logarithm of household size, sex and marital status were included in the model, as these factors, particularly income, are likely associated with private drug insurance.

Because recall ability could affect response accuracy, the model included age[10] and highest level of education. Given that proxy reporters may be more or less likely to report with error,[11] an indicator of proxy response was also included.

Probability models were estimated using logit regression; the standard errors of the parameter estimators were modified to account for the cluster sampling frame of the NPHS,[6] using the robust covariance matrix estimators programmed in Stata version 6.0.[12] Unlike conventional estimators, which assume that all observations are independent within clusters, the robust estimators take into account the loss of effective sample size owing to the correlation between latent differences in the propensity to report drug coverage among survey respondents residing within the same clusters. The greater the degree of correlation, the less information gained per cluster and the lower the precision of the estimates. Upon preliminary testing, however, the robust and conventional standard error estimates were very close. This may reflect the distribution of respondents across clusters; the average number of observations per cluster in the seniors and social assistance recipients samples was 1.6 and 1.2, respectively. Conventional logit estimators were therefore used (see Appendix Tables C and D for estimates).

After estimation, the way in which the probability of self-reported coverage varies by individual characteristics was predicted. To find the coverage probability for men, for example, the value for the "male" covariate was set equal to 1, and the remaining covariates were set equal to their sample means (Tables 3 and 4). The standard errors for these predictions were estimated using the empirical distribution formed by taking repeated independent draws from the asymptotic distribution of the logit parameter estimates.[13]

awareness, in turn, may depend on individuals' health status and the consequent need for medication, and on other characteristics such as age, sex, marital status, living arrangements, education and income. Even the way in which survey responses are provided—self-reported or by proxy—may influence whether drug insurance coverage is reported.

Determinants of self-reported coverage

When the other selected factors were taken into account, for seniors, greater use of prescription medications was associated with a higher likelihood of reporting drug insurance coverage (Table 3). And as the number of chronic conditions with which seniors had been diagnosed increased, so did their probability of reporting that they had insurance (Appendix Table C). Senior men were marginally but significantly more likely than senior women to report coverage. Seniors living with a spouse had a higher average probability of reporting drug insurance than did those who had never been married.

The literature suggests that proxy reports on behalf of seniors are more accurate than self-reports,[5] and proxy reporting has been found to

Definitions

Prescription drugs are those substances sold under the Food and Drug Act that require a prescription. Respondents to the 1996/97 National Population Health Survey (NPHS) were asked: "Do you have insurance that covers all or part of the cost of your prescription medications? (including private, government or employer-paid plans)."

Premiums are payments made to receive insurance coverage regardless of medication use.

Deductibles refer to drug expenditures paid by the beneficiary before the insurer assumes any costs. The insurer and beneficiary often share drug costs in excess of deductibles. The beneficiary's share can be a fixed amount per prescription (co-payment) or a fixed percentage of the drug cost (co-insurance).

Medication use in past two days is based on responses to questions about prescription drug use in the two days before the NPHS interview: " . . . yesterday and the day before yesterday . . . how many different medications did you take?" and "What is the exact name of the medications that you took?" Prescription-only drugs and non-prescription drugs that could be prescribed (such as insulin) were classified as prescription drugs; over-the-counter drugs and indeterminate drugs (the drug descriptor included a combination of over-the-counter and prescription drugs) were excluded. For this analysis, three categories of prescription medication use in the past two days were established: none, 1 or 2, and 3 or more.

The number of *chronic conditions* that respondents reported (up to 22 were identified in the 1996/97 NPHS) was used as an indication of potential need for prescription drugs. Respondents were asked if they had "any long-term conditions that have lasted or are expected to last six months or more and that have been diagnosed by a health professional." For this analysis, the number of chronic conditions was treated as a continuous variable.

Age (65 or older for seniors and 18 to 64 for social assistance recipients) was also treated as a continuous variable.

Social assistance recipients were identified by a question ascertaining the main source of household income over the past 12 months. Respondents aged 18 to 64 who reported "provincial or municipal social assistance or welfare" as their main source were classified as social assistance recipients.

Respondents were asked their current marital status. For this analysis, three categories were identified: married/common-law, widowed/separated/divorced, and never married.

Household size was used to determine living arrangements and was treated as a continuous variable.

Education was grouped into four categories: less than high school graduation, high school graduation, some postsecondary, and postsecondary graduation.

Household income was based on total annual income. The following income groups were identified for seniors: less than $10,000; $10,000 to $19,999; $20,000 to $29,999; $30,000 to $39,999; $40,000 to $59,999, and $60,000 or more. For social assistance recipients, the groups were: less than $10,000; $10,000 to $19,999; $20,000 to $29,999, and $30,000 or more.

Proxy responses are those obtained for a particular household member from another knowledgeable member of the household, rather than being *self-reported*.

improve response accuracy in a population of cognitively impaired and/or frail elderly.[14] Results from the 1996/97 NPHS are consistent with these findings. Seniors whose responses were proxy-reported had a higher probability of being identified as having coverage than did those who responded on their own behalf.

The probability of seniors reporting drug insurance increased with household income up to the $30,000-to-$39,999 range; beyond that point, the probability of reporting coverage did not continue to increase with income. Seniors with high school or postsecondary graduation were more likely than

Table 3
Mean probabilities of seniors reporting drug insurance coverage, by selected characteristics, 1996/97 National Population Health Survey, household population, Canada excluding territories

	Mean probability	Standard error	95% confidence interval
Sex			
Men	0.593*	0.009	0.576, 0.611
Women†	0.539	0.007	0.524, 0.554
Marital status			
Married/Common-law	0.600*	0.010	0.579, 0.620
Widowed/Separated/Divorced	0.532	0.010	0.512, 0.552
Never married†	0.489	0.023	0.445, 0.533
Education			
Less than high school graduation†	0.545	0.008	0.529, 0.560
High school graduation	0.583*	0.014	0.555, 0.610
Some postsecondary	0.539	0.015	0.510, 0.568
Postsecondary graduation	0.605*	0.013	0.580, 0.629
Household income			
Less than $10,000†	0.465	0.024	0.418, 0.513
$10,000-19,999	0.518*	0.009	0.499, 0.536
$20,000-29,999	0.576*	0.011	0.554, 0.597
$30,000-39,999	0.648*	0.014	0.620, 0.675
$40,000-59,999	0.607*	0.017	0.574, 0.640
$60,000+	0.607*	0.025	0.557, 0.657
Prescription drugs in past 2 days			
0†	0.511	0.008	0.494, 0.527
1-2	0.571*	0.009	0.553, 0.589
3+	0.665*	0.013	0.639, 0.689
Reporting status			
Proxy	0.674*	0.025	0.622, 0.722
Self†	0.556	0.006	0.545, 0.567
Province			
Newfoundland			
Low income	0.526*	0.047	0.434, 0.613
High income	0.597	0.171	0.249, 0.882
Prince Edward Island	0.555	0.040	0.476, 0.631
Nova Scotia	0.671	0.038	0.589, 0.743
New Brunswick			
Low income	0.648	0.038	0.571, 0.718
High income	0.616	0.141	0.312, 0.857
Québec	0.239*	0.024	0.196, 0.287
Ontario†	0.623	0.008	0.608, 0.637
Manitoba	0.338*	0.011	0.317, 0.360
Saskatchewan	0.270*	0.032	0.211, 0.335
Alberta	0.743*	0.012	0.719, 0.766
British Columbia	0.700*	0.030	0.639, 0.756

Data source: *1996/97 National Population Health Survey, cross-sectional sample, Health file*
Note: *Model also includes age, logarithm of household size and number of chronic conditions (see Appendix Table C).*
† Reference group
** Significantly different from reference group ($p < 0.05$)*

Table 4
Mean probabilities of social assistance recipients aged 18 to 64 reporting drug insurance coverage, by selected characteristics, 1996/97 National Population Health Survey, household population, Canada excluding territories

	Mean probability	Standard error	95% confidence interval
Sex			
Men	0.521*	0.025	0.473, 0.570
Women†	0.645	0.015	0.615, 0.673
Marital status			
Married/Common-law	0.551	0.029	0.495, 0.608
Widowed/Separated/Divorced	0.652	0.022	0.608, 0.694
Never married†	0.606	0.020	0.564, 0.645
Education			
Less than high school graduation†	0.602	0.019	0.565, 0.639
High school graduation	0.609	0.031	0.546, 0.668
Some postsecondary	0.618	0.026	0.567, 0.668
Postsecondary graduation	0.615	0.029	0.557, 0.670
Household income			
Less than $10,000†	0.595	0.023	0.550, 0.639
$10,000-19,999	0.619	0.017	0.586, 0.651
$20,000-29,999	0.535	0.053	0.429, 0.635
$30,000+	0.811*	0.080	0.625, 0.930
Prescription drugs in past 2 days			
0†	0.562	0.017	0.530, 0.594
1-2	0.636*	0.023	0.590, 0.681
3+	0.768*	0.032	0.700, 0.827
Reporting status			
Proxy	0.734	0.082	0.554, 0.868
Self†	0.607	0.013	0.583, 0.632
Province			
Newfoundland	0.419*	0.065	0.294, 0.549
Prince Edward Island	0.310*	0.095	0.150, 0.508
Nova Scotia	0.560	0.076	0.407, 0.702
New Brunswick	0.511*	0.074	0.366, 0.654
Québec	0.326*	0.042	0.248, 0.412
Ontario†	0.682	0.016	0.650, 0.712
Manitoba	0.580*	0.034	0.514, 0.646
Saskatchewan	0.620	0.094	0.421, 0.789
Alberta	0.593	0.044	0.505, 0.678
British Columbia	0.619	0.071	0.474, 0.751

Data source: *1996/97 National Population Health Survey, cross-sectional sample, Health file*
Note: *Model also includes age, logarithm of household size and number of chronic conditions (see Appendix Table D).*
† Reference group
** Significantly different from reference group($p < 0.05$)*

those with less formal education to report having drug insurance.

For social assistance recipients, previous prescription medication use, household income of $30,000 or more, and a higher number of chronic conditions increased the likelihood of reporting drug insurance coverage (Table 4, Appendix Table D). Differences by educational attainment and marital status were not significant. As well, the probability that social assistance recipients would report coverage did not differ significantly by self- or proxy-reports. And unlike the situation among seniors, female social assistance recipients were more likely than their male counterparts to report coverage.

Provincial differences remain

Even when the selected factors were taken into account, substantial provincial differences persisted in the likelihood that seniors and social assistance recipients would report having drug insurance. Compared with Ontario, probabilities for seniors tended to be high in Alberta and British Columbia, and low in Québec, Saskatchewan, Manitoba, and Newfoundland (low-income). For social assistance recipients, rates of reporting prescription drug insurance were low in Prince Edward Island, Québec, Newfoundland, New Brunswick and Manitoba, compared with Ontario (Table 4).

In general, reported rates of coverage among seniors were higher in provinces that did not impose deductibles (British Columbia, Alberta, low-income in New Brunswick, Prince Edward Island and Newfoundland), compared with provinces that did impose deductibles (Manitoba, Saskatchewan, Québec). Those who face deductibles pay all drug expenses up to a certain amount and so may be less likely to realize that they are covered for expenses beyond that threshold.

For example, in 1996/97, the drug programs for seniors in Saskatchewan and Manitoba reimbursed expenditures in excess of sizeable deductibles (up to $850 semi-annually in Saskatchewan and an annual deductible of 2% to 3% of household

Limitations

During the 1996/97 National Population Health Survey (NPHS) period, all the provincial drug plans automatically provided coverage to social assistance recipients—no special enrolment or registration was required. However, identifying seniors who were eligible for provincial drug programs was not straightforward, because the criteria varied from province to province, and even for different groups within provinces (Appendix Table A). As well, some of those who were eligible may have declined to enroll because premiums or registration were required, even if coverage was premium-free.

In Alberta, Manitoba, Nova Scotia and New Brunswick, the provincial drug plans mailed an application package to individuals before their 65th birthday, and eligibility for benefits was contingent upon these application forms being completed and returned. Premiums were also required of Nova Scotia seniors, although those receiving the Guaranteed Income Supplement (GIS) would have had their premiums reimbursed. New Brunswick seniors who did not receive the GIS and whose household income exceeded marital status-specific income thresholds had the option of purchasing government-subsidized drug coverage through Blue Cross. Because this coverage was voluntary and required the payment of premiums, not all seniors would necessarily have been covered. It was difficult to identify this group, because the NPHS income intervals did not coincide with provincial income thresholds. Conservatively, for this analysis, New Brunswick seniors not receiving the GIS were categorized as ineligible for drug benefits, although some would have been entitled to them. In Newfoundland, only seniors who received the GIS were eligible for provincial drug coverage.

Thus, identification of NPHS seniors eligible for drug benefits in some provinces was based on their having reported GIS income during the previous 12 months. But some elderly people who qualified for the GIS may have been unaware of the program, and therefore, failed to apply. They would be included among the group ineligible for prescription drug coverage in this analysis, although their characteristics might more closely resemble those of seniors who were entitled to GIS benefits.

income in Manitoba), but provided relatively comprehensive coverage to social assistance recipients ($2 per prescription in Saskatchewan and free in Manitoba). When the other covariates were held constant, 27% of seniors in Saskatchewan and 34% in Manitoba reported coverage, whereas the corresponding figures for social assistance recipients were 62% and 58%.

In Québec, the only province that required deductibles for social assistance recipients, their reported rate of coverage was markedly lower than that of social assistance recipients in most other provinces. In Prince Edward Island, which also had a low reported rate of coverage, reimbursement was restricted to prescriptions filled in government-run pharmacies; prescriptions filled in commercial pharmacies were not subsidized.

The low reported rates of prescription drug insurance among seniors and social assistance recipients in Québec might also be an artifact of the timing of the 1996/97 NPHS. The interviews, conducted from June 1996 through August 1997, coincided with a period of flux in the provisions of the Régime général d'assurance médicaments, during which premiums, deductibles, co-payments and maximum beneficiary contributions increased substantially.

Concluding remarks

The results of this analysis show substantial under-reporting of prescription drug insurance coverage among 1996/97 National Population Health Survey respondents who were known to be eligible for publicly provided benefits. Only 51% of seniors and 46% of social assistance recipients in provinces with premium-free coverage reported that they had insurance to cover all or part of their costs for prescription medications.

Furthermore, there is evidence that the under-reporting of drug insurance coverage is not restricted to seniors and social assistance recipients. An earlier analysis of 1996/97 NPHS data[14] found that approximately 61% of all household residents in the 10 provinces reported having drug insurance. However, a national study[15] using 1995 enrolment data from private and public health insurers estimated that 88% of Canadians were insured. And a study published in 2000[16] using the same types of data estimated that 90% of Canadians had some drug coverage.

It is noteworthy that the rates of self-reported insurance among seniors who did not have premium-free provincial coverage (and so were likely required to apply and pay premiums for alternative coverage) were over 20 percentage points higher than the rates for those who did receive premium-free provincial benefits (73% versus 51%). This is consistent with evidence from a Wisconsin study.[17] A comparison of self-reported drug insurance with actual coverage from a sample of 351 residents of that state found that 94% correctly identified having private coverage (typically from an employer), but only 7% correctly reported that they had public coverage (Medicare, Medicaid and other sources).

Although it could not be directly tested, use of the word "insurance" in the NPHS questionnaire may be a source of confusion. Provincial drug plan beneficiaries may not recognize that prescription drug subsidies, even if they cover only a part of the cost, are a form of insurance. Certainly, these public subsidies are unlike traditional insurance. Except for Québec, the provincial drug plans do not use the word "insurance" in their names, and among the plans examined, few premiums are payable.

The results of this analysis indicate that self-reported drug insurance should be interpreted cautiously. If survey data are to be used to measure levels of coverage, further research is needed to devise questionnaires that would improve reporting accuracy.

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Appendix

Table A
Provincial prescription drug programs for seniors, 1996/97

Province (Program name)	Beneficiary group	Premiums[1]	Deductible	Co-payments and co-insurance[2]	Maximum beneficiary contribution
Newfoundland (Newfoundland and Labrador Prescription Drug Program)	GIS seniors	None	None	Dispensing fee + 10% of ingredient cost > $30	None
	Non-GIS seniors	No coverage	No coverage	No coverage	No coverage
Prince Edward Island (Prince Edward Island Drug Cost Assistance Plan for Seniors)	All seniors	None	None	$14.85;[3] $14.50[3]	None
Nova Scotia (Seniors' Pharmacare)	All seniors[4]	$215 less income- contingent rebate[5]	None	Maximum (20%, $3/prescription)	$200
New Brunswick (New Brunswick Prescription Drug Program)	GIS seniors[6]	None	None	$9.05/prescription	$250
	Low-income seniors[6]	None	None	$9.05/prescription	None
	Other seniors[7]	$58/month	None	$9.05/prescription	None
Quebec (Régime général d'assurance médicaments)[8]	Full GIS seniors[9]	None;[10] $0-$175[11]	None;[10] $25/quarter;[12] $8.33/month[13]	None;[14] 25%[15]	None;[14] $83.33/5 months;[16] $50/quarter;[12] $16.67/month[13]
	Partial GIS seniors	None,[10] $0-$175[11]	None,[10] $25/quarter;[12] $8.33/month[13]	$2/prescription,[14] 25%[15]	$100,[14] $208.33/5 months,[16] $125.00/quarter;[12] $41.67/month[13]
	Non-GIS seniors	None,[10] $0-$175[11]	None,[10] $25/quarter;[12] $8.33/month[13]	$2/prescription,[14] 25%[15]	$100,[14] $312.50/5 months,[16] $187.50/quarter,[12] $62.50/month[13]
Ontario (Ontario Drug Benefit)[17]	Single senior, household income >$16,018; Senior with partner, household income > $24,175[19]	None	$100	$6.11/prescription[18]	None
	Other seniors	None	None	$2/prescription[20]	None
Manitoba (Pharmacare)	Households with adjusted income ≤ $15,000[21]	None	2% of adjusted household income[21]	None	2% of adjusted household income[21]
	Households with adjusted income > $15,000[21]	None	3% of adjusted household income[21]	None	3% of adjusted household income[21]
Saskatchewan (Saskatchewan Prescription Drug Plan)	Seniors on Saskatchewan Income Plan[22]	None	$100 semi-annually	35%	1.7% of adjusted household income semi-annually[23]
	Seniors with some GIS income	None	$200 semi-annually	35%	1.7% of adjusted household income semi-annually[23]
	Non-GIS seniors	None	$850 semi-annually	35%	1.7% of adjusted household income semi-annually[23]
Alberta (Alberta Blue Cross Group 66)	All seniors	None	None	Maximum (30%, $25/prescription)[24]	None
British Columbia (Pharmacare Plan A)	All seniors	None	None	100% of dispensing fee	$200

1 *Unless otherwise stated, premiums, deductibles and maximum contributions applied annually.*
2 *Unless otherwise stated, co-payments and co-insurance rates apply to total prescription, including drug ingredient cost and dispensing fee.*
3 *Co-payments based on estimates of the average dispensing fee charged to seniors after August 1993.*
4 *Beginning in September 1996, seniors could opt out of program.*
5 *Premium is $215 for single non-GIS seniors with income of $18,000 or more, decreasing to $0 with income of $15,000; premium is $215 per senior for married non-GIS seniors with combined income of $24,000 or more, decreasing to $0 with income of $18,000. Seniors who fail to enroll within specified period after receiving notification of program eligibility pay annual premium of $322.50 and face three-month waiting period.*
6 *GIS seniors are those who collect some GIS benefits. Low-income seniors are those who do not collect GIS benefits, but have adjusted household income $17,198 or less if single; $26,955 or less if married to another senior; $32,390 or less if married to non-senior.*
7 *"Other seniors" are those who neither receive GIS benefits nor have sufficiently low income; Blue Cross of Atlantic Canada provides drug coverage to these seniors, regardless of health status, provided they apply within 60 days of 65th birthday. Thereafter, they may face higher premiums or be denied coverage on basis of health.*
8 *Those who opt out of provincial government coverage must enroll in plan with following minimum conditions: no more than 25% co-insurance rate on total prescription cost; no more than $750/year in adult out-of-pocket cost, including drug expenses for dependants younger than 18 and dependent students younger than 26.*
9 *Coverage also applies to non-elderly spouses receiving GIS Spousal Allowance.*
10 *Until end of December 1996*
11 *From January 1997*
12 *January to June 1997*
13 *From July 1997*
14 *Until end of July 1996*
15 *From August 1996*
16 *August to December 1996*
17 *Until July 14, 1996, all seniors received full coverage.*
18 *Seniors in families receiving Trillium Drug Program benefits who have exceeded yearly deductible pay $2 per prescription.*
19 *Household income defined as line 236 of federal income tax form.*
20 *Many pharmacies waive $2 co-payment.*
21 *Adjusted household income is gross income (line 150 of federal Notice of Assessment form) less $3,000 for spouse and each dependant younger than 18.*
22 *Eligibility for Saskatchewan Income Plan requires that Old Age Security and GIS comprise almost all income.*
23 *Maximum contribution applies to individuals who apply and qualify for Special Support program. Adjusted household income is gross household income (line 150 of federal Notice of Assessment form) less $3,500 for each dependant younger than 18.*
24 *Maximum patient co-payment of $25 per prescription does not apply if patient chooses brandname formulation when generic equivalent exists.*

Table B
Provincial prescription drug programs for social assistance recipients aged 18 to 64, 1996/97

Province (Program name)	Premiums	Deductible	Co-payments and co-insurance[1]	Maximum beneficiary contribution
Newfoundland (Newfoundland and Labrador Prescription Drug Program)	None	None	None	None
Prince Edward Island (Prince Edward Island Drug Cost Assistance Plan)	None[2]	None	None	None
Nova Scotia (Pharmacare for Income Assistance)	None	None	$3/prescription	None
New Brunswick (New Brunswick Prescription Drug Program)	None	None	$4/prescription for adults; $2/prescription for children younger than 18	$250/family
Quebec (Programme de médicaments et des services pharmaceutiques)[3]	None	None;[4] $25/quarter;[6] $8.33/month[7]	25%[5]	$83.33/5 months;[5] $50/quarter;[6] $16.67/month[7]
Ontario (Ontario Drug Benefit Program)	None	None	$2/prescription[8]	None
Manitoba (Social Allowance Health Services)	None	None	None	None
Saskatchewan (Saskatchewan Assistance Plan)[9]	None	None	$2/prescription	None
Alberta (Social Services Prescription Drug Services for Social Allowance and Child Welfare)	None	None	None	None
British Columbia (Pharmacare Plan C)	None	None	None	None

[1] Unless otherwise stated, co-payments and co-insurance rates apply to total prescription, including drug ingredient cost and dispensing fee.
[2] No charge if filled at government pharmacy; $2 charge if filled at community pharmacy.
[3] Social assistance recipients' dependants younger than 18 receive full coverage.
[4] Until end of December 1996
[5] Starting August 1996
[6] January to June 1997
[7] From July 1997
[8] None before July 15, 1996
[9] Dependants younger than 18 of Saskatchewan Assistance Plan beneficiaries receive full coverage; such beneficiaries who require "expensive, long-term medications" and others such as unwed mothers, inmates, and transients receive full coverage.

Table C

Logit model estimates of probability of seniors reporting drug insurance coverage, by selected characteristics, 1996/97 National Population Health Survey, household population, Canada, excluding territories

	Coefficient	z	P>|z|	95% confidence interval
Age	-0.007	-1.827	0.068	-0.014, 0.000
Men	0.220	4.509	0.000	0.124, 0.315
Married/Common-law	0.448	4.163	0.000	0.237, 0.659
Widowed/Separated/ Divorced	0.172	1.813	0.070	-0.014, 0.357
High school graduation	0.156	2.381	0.017	0.028, 0.285
Some postsecondary	-0.023	-0.331	0.741	-0.156, 0.111
Postsecondary graduatio	0.248	3.935	0.000	0.124, 0.371
$10,000-19,999	0.212	2.089	0.037	0.013, 0.411
$20,000-29,999	0.447	4.141	0.000	0.235, 0.658
$30,000-39,999	0.750	6.365	0.000	0.519, 0.981
$40 000-59 999	0.577	4.682	0.000	0.335, 0.818
$60 000+	0.576	3.924	0.000	0.288, 0.863
Household size (log)	-0.354	-3.909	0.000	-0.531, -0.176
Number of chronic conditions	0.066	5.207	0.000	0.041, 0.090
1-2 prescription drugs in past 2 days	0.244	4.817	0.000	0.144, 0.343
3+ prescription drugs in past 2 days	0.641	9.370	0.000	0.507, 0.775
Proxy reporter	0.499	4.177	0.000	0.265, 0.733
Newfoudland (low income)	-0.402	-2.106	0.035	-0.775, -0.028
Newfoudland (high income)	-0.058	-0.073	0.942	-1.617, 1.500
Prince Edward Island	-0.280	-1.677	0.094	-0.607, 0.047
Nova Scotia	0.219	1.231	0.219	-0.130, 0.569
New Brunswick (low income)	0.112	0.649	0.516	-0.225, 0.449
New Brunswick (high income)	0.018	0.027	0.978	-1.263, 1.299
Québec	-1.659	-12.284	0.000	-1.924, -1.395
Manitoba	-1.171	-19.988	0.000	-1.286, -1.057
Saskatchewan	-1.498	-8.958	0.000	-1.826, -1.171
Alberta	0.564	8.051	0.000	0.427, 0.701
British Columbia	0.351	2.441	0.015	0.069, 0.634
Intercept	-0.099	-0.334	0.738	-0.680, 0.482

Data source: *1996/97 National Population Health Survey, cross-sectional sample, Health file*
Notes: *Pseudo R^2 = 0.1011; number of observations = 9,603.*

Table D

Logit model estimates of probability of social assistance recipients aged 18 to 64 reporting drug insurance coverage, by selected characteristics, 1996/97 National Population Health Survey, household population, Canada excluding territories

	Coefficient	z	P>|z|	95% confidence interval
Age	-0.009	-1.630	0.103	-0.020, 0.002
Men	-0.511	-4.225	0.000	-0.748, -0.274
Married/Common-law	-0.223	-1.435	0.151	-0.527, 0.082
Widowed/Separated/ Divorced	0.199	1.455	0.146	-0.069, 0.466
High school graduation	0.026	0.166	0.868	-0.278, 0.330
Some postsecondary	0.066	0.484	0.628	-0.200, 0.331
Postsecondary graduation	0.053	0.362	0.717	-0.234, 0.340
$10,000-19 999	0.102	0.831	0.406	-0.139, 0.344
$20 000-29 999	-0.242	-1.000	0.318	-0.718, 0.233
$30,000+	1.162	2.123	0.034	0.089, 2.235
Household size (log)	0.181	1.447	0.148	-0.064, 0.425
Number of chronic conditions	0.136	4.445	0.000	0.076, 0.196
1-2 prescription drugs in past 2 days	0.309	2.501	0.012	0.067, 0.551
3+ prescription drugs in past 2 days	0.959	4.788	0.000	0.567, 1.352
Proxy reporter	0.632	1.478	0.140	-0.206, 1.471
Newfoundland	-1.092	-3.880	0.000	-1.644, -0.541
Prince Edward Island	-1.599	-3.443	0.001	-2.510, -0.689
Nova Scotia	-0.512	-1.585	0.113	-1.145, 0.121
New Brunswick	-0.719	-2.264	0.024	-1.341, -0.096
Québec	-1.498	-7.298	0.000	-1.900, -1.095
Manitoba	-0.438	-2.801	0.005	-0.744, -0.131
Saskatchewan	-0.255	-0.608	0.543	-1.075, 0.565
Alberta	-0.381	-1.945	0.052	-0.766, 0.003
British Columbia	-0.266	-0.830	0.407	-0.895, 0.363
Intercept	0.523	2.067	0.039	0.027, 1.019

Data source: *1996/97 National Population Health Survey, cross-sectional sample, Health file*
Notes: *Pseudo R^2 = 0.0868; number of observations = 1,765.*