

Health Care Utilization in Canada: Twenty-five Years of Evidence

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Plusieurs chercheurs ont établi une relation entre le statut socio-économique (SSE) d'une part, et l'état de santé et l'utilisation des soins de santé d'autre part. De récentes données empiriques indiquent aussi que les Canadiens estiment que l'accessibilité aux soins de santé décroît au pays. Cette étude décrit les tendances relatives à l'utilisation des soins, dans le système de santé public (médecins, spécialistes, hôpitaux) au Canada, de 1978 à 2003. Nous examinons la relation entre le SSE et l'utilisation des soins de santé, en tenant compte de l'effet des variables que sont l'état de santé et les caractéristiques démographiques, pour déterminer si, au cours de la période étudiée, il y a eu ou non des changements sur le plan de l'équité dans l'accès aux soins. Nos résultats indiquent des inégalités apparentes, reliées au SSE, dans l'accès aux soins de santé ; c'est à l'étape du premier contact avec le système de santé qu'elles sont les plus évidentes, en comparaison avec le nombre de visites médicales, par exemple. Les services des spécialistes, en particulier, posent des problèmes importants, et ces problèmes se sont accrus avec les années.

Mots clés : équité, utilisation des soins de santé, gradients socioéconomiques

A plethora of literature links socioeconomic status (SES) to health and health care utilization. Recent anecdotal evidence indicates that Canadians believe their access to health care is diminishing. This study describes health care utilization patterns for services provided under public health insurance (physicians, specialists, and hospitals) in Canada between 1978 and 2003. The relationship between SES and utilization, controlling for health and demographic characteristics, is examined to investigate whether changes in the equity of utilization have occurred over time. Results indicate that SES inequities in utilization are apparent, appearing to be more relevant in initial contact with the system than in the number of visits. Specialists' services are particularly problematic and becoming more so over time.

Keywords: equity, health care utilization, socioeconomic gradients

INTRODUCTION

Access to health care is an important issue, particularly in countries with publicly funded health care systems. Canadians have been covered for all medically necessary health care since 1972; the *Canada Health Act* reinforced this principle in 1984. However, variations in health across socioeconomic status (SES) remain in Canada and in other countries offering public health care. Although health care is but one “determinant” of health and likely not responsible for the majority of the variation, disparities in health across SES lead policy-makers, and thus researchers, to question whether the provision of health care is based on need irrespective of socioeconomic and demographic characteristics.

A number of Canadian studies on the relationship between health care utilization and SES are available in the health literature (e.g., Birch, Eyles, and Newbold 1993; Dunlop, Coyte, and McIsaac 2000; Haynes 1991; Katz, Hofer, and Manning 1996; Mustard et al. 1998; Roos and Mustard 1997).¹ However, the studies tend to examine one period and/or ignore the unique distributional characteristics of utilization data.² This study adds to the current literature by examining the correlations between SES and utilization (physician and specialist visits, and hospitalizations) over a 25-year period from 1978 to 2003. While the descriptive analyses offer policy-makers important information on the evolving relationships between SES and utilization (controlling for need and demographics) in a period of change, no claims regarding causality can be made.

Seven cross-sections of data offer snapshot views of several distinct periods post-public health insurance. The study begins shortly after the introduction of public health insurance, and spans the declaration of the *Canada Health Act* (reconfirming the health care equity goals) and many changes in health care financing. In 1978, health care expenditures were about 7 percent of Gross Domestic Product (GDP); expenditures rose fairly rapidly to a high of 10 percent of GDP in 1992, followed by a tighten-

ing of federal and provincial health care spending that resulted in expenditures falling to 9 percent of GDP in 1997. Subsequent “reinvestment” saw expenditures rebound to new highs (over 10 percent) in 2005. Expenditures per capita follow a similar pattern (see Appendix, Figure A1).

Previous cross-sectional studies indicate that the utilization of physician services tends to be relatively equitable, but utilization of specialist services tends to favour the wealthy. Low income is often associated with higher utilization of hospital services, but several studies indicate that the higher rates can be attributed to avoidable hospitalizations (conditions that could have been treated on an outpatient basis given adequate primary care). The higher hospitalization rates may be an indication of inequitable primary or preventive care rather than equitable provision of secondary care.

Results of this study indicate a positive relationship between SES and health care utilization (often referred to as the SES gradient), and in many cases the inequities are increasing over time. SES variables are positively related to the probability of any visits to a medical doctor but inversely related to the number of visits, conditional on at least one visit. The relationship between SES variables and specialist visits are consistently positive over the study period and inequities in the number of visits, conditional on one visit, are becoming more relevant as time passes. As in other studies, hospital admissions and length of stay are inversely related to SES (unfortunately, there is no measure of avoidable hospitalizations in these data). While the descriptive nature of the results cannot lead to any conclusions regarding causality, it is important that policy-makers are well informed regarding the presence of SES gradients and the changes occurring over time.

LITERATURE REVIEW

The desire for equity was a main driver of the introduction of public health insurance in Canada. It has

been available to all Canadians since 1972 and offers the right to seek necessary health care services without consideration of cost. However, a “zero price” at point of utilization has not necessarily led to equal health care in Canada (Cairney and Arnold 1998; Case, Lubotky, and Paxson 2002; Currie and Stabile 2003; Curtis 2001; Curtis, Dooley, and Phipps 2004; Curtis and Phipps 2004; Evans, Barer, and Marmor 1994; Mustard and Frolich 1995; Wagstaff and van Doorslaer 2004) or in other countries (Haynes 1991; van Doorslaer, Masseria, and Koolman 2006). Although health care is not the only determinant of health, SES gradients in health status have led to a significant research literature on health care utilization, particularly regarding questions of equity in countries offering publicly provided health insurance or health care (Atella et al. 2004; Hurley and Grignon 2006; Lasser, Himmelstein, and Woolhandler 2006; Mangalore 2006). Inequality and inequity in health care utilization³ is an important policy issue in Canada, where a fundamental principle of the health care system is equitable access.

Prior to the introduction of the *Canada Health Act*, studies indicate that equity principles were intact. SES (usually proxied by income or education) was either inversely related to utilization or an insignificant factor after controlling for “need” (e.g., Broyles et al. 1983; Manga, Broyles, and Angus 1987). Results post-*Canada Health Act* or from regional studies are less consistent. Using the 1985 General Social Survey, Birch, Eyles, and Newbold (1993) found significant relationships at the national level between need and the probability and frequency of use but no relationship with income; associations with education were evident for those in the poorest health. Associations between income and the probability of visiting a physician, after controlling for need, were found in Quebec but not in Ontario (Newbold, Birch, and Eyles 1994). Katz, Hofer, and Manning (1996) surmise that the inverse relationship between income and utilization found in the 1990 Ontario Health Survey was likely due to health status differences, not SES (they were unable to control for need). Roos and Mustard (1997)

found a similar inverse relationship between neighbourhood SES and utilization in Manitoba but concluded that the utilization gap was less than expected given probable health status differences. Visits to specialists and surgical procedures did not vary across income even though people from lower-income neighbourhoods were expected to need substantially more services.

More recent research using the Canadian National Population Health Survey (NPHS) reveals differential utilization by SES after adjusting for need. Although physician visits seem equitable, lower SES (education and/or income) is associated with fewer visits to specialists (Dunlop, Coyte, and McIsaac 2000). After adjusting for need and insurance status, Stabile (2001) finds that income is positively related in the 1996 NPHS to the probability of physician contact (the magnitude is similar to that of insurance status) but fewer visits conditional on contact. Deri (2005) finds a significantly positive relationship in the 1994, 1996, and 1998 NPHS between income and the probability of any contacts and the number of specialist visits for those whose mother tongue is neither English nor French. In contrast, Sarma and Simpson (2006) find little relationship between utilization and income in the 1998 NPHS.

Comparing Canada and the United States, Lasser, Himmelstein, and Woolhandler (2006) find that the richest Canadian and US groups are more likely to have a regular family doctor and to have visited a physician in the last year compared to the lowest income groups; the gap is less in Canada than in the United States. The authors conclude that Canada is more equitable than the United States, but that inequities still exist. Canada fares poorly when compared to other Organisation for Economic Cooperation and Development (OECD) countries (van Doorslaer, Masseria, and Koolman 2006). The likelihood of at least one visit to a physician is found to be equitable in most countries; however, Canada is one of three countries where it is not. All countries in the study show a positive relationship between SES and specialist services, and the number of visits

with specialists given contact. Hurley and Grignon (2006) interpret the somewhat positive relationship in contacts, offset in Canada by the slight negative relationship in the number of visits, as having little significance for health policy; however, they point out that the inequity in access to specialists is “troubling.”

Inequity in physician/specialist visits may lead to further inequities in hospitalizations (Saxena et al. 2006). Studies indicate that poorer individuals are more likely to be hospitalized and have longer stays in Canada (Billings, Anderson, and Newman 1996; Booth and Hux 2003; Carriere, Roos, and Dover 2000; Lin, Allan, and Penning 2002; Manga, Broyles, and Angus 1987) and internationally (Billings, Anderson, and Newman 1996; Pappas et al. 1997; Saxena et al. 2006). Many hospitalizations are avoidable with timely, good quality primary care, thus the higher rates of hospitalization experienced by lower-income individuals are viewed, by many health services researchers, as a shortcoming of the primary care system rather than as a sign of equity. Potentially treatable conditions that lead to hospitalizations are used as indicators of limited access to primary care (Blustein, Hanson, and Shea 1998; Weissman, Gatsonis, and Epstein 1992).

In sum, studies using data collected following the budget cuts of the mid-1990s point out associations between utilization and SES, whereas earlier studies did not. Recent evidence indicates that, after controlling for need, adults in lower SES circumstances tend to utilize fewer physician and specialist services, and have more frequent hospitalizations and longer hospital stays. Inequities in physician visits tend to be driven mainly by differences in the utilization of specialists, while inequities in hospitalizations are often found to be the result of inequitable treatment in primary care.

THEORY AND ESTIMATION

Earlier studies (e.g., Manning et al. 1987) modelled health care demand as any other good in order to

estimate demand elasticities. More recently, the principal-agent framework has been the basis of utilization models. Asymmetries of information (i.e., the physician has more information than the patient) lead the patient (principal) to rely on the physician (agent) for assistance in making optimal choices regarding health care utilization. In a perfect principal-agent relationship, physicians would offer the exact amount of care that patients would have chosen had they had full information; however, the relationship may not be perfect due to economic, ethical, and personal considerations (Evans 1984).

Empirical work based on the principal-agent model often assumes the decision is a two-step process; a two-part hurdle model overcomes the unique distribution of the count data. In the first step, the relationship between contact/no contact and individual/family characteristics is estimated with a logit regression. In the second step, the number of visits, conditional on at least one visit, is estimated with a zero-truncated negative binomial regression, an estimation procedure that is particularly suited to estimating distributions of strictly positive counts (i.e., number of visits conditional on at least one; Chi 1998; Hausman, Hall, and Griliches 1984; Lee et al. 2003; Mullahy 1997; Nguyen, Hakkinen, and Rosenqvist 2005; Pohlmeier and Ulrich 1995; Sarma and Simpson 2006; Winkelmann 2003).

The two-part model also lends itself nicely to possible policy interpretation. For example, if significant results are seen in the first step (contacting the system), informational difficulties or perverse incentive/disincentives for individuals who should or should not be seeking care may be a concern, and policy-makers may wish to focus on educating the public on proper use of medical services, providing transportation assistance for those in need, helping employees to negotiate time off work for physician visits, or offering more after-hours clinics. Significant differences in the second step (number of visits/nights in hospital conditional on accessing the system) could lead to a focus on encouraging

appropriate levels of care through such policies as clinical guidelines that encourage horizontal equity.

DATA SOURCES

Data used for this analysis include the 1978 Canada Health Survey (CHS), the 1985 and 1991 General Social Survey (GSS), the 1994 and 1998 NPHS, and the 2001 and 2003 Canadian Community Health Survey (CCHS). All data were extracted from share use health files except for the GSS, where only public use files were available.⁴ All surveys are population based and collect information on health status, use of health care services, health behaviours, and economic and sociodemographic characteristics for non-institutionalized persons living in Canada. Excluded from the surveys are populations on Indian Reserves, Canadian Forces Bases, and in some remote areas. The sample is restricted to individuals most likely to be making their own health care decisions (20 years of age and older). Observations missing necessary information are excluded. The Territories were sampled only by the CCHS; hence, those observations were dropped. Survey weights are utilized in all analyses to deal with the complex sampling methodologies.

The use of health care services is obtained via self-report of visits to health care providers and overnight stays in hospitals or nursing homes (which will be referred to as hospitals) in the 12 months prior to the survey. Three measures of health care utilization are investigated: (a) physician visits, (b) specialist visits,⁵ and (c) overnight hospital stays. Truncated negative binomial estimation corrects for left-hand truncation of the data (Chi 1998; Hausman, Hall, and Griliches 1984; Lee et al. 2003; Mullahy 1997; Nguyen, Hakkinen, and Rosenqvist 2005; Pohlmeier and Ulrich 1995; Winkelmann 2003) but right-hand truncation may be an issue in some years. Specifically, measures in the GSS are truncated to suppress very high counts. In the 1985 GSS, physician and specialist visits are capped at 27 and overnight hospital stays at 15; a small proportion of

visits are at the cap (1.0 percent of physician visits and 1.3 percent of specialist visits). Hospital nights are more severely affected: 16.7 percent of stays are set at 15. In the 1991 GSS, caps are set at 52 (0.24 percent of physician visits and 0.33 percent of specialist visits). Capping all data at the 1985 caps would increase comparability across time but would also complicate estimation and discard a great deal of information. The analyses are carried out on all the data as reported; however, a note of caution is in order when comparing 1985 hospitalizations to other years.

Health status is proxied by fair/poor health status. A five-category (excellent, very good, good, fair, poor) self-rated health variable is available in the GSS from 1991 onward. The 1985 GSS contains a four-category health status variable (excellent, good, fair, poor). For all years other than 1978, poor health status is set equal to one for those who report being in poor or fair health. Self-reported health status is not available in the 1978 survey; however, there is information on whether or not an individual reported health problems or limitations in daily activities and work, and these data are used to proxy fair/poor health status.⁶

The main focus of this study is the relationship between socioeconomic status (SES) and health care utilization. Household income, education, immigrant status, and labour force participation are included as SES variables. Indicators for low- and high-income persons (*poor* and *rich*) are derived by adjusting the best estimate of total yearly household income from all sources by the square root of household size.⁷ Low-income status is equal to one for individuals whose adjusted household income is less than half the median for the given year. Higher-income status is equal to one if individuals have adjusted incomes in the 90th percentile for the given year. For the education variable, university includes college diplomas. Those who report their main activity as looking for work or not working due to a labour dispute are recorded as “unemployed.” Those who report not working, or main activities such as caring for family or being retired, are recorded as “not in the labour force.”

Immigrants are, on average, in better health upon arrival in Canada—often referred to as the healthy immigrant effect. Over time, through the process of assimilation, their health approaches that of the general population. Thus, utilization patterns may differ in a similar way (Deri 2005; McDonald and Kennedy 2004). Immigrant families may face barriers to utilization (e.g., prejudices within the system, language, or cultural issues). Deri (2005) finds that networks and the availability of physicians speaking the immigrant's language strongly effect health care utilization patterns. Thus, immigrant status (equal to one if born outside Canada, zero otherwise) is also included. Immigrant status is interacted with years since immigration (YSI) to Canada ($YSI = \text{current year/age} - \text{year/age at immigration}$), as immigrant status may not capture the dynamics of recent immigrant effects (the comparator is a native-born individual).

Other controls are based on the health and health care utilization literature (Birch, Eyles, and Newbold 1993; Curtis 2001; Mangalore 2006; Sarma and Simpson 2006; Schellhorn 2001; Stabile 2001). Age, sex, marital status, and health behaviours are included. Age (five-year age intervals from 20 to 75 and a dummy for those over the age of 75 (40–45 years is the comparator), marital status (*never married* and *previously married*; married, including common-law, is the comparator), and sex (*male*; female is the comparator) controls are included.

Health behaviours or lifestyle variables (e.g., smoking, activity levels, heavy drinking) are hypothesized to have an important impact on health and health care utilization. Individuals who indulge in negative health behaviours may have different attitudes toward health care than those who have similar health status but who live healthier lifestyles. Following other literature (Birch, Eyles, and Newbold 1993; Mangalore 2006; Sarma and Simpson 2006; Schellhorn 2001), we control for these factors. A derived dummy variable—negative health behaviours (*neg health behav*)—equal to one if the individual smokes, has a sedentary lifestyle, or con-

sumes more than two drinks per day is computed⁸ (the reference group is an individual who does not partake in these activities). Although Canada has a national health insurance scheme, covered services vary as each province determines what is medically necessary; thus regional dummies are included as controls (Ontario is comparator).

RESULTS

Descriptive Statistics

Health Care Utilization. Table 1 (first six rows) presents the weighted sample means for health care utilization. Between 1978 and 2003, 79.5 to 84.6 percent of the population accessed medical doctors, including general practitioners/family doctors and specialists. The highest proportion of contacts was made in 1991, a 5.1 percentage point increase from 1978, and by 2003 the increase had diminished by 2.1 percentage points. The frequency of visits to general practitioners, conditional on at least one visit, increased from 1978 to 1994 (recall that visits are capped at 27 in 1985 and at 52 in 1991), and then decreased throughout the remainder of the period. The average number of visits was 4.8 in 1978 and 5.2 in 2003, peaking at 5.9 in 1994.

Data on specialist services are unavailable before 1985; since then, the percentage of the population contacting specialists has decreased by 1.7 percentage points, from 30.7 percent in 1985 to 29.0 percent in 2003; 1994 saw the lowest figures. There was an increase in the number of visits, conditional on at least one visit, from 3.1 in 1985 to a peak of 3.8 visits in 1994 and then settling again to around 3.2 visits in 2003 (not significantly different than 1985).

Fewer non-institutionalized Canadians experienced hospital/nursing or convalescent home admissions over the study period; a decrease of nearly 3 percentage points took place between 1978 (11.1 percent) and 2003 (8.3 percent). The hospitalization rate remained relatively constant until 1994, when it fell by 1.2 percentage points.

TABLE 1
Sample Means for Health Care Utilization, 1978–2003

Variable Means	1978	1985	1991	1994	1998	2000	2003
MD contacts	79.53	77.76*	84.63*	80.93*	82.11*	82.37*	81.62*
MD visits	4.78	4.63	4.88*	5.86*	5.34*	5.46*	5.17*
Spec contacts		30.72	29.25*	27.12*	27.63*	30.10***	28.96*
Spec visits		3.05	3.13	3.84*	3.22***	3.40*	3.20
Admissions	11.14	11.02	11.26	9.97*	7.99*	8.65*	8.33*
Hospital nights	11.15	6.21*	8.90*	11.37	8.91*	9.01*	8.29*
Poor health	25.93	18.61*	12.99*	11.17*	10.12*	12.39*	11.20*
Poor	15.32	17.37*	13.30*	14.57**	16.94*	18.37*	17.34*
Rich	10.42	10.03	8.56*	7.58*	10.01***	9.81**	9.97***
Less than HS	48.23	36.66*	30.57*	26.03*	21.65*	21.23*	17.25*
High school	22.12	18.86*	16.27*	15.85*	15.21*	19.46*	18.64*
Post-secondary	19.62	16.20*	29.01*	24.93*	26.91*	19.66	19.76
University	10.03	28.27*	24.16*	33.19*	36.23*	39.65*	44.36*
Employed	58.40	64.80*	66.40*	56.77*	61.27*	62.04*	63.13*
Unemployed	5.83	3.59*	5.03*	4.32*	3.70*	3.93*	4.08*
Not in LF	35.86	31.65*	28.58*	38.90*	35.21***	34.08*	32.84*
Immigrant	21.80	17.75*	17.64*	19.85*	21.16***	21.73	21.32
YSI 0–5	0.03	0.01*	0.02*	0.03*	0.02*	0.03*	0.02*
YSI 5–10	0.03	0.02*	0.02*	0.02*	0.03	0.03	0.03
YSI 10–15	0.03	0.03***	0.02*	0.02*	0.02*	0.03	0.03
YSI 15–20	0.02	0.02	0.02	0.02	0.02**	0.02*	0.02**
Neg health behav	66.21	57.68*	56.34*	72.02*	67.23**	66.05*	62.26*
Male	47.27	52.34*	50.24*	48.54*	49.51*	50.23*	51.22*
Married	73.89	72.91**	71.30*	68.61*	65.98*	67.75*	68.56*
Never married	14.46	15.30**	16.23*	17.40*	18.39*	18.55*	18.56*
Previously married	11.65	11.79	12.48*	14.00*	15.63*	13.68*	12.88*
Age 20 to 24	14.32	14.05	12.76*	10.49*	8.69*	9.11*	9.25*
Age 25 to 29	12.39	13.03**	13.79*	13.05**	11.28*	10.33*	9.83*
Age 30 to 34	9.88	11.87*	12.37*	12.54*	13.63*	12.37*	11.87*
Age 35 to 39	7.66	8.63*	11.39*	10.96*	12.44*	12.56*	12.89*
Age 40 to 44	8.04	6.70*	8.90*	9.47*	9.82*	10.98*	10.83*
Age 45 to 49	7.56	6.81*	6.95*	7.47	8.56*	9.27*	9.61*
Age 50 to 54	7.14	6.18*	5.91*	6.22*	6.36*	6.95	7.98*
Age 55 to 59	6.01	5.61**	5.48*	5.67**	5.80	5.29*	5.76
Age 60 to 64	5.04	5.75*	5.01	5.27	4.97	4.79	4.55*
Age 65 to 69	3.72	4.56*	3.54	4.65*	3.95	4.16**	3.86
Age 70 to 75	2.22	3.21*	2.73*	3.11*	3.45*	3.01*	2.97*
Age >75	4.00	5.62*	4.59*	5.86*	6.37*	5.85*	5.66*
Atlantic	8.74	7.18*	9.34**	8.29**	7.87*	7.53*	7.09*
Quebec	28.72	29.08	28.67	24.84*	24.94*	25.62*	24.37*
Ontario	34.88	37.41*	30.86*	38.02*	37.31*	38.58*	39.77*
Prairies	15.98	16.87*	17.12*	16.25	16.06	15.57	15.69
British Columbia	11.69	9.46*	14.01*	12.60*	13.82*	12.71*	13.07*
Sample size	16,043	6,961	8,655	14,394	10,900	83,703	80,468

Notes: MD = medical doctor. Spec = specialist. HS = high school. LF = labour force. YSI = years since immigration.
* significantly different from 1978 (1985 for specialist) at 1 percent. ** significantly different from 1978 (1985 for specialist) at 5 percent. *** significantly different from 1978 (1985 for specialist) at 10 percent.

Source: Authors' calculations.

There was another significant drop of 2 percentage points between 1994 and 1998; period-to-period changes were small in magnitude thereafter. The number of nights spent in hospital also decreased significantly over time. In 2003, patients stayed, on average, 2.9 fewer nights than in 1978 (note that the 1985 data were capped at 15 nights).

Population Characteristics. The remainder of Table 1 presents the means for individual characteristics across the years. Trends indicate that individuals are reporting themselves to be, on average, more healthy over time with approximately one-quarter, one-fifth, and one-tenth of the population reporting fair/poor health in 1978, 1985, and 1998, respectively. By the end of the period, just over 11 percent of the population report fair/poor health.

Across SES variables, the percentage of those who are poor (adjusted household incomes less than half the median in the given year) varies from a high of 18.4 percent in 2000 to a low of 13.3 percent in 1991; 17.3 percent of the families in the study are poor in 2003. The percentage with incomes in the 90th percentile varies slightly (the percentiles were calculated before observations were dropped). Education levels have been rising, with substantially fewer people with less than high school education (48.2 percent in 1978 compared to 17.3 percent in 2003) or with high school diplomas (from 22.1 percent in 1978 to 5.2 percent in 1998, and then increasing to 18.6 percent in 2003). There was a substantial increase of 34 percentage points in those holding university degrees, from 10 percent in 1978 to 44.4 percent in 2003. Coinciding with the recession of the early 1990s, the employment rate dropped substantially in 1994 and the proportion not in the labour force increased.

Several demographic trends are also apparent. The proportion of non-native-born Canadians fell from 21.8 percent in 1978 to 17.6 percent in 1991, and then rebounded to 21.3 percent in 2003. There are fewer married, more single (never married), and more previously married individuals. The popula-

tion is aging; there are fewer persons below 35 years of age and substantially more in the 35 to 54 age groups in more recent years. The Canadian population is becoming more concentrated in Ontario and British Columbia.

To summarize, Canadians are reporting themselves to be healthier than in the past. They are also better educated and older. Fewer individuals are married. Poverty levels have fluctuated but are on the rise in the 2000s. Although there have been statistically significant changes in the percentage of Canadians making at least one contact with a medical doctor, the changes have not been substantial in magnitude (about 2.1 percentage points), but neither have they declined. Among those making at least one contact, there are more visits, on average. Visits with specialists have not changed significantly over time. Fewer Canadians are spending nights in hospital; when they do, their stays are shorter by roughly a half a week.

As noted previously, utilization is not a measure of access. Access is very difficult to determine; however, several of the surveys include items about an individual's inability to obtain needed care. Although the questions posed are not identical,⁹ the responses offer some information regarding individuals' perceptions of difficulties in obtaining care. In 1978, approximately 6.8 percent of respondents reported not receiving needed care, with slight changes reported in 1994 and 1998. In 2000, however, this proportion almost doubled to 13 percent, falling to 11.7 percent in 2003. For those with poor health status—assumed to be higher users of the health care system—the percentages are approximately double the overall average throughout the period of study. The percentage of low-income (high-income) individuals reporting problems accessing care is about 1.5 times higher than (or 0.75 as high as) the average in each year.

Socioeconomic Status and Health Care Utilization

Physician Contact and Visits. Table 2 presents the results for contact/no contact with a medical doctor.

TABLE 2
Change in Probability of Contacting a Medical Doctor (MD)

<i>MD Contact</i>	<i>1978</i>	<i>1985</i>	<i>1991</i>	<i>1994</i>	<i>1998</i>	<i>2000</i>	<i>2003</i>
Poor health	0.33*	0.35*	0.39*	0.56*	0.61*	0.53*	0.46*
Poor	0.07**	-0.11**	0.12**	-0.06***	-0.03	-0.06*	-0.12*
Rich	-0.05	0.14**	0.03	0.13*	0.03	0.05*	0.04**
Less than HS	-0.04	-0.03	-0.04	-0.06	0.03	-0.05*	-0.05*
Post-secondary	0.00	0.05	-0.03	0.12*	0.07	0.04*	0.08*
University	0.05	0.01	0.09***	0.12*	0.13*	0.05*	0.13*
Unemployed	-0.06	0.07	-0.10	-0.06	0.02	-0.02	0.06**
Not in LF	-0.05***	0.02	-0.12**	0.11*	0.04	0.06*	0.04*
Immigrant	0.01	0.10	0.00	0.02	0.08***	-0.04**	0.02
YSI 0-5	-0.10	0.00	0.42*	-0.16**	-0.23*	-0.11*	-0.19*
YSI 5-10	0.14**	-0.16	0.07	0.02	0.08	0.07**	-0.01
YSI 10-15	-0.06	0.05	-0.05	-0.02	0.48*	0.03	-0.01
YSI 15-20	-0.01	-0.04	0.10	0.16***	0.05	0.05	0.06
Neg health behav	-0.06*	-0.16*	-0.04	0.04***	-0.04	-0.07*	-0.06*
Male	-0.41*	-0.44*	-0.43*	-0.35*	-0.45*	-0.43*	-0.41*
Never married	-0.23*	-0.09**	-0.17*	-0.20*	-0.16*	-0.09*	-0.15*
Previously married	0.03	0.00	-0.02	-0.07***	-0.08***	-0.05*	-0.04**
Age 20 to 24	0.23*	0.10	0.34*	0.13**	0.04	0.02	0.03
Age 25 to 29	0.13*	0.07	0.17*	0.13*	-0.09***	0.04**	-0.03***
Age 30 to 34	0.03	0.01	0.26*	0.06	-0.09***	0.02	-0.03***
Age 35 to 39	-0.04	0.02	0.13**	0.12*	-0.04	0.02	-0.01
Age 45 to 49	0.04	-0.02	0.26*	-0.05	-0.10***	0.05*	0.00
Age 50 to 54	-0.01	0.15***	0.22*	0.19*	-0.03	0.17*	0.09*
Age 55 to 59	0.00	0.18**	0.37*	0.11**	0.32*	0.22*	0.19*
Age 65 to 69	0.16*	0.18***	0.59*	0.33*	0.22*	0.29*	0.36*
Age 70 to 75	0.14**	0.26**	0.54*	0.35*	0.41*	0.37*	0.41*
Age >75 years	0.31*	0.32*	0.68*	0.44*	0.37*	0.50*	0.46*
Atlantic	-1.18*	-0.13**	-0.07	-0.07***	0.01	0.03***	0.11*
Quebec	-0.28*	-0.08***	-0.22*	-0.16*	-0.20*	-0.17*	-0.16*
Prairies	-0.06***	0.00	-0.16*	-0.08**	-0.08**	-0.05*	0.00
British Columbia	-0.08**	0.07	-0.06	-0.06***	-0.08***	-0.03**	0.07*
Sample size	16,043	6,961	8,655	14,394	10,900	83,703	80,468

Notes: HS = high school. LF = labour force. YSI = years since immigration. Numbers represent the change in probability of contacting a medical doctor for a change in the given characteristic from the base case (holding all else constant). The base case is a native-born Canadian female who is 40-44 years of age, reports being in good to excellent health, has a high school diploma, is employed, has no negative health behaviours, and lives in Ontario.

* significant at 99 percent level. ** significant at 95 percent level. *** significant at 90 percent level.

Source: Authors' calculations.

The probability that an individual with fair/poor health status visits a doctor is between 0.33 (98 percent) and 0.61 percentage points (316 percent) higher than for those who are in better health. The difference grows over time, peaking in 1998 then settling to about twice as likely in the 2000s. The only other characteristics that compare in magnitude are being 75 years of age or older (compared to being 40 to 45 years old) and being male (compared to female). The gender difference is remarkably stable across time.

Poverty is significantly associated with physician contact, except in 1998. Poorer individuals have utilization probabilities that are between 0.07 and 0.12 points (in 1978 and 1991, respectively) higher than middle-income earners. From 1994 on, poverty is negatively associated with utilization; the poor are 0.06 points (13 percent) to 0.12 points (21 percent) less likely to visit a doctor between 1994 and 2003. In 1985, 1994, 2000, and 2003, higher-income individuals are significantly more likely to contact a physician (32 percent, 29 percent, 10 percent, and 8 percent, respectively) than the comparator.

In the early years of the study, education is not significantly related to physician contact, but it becomes significantly positively related in the later years. Compared to high school graduates, individuals who did not complete high school are about 10 percent less likely to make contact, while the post-secondary or university educated are 10 to 30 percent more likely to make contact. Unemployment is significantly related to contacting a physician only in 2003, when the unemployed are 13 percent more likely than the employed to have at least one visit. Those not in the labour force are significantly less likely to contact a medical doctor in the early years of the study, but are more likely to do so in 1994, 2000, and 2003 (24 percent, 12 percent, and 8 percent, respectively). Immigrants who have resided in Canada for up to five years have a significantly higher probability (0.42, or 40 percent more) of seeing a physician in 1991 than native-born Canadians,

but significantly lower probabilities in 1994, 1998, 2000, and 2003 (−0.16, or 27 percent; −0.23, 37 percent; −0.11, 20 percent; and −0.19, 32 percent, respectively). Immigrants residing in Canada for longer periods of time do not differ systematically from native-born Canadians.

Compared to married persons, those never married or previously married are significantly less likely to contact a physician in the later years of the study. Individuals who have negative health behaviours are significantly less likely to contact a physician compared to those who do not, except in 1998. As already stated, across the period males are about half as likely to contact a physician as females, and older individuals are more likely to contact a physician than the middle-aged. Individuals from all regions are less likely to contact a physician than an Ontarian.

Table 3 records the change in mean number of visits, conditional on at least one visit, for a change in the given characteristic (holding all else constant). Those in poor health have 6 to 11 more visits, on average, than the population mean; compared to healthy persons, they have more than double the mean visits in 1978 and close to triple in the final study years. From 1991 onward, lower-income individuals have more visits (approximately 10 percent more) than middle-income individuals (about half a visit more than average). Physician visits among those from wealthier households are not significantly different from the mean except in 1994, when they have 13 percent more visits, and in 2000 when they have 5 percent fewer.

Individuals with less than a high school education have about 25 percent more visits than high school graduates in the last few years of the study. Those with university education have substantially more visits in 1985 and 1991, but a similar number of visits to the comparison group in later years. In the early and late periods of the study, the unemployed have significantly more visits than average,

TABLE 3
Change in Number of Visits to a Medical Doctor (MD)

<i>MD Contact</i>	<i>1978</i>	<i>1985</i>	<i>1991</i>	<i>1994</i>	<i>1998</i>	<i>2000</i>	<i>2003</i>
Poor health	6.26*	7.32*	11.08*	11.25*	9.72*	9.88*	8.79*
Poor	0.14	0.09	0.59**	0.82*	0.43***	0.66*	0.47*
Rich	0.10	-0.05	-0.20	0.76**	0.11	-0.27*	0.00
Less than HS	-0.05	0.23	0.34	0.23	0.53***	0.16***	0.26**
Post-secondary	-0.76*	0.05	0.78*	0.76*	0.16	0.11	0.47*
University	-0.72*	0.88*	0.83*	0.12	0.27	0.00	0.05
Unemployed	3.39*	1.06***	0.49	0.70	-0.21	1.15*	0.36**
Not in LF	2.49*	1.20*	1.37*	2.81*	1.44*	1.97*	1.65*
Immigrant	-0.33	0.00	0.34	0.12	0.37	-0.22**	-0.36*
YSI 0-5	-0.57	1.25	-1.42**	-1.29*	-0.64	-1.97*	-0.93*
YSI 5-10	0.67	1.48***	-1.22***	3.46*	-1.82*	-0.33***	-0.31***
YSI 10-15	0.72	0.97	1.76**	0.18	-0.69	0.16	-0.88*
YSI 15-20	2.58*	1.71**	1.07	0.06	0.21	0.22	-0.16
Neg health behav	0.24	-0.05	-0.78*	0.29	0.16	0.66*	0.72*
Male	-1.24*	-1.25*	-1.46*	-1.52*	-1.28*	-1.47*	-1.40*
Never married	-0.33	0.51***	-0.34	0.23	0.11	-0.27*	-0.36*
Previously married	0.48***	0.19	0.29	0.18	0.64*	0.22**	0.57*
Age 20 to 24	-0.33	-0.42	1.71*	-0.59	0.75***	0.05	0.05
Age 25 to 29	0.53	0.28	1.95*	0.41	1.44*	0.98*	1.19*
Age 30 to 34	-0.62**	-0.28	1.37*	0.00	1.17*	0.71*	1.09*
Age 35 to 39	-1.20*	-0.88**	0.44	-0.41	1.07*	0.27**	0.31*
Age 45 to 49	-0.19	0.60	-0.29	-0.59***	0.43	-0.11	-0.41*
Age 50 to 54	-0.24	0.00	0.68	-0.41	0.85**	0.00	-0.16
Age 55 to 59	-0.43	-0.28	0.59	-1.47*	1.34*	0.44*	0.00
Age 60 to 64	0.76***	0.05	1.81*	-1.29*	-0.21	-0.05	-0.16
Age 65 to 69	-0.43	0.93	1.71*	-0.70***	0.05	-0.33**	-0.36**
Age 70 to 75	-0.33	1.30**	1.42**	-1.17*	1.17**	0.00	-0.52*
Age >75 years	0.57	2.22*	3.42*	-0.70***	0.96**	-0.22	-0.31**
Atlantic	-0.72*	-0.19	-0.49	-0.53***	0.05	-0.55*	0.05
Quebec	-1.24*	-1.34*	-1.76*	-2.17*	-1.50*	-1.53*	-1.60*
Prairies	-0.57*	0.32	-0.78*	-0.47**	-0.21	0.00	-0.10
British Columbia	-0.10	0.23	0.49	0.29	0.80*	0.49*	0.31*
Sample size	12,636	5,814	7,441	11,754	9,058	69,258	66,307

Notes: HS = high school. LF = labour force. YSI = years since immigration. Numbers represent the changes in the population mean number of visits, conditional on at least one visit, for the given characteristic. For example, in 2003 the mean number of visits for those in poor health, who had at least one visit, was 8.79 more visits than the mean for all individuals who had at least one visit.

* significant at 99 percent level. ** significant at 95 percent level. *** significant at 90 percent level.

Source: Authors' calculations.

but only about one-third of a visit more in 2003. Individuals who are out of the labour force have significantly more visits than the comparator throughout the study (approximately 30 percent more in most years, and 50 percent more in 1978 and 1994). Newer immigrants (with less than ten years in Canada) have consistently fewer visits in all but the earliest years of the study.

The results for demographic characteristics are mixed. Males have about 30 percent fewer visits, on average, than females throughout the study period. Never married individuals have similar numbers of visits as married people at the beginning of the study but about 7 percent fewer visits by the end, and previously married individuals have about 10 percent more visits in 1978 and from 1998 onwards. Surprisingly, younger individuals have more visits than those aged 40 to 45 years, while older individuals have more visits at the beginning of the study but the same or fewer visits as the comparator by the end of the study.

To summarize, those with poorer health are much more likely to contact a physician and to have more visits than healthier individuals. Poorer and less educated persons are less likely to contact a physician, but they have more visits once contact is made. Wealthier and more educated individuals are more likely to have an initial visit than their counterparts and then have similar numbers of visits. The results are mixed for employment status; the unemployed have about as many contacts as the employed, while those who are out of the labour force have fewer contacts at the beginning of the study and similar or slightly higher probabilities by the end. However, by the end of the study both the unemployed and those not in the labour force have substantially more visits than an employed person. Newer immigrants are less likely to have any utilization and have fewer mean visits than native-born individuals, and this pattern is particularly true by the end of the study.

Specialist Contact and Visits. The probability of contacting a specialist (see Table 4) is significantly

higher for unhealthy individuals (about 0.47 points or almost three times that of someone in better health). Lower SES groups are significantly less likely to see a specialist; the relationship is quite stable over time. Individuals from poorer households are about 18 percent less likely than those from middle-income households to contact a specialist throughout the period, while wealthier persons are over 25 percent more likely. Those with less than a high school education are about 10 points (20 percent) less likely than high school graduates to contact a specialist, while those with post-secondary education are about 5 to 15 points (15–30 percent) more likely. The unemployed contact specialists slightly more often than the employed, and those not in the labour force do so about 30 percent more. Immigrants, no matter how long in Canada, are never more likely than native-born Canadians to contact a specialist.

Males have significantly fewer contacts with specialists than females (about half as likely). Compared to married individuals, those who never married have significantly fewer contacts with specialists by the end of the study period. Older individuals are more likely to contact a specialist than middle-aged persons. The results are mixed for people with negative health behaviours. Compared to Ontario residents, the probability of visiting a specialist is higher in Quebec, lower in the Prairies and British Columbia, and similar in the Atlantic region.

The positive association with SES (other than income) persists in the later years of the study for the number of visits to a specialist, conditional on at least one visit (see Table 5). Health is the most strongly associated factor; less healthy individuals have four to five more visits per year than average (2.5 times that of a healthier person). Poverty status does not matter except in 2003 when the poor have about half a visit more than average (20 percent more visits than middle-income earners). The less educated have almost 20 percent fewer visits (about half a visit less) in 2000 and 2003, which is an

TABLE 4
Change in the Probability of Contacting a Specialist

<i>Characteristics</i>	<i>1985</i>	<i>1991</i>	<i>1994</i>	<i>1998</i>	<i>2000</i>	<i>2003</i>
Poor health	0.44*	0.42*	0.44*	0.48*	0.47*	0.47*
Poor	-0.09**	0.02	-0.08**	-0.10*	-0.08*	-0.08*
Rich	0.23*	0.13*	0.18*	0.14*	0.07*	0.11*
Less than HS	-0.10**	-0.06	-0.11*	-0.06***	-0.09*	-0.12*
Post-secondary	0.10**	0.12*	0.13*	0.12*	0.05*	0.07*
University	0.12*	0.23*	0.13*	0.16*	0.10*	0.13*
Unemployed	0.12	0.10***	0.07	0.01	0.05*	0.04**
Not in LF	0.15*	0.13*	0.17*	0.13*	0.12*	0.14*
Immigrant	0.10**	0.14*	0.08*	-0.03	-0.03***	-0.04*
YSI 0-5	-0.50*	0.28*	-0.28*	-0.10	-0.12*	-0.09*
YSI 5-10	-0.14	-0.24**	0.04	-0.23*	-0.15*	-0.10*
YSI 10-15	-0.12	-0.14	-0.13	0.14	-0.05***	-0.08*
YSI 15-20	-0.28*	-0.21**	-0.09	-0.37*	-0.03	-0.08**
Neg health behav	-0.07**	-0.05**	0.04***	-0.03	-0.03*	0.02**
Male	-0.20*	-0.18*	-0.30*	-0.30*	-0.27*	-0.28*
Never married	-0.02	0.00	-0.14*	-0.03	-0.05*	-0.05*
Previously married	-0.07	-0.05	-0.04	0.02	-0.07*	-0.01
Age 20 to 24	-0.23*	0.05	-0.05	-0.04	-0.03***	0.00
Age 25 to 29	-0.06	0.03	-0.02	-0.03	-0.02	-0.03***
Age 30 to 34	-0.02	0.00	-0.05	-0.07	0.02	0.05*
Age 35 to 39	-0.09	0.08	0.04	0.10**	0.00	0.06*
Age 45 to 49	0.13***	0.08	-0.05	0.08	0.02	0.02
Age 50 to 54	-0.04	0.13**	0.02	0.13*	0.10*	0.07*
Age 55 to 59	0.07	0.25*	0.03	0.17*	0.13*	0.10*
Age 60 to 64	-0.02	0.14**	0.04	0.08	0.16*	0.17*
Age 65 to 69	0.02	0.21*	0.07	0.07	0.12*	0.13*
Age 70 to 75	0.20**	0.15***	-0.02	0.08	0.17*	0.12*
Age >75 years	0.08	0.29*	-0.04	-0.01	0.12*	0.09*
Atlantic	-0.06	0.00	-0.09**	-0.11**	-0.04*	-0.03
Quebec	0.06	0.08***	0.13*	0.16*	0.13*	0.12*
Prairies	-0.09**	-0.13*	-0.10*	-0.11*	-0.12*	-0.09*
British Columbia	-0.04	-0.02	-0.13*	-0.16*	-0.12*	-0.06*
Sample size	6,961	8,655	14,394	10,900	83,703	80,468

Notes: HS = high school. LF = labour force. YSI = years since immigration. Numbers represent the change in probability of contacting a specialist for a change in the given characteristic from the base case (holding all else constant). The base case is a native-born Canadian female who is 40-44 years of age, reports being in good to excellent health, has a high school diploma, is employed, has no negative health behaviours, and lives in Ontario.

* significant at 99 percent level. ** significant at 95 percent level. *** significant at 90 percent level.

Source: Authors' calculations.

TABLE 5
Change in Number of Visits to a Specialist

<i>Characteristics</i>	<i>1985</i>	<i>1991</i>	<i>1994</i>	<i>1998</i>	<i>2000</i>	<i>2003</i>
Poor health	3.87*	5.70*	6.18*	4.60*	5.44*	4.70*
Poor	-0.21	0.69	0.42	0.10	-0.07	0.61*
Rich	0.37	-0.44	-0.04	1.13**	0.17	-0.19
Less than HS	-0.98*	-0.13	0.04	0.68	-0.58*	-0.58*
Post-secondary	-0.61	0.28	2.30*	0.32	-0.10	0.03
University	0.15	0.56	0.00	0.84***	0.20	0.32**
Unemployed	-0.64	-1.16***	0.23	-0.48	0.48***	-0.42***
Not in LF	0.43	-0.03	3.03*	0.97**	2.35*	0.99*
Immigrant	-0.61	-0.13	0.27	0.13	-0.61*	-0.32**
YSI 0-5	6.50***	-1.94*	0.04	-1.38***	-1.60*	-1.57*
YSI 5-10	1.28	-1.31	0.84	-2.13*	0.10	-0.77*
YSI 10-15	-0.95	0.03	-0.77	-1.45**	-1.16*	-0.67**
YSI 15-20	0.82	-0.19	-0.81	1.48	-0.78**	-0.99*
Neg health behav	0.24	-0.69*	0.58***	-0.35	0.51*	0.74*
Male	0.21	-0.47***	0.31	0.10	-0.51*	-0.70*
Never married	-0.31	-0.59	1.08**	-0.35	0.48*	-0.26**
Previously married	0.43	0.25	-0.77**	0.52	0.17	0.32**
Age 20 to 24	0.24	0.59	-2.27*	-0.23	-0.24	-0.51*
Age 25 to 29	2.53*	1.78**	0.88	0.61	2.04*	1.41*
Age 30 to 34	1.74**	1.63**	0.27	0.71	0.58*	1.79*
Age 35 to 39	0.98	-0.16	-1.50*	-0.61	0.31	1.02*
Age 45 to 49	0.24	-1.28*	-1.54*	-0.93**	-0.10	-0.61*
Age 50 to 54	-0.34	-0.72	-2.04*	-1.19*	-0.03	-0.16
Age 55 to 59	0.55	-0.91***	-2.38*	-0.19	-0.20	-0.38**
Age 60 to 64	-0.21	0.97	-2.30*	-1.67*	-1.02*	-0.26
Age 65 to 69	0.98	-0.34	-2.11*	-1.80*	-0.92*	-0.64*
Age 70 to 75	0.49	-1.16***	-2.73*	-2.16*	-1.05*	-1.15*
Age >75 years	0.76	-0.13	-2.27*	-1.77*	-1.60*	-1.50*
Atlantic	-0.79	-0.56	-1.11**	-0.74	-1.26*	-0.64*
Quebec	-0.76**	-1.00*	-1.27*	-1.51*	-1.29*	-1.18*
Prairies	0.15	0.47	-0.35	-0.52	-0.58*	-0.06
British Columbia	0.34	0.44	0.12	-0.48	-0.65*	-0.22***
Sample size	2,198	2,600	3,822	2,937	24,465	23,161

Notes: HS = high school. LF = labour force. YSI = years since immigration. Numbers represent the changes in the population mean number of visits, conditional on one visit, for the given characteristic. For example, in 2003 the mean number of visits for those in poor health, who had at least one visit, was 4.70 more visits than the mean for all individuals who had at least one visit.

* significant at 99 percent level. ** significant at 95 percent level. *** significant at 90 percent level.

Source: Authors' calculations.

improvement from the 40 percent fewer visits (about one visit less) in 1978 but a decline from the insignificant relationship in the 1990s. Those not in the labour force have one to three more visits than average from 1991 onwards. Newer immigrants have about half as many visits as native-born Canadians; the gap narrows with time, but immigrants with over 20 years of residence in Canada still have fewer visits by the end of the study.

Surprisingly, older individuals have substantially fewer visits to specialists than middle-aged individuals, and younger individuals have more visits. Those over the age of 75 have 1½ to 2¼ fewer visits than average (half as many visits as a middle-aged person) from 1994 on. Males have similar numbers of visits as females in the early periods of the study but fewer by the end. Never married and previously married individuals have similar numbers of visits except in the last year of the study period, when those who were never married have fewer visits, and those who were previously married have more visits than average (about 10 percent). Those with negative health behaviours have more visits (one-half to three-quarters of a visit more) than average in the latest periods.

Hospitalizations. As with other types of utilization, health status is most strongly related to hospital admissions (Table 6). Those in poor health are two to three times more likely to be hospitalized than someone in better health. Poverty is associated with more hospitalizations, while wealthier individuals have roughly the same number of hospital visits as middle-income earners in the later years of the study. Those not in the labour force are more likely to be hospitalized when compared to employed individuals, and the unemployed are never less likely. Immigrants are never more likely to have a hospital stay than non-immigrants, and this trend increases in the later years of the study. Never married individuals are about half as likely as married persons to be admitted to the hospital, and previously married persons are less likely in 1985, 1998, and 2000. Those with negative health behaviours are approximately 20 percent more likely than those without to

be hospitalized in the last half of the study. Younger and older individuals are more likely to be hospitalized than middle-aged people (counter to popular belief, the likelihood is higher for younger individuals than older). In the final years of the study, individuals in the Atlantic and Prairie regions are more likely to be hospitalized than Ontario residents.

Health status is most strongly associated with the number of nights spent in hospital, conditional on admission (Table 7). In the final years of the study, those living in poorer households have about 25 percent more nights in hospital than do those from middle-income households, while wealthier individuals spend 20 percent fewer nights in hospital. Individuals who are not in the labour force have substantially more nights in hospital than their counterparts. Immigrants have significantly fewer nights than non-immigrants in the later years. Those who are not married have more nights, on average, than do married individuals, but significance varies across the years. Males and those with negative health behaviours spend more nights in hospital, on average, than their comparators. In general, older persons have more nights and younger persons fewer than the middle-aged.

Summary of Findings. For all health care services, health status is most strongly related to the probability of any contacts and the number of contacts, conditional on at least one. The magnitude of the relationship between health status and health care utilization is stable or growing through time. Those with lower levels of SES (income, education, or employment) have, on average, less likelihood of visiting a physician than individuals from mid-SES households, and those with higher SES levels have a greater likelihood. These tendencies seem to be growing over time. However, those with lower SES have, on average, higher numbers of physician visits conditional on at least one visit. Thus, there appears to be some “adjustment” once a person accesses the system. For immigrants, the patterns vary somewhat depending on time spent in Canada. Those with long tenure in Canada have probabilities similar to native-born Canadians, but newer arrivals have much lower

TABLE 6
Change in the Probability of Admission to a Hospital/Nursing Home

<i>Characteristics</i>	<i>1978</i>	<i>1985</i>	<i>1991</i>	<i>1994</i>	<i>1998</i>	<i>2000</i>	<i>2003</i>
Poor health	0.37*	0.46*	0.39*	0.48*	0.55*	0.51*	0.49*
Poor	0.03	-0.04	0.14*	0.17*	0.08	0.07*	0.08*
Rich	-0.08	0.19*	-0.04	-0.03	-0.15***	-0.05**	-0.04
Less than HS	0.04	0.05	0.10***	-0.02	0.06	0.02	0.02
Post-secondary	-0.09**	0.05	0.06	0.04	0.09	0.05**	-0.04**
University	-0.08	0.06	0.12**	-0.03	0.16*	0.00	-0.01
Unemployed	0.31*	0.13	-0.01	0.09	0.21**	0.10*	0.03
Not in LF	0.35*	0.28*	0.25*	0.24*	0.25*	0.20*	0.23*
Immigrant	-0.04	-0.04	0.05	0.06	-0.05	-0.10*	-0.07*
YSI 0-5	0.17**	-0.01	-0.19	-0.24*	0.13	-0.04	-0.14*
YSI 5-10	0.15***	-0.15	-0.34**	-0.02	-0.11	-0.06	0.00
YSI 10-15	-0.23**	-0.12	-0.46*	0.04	0.07	0.07	-0.11**
YSI 15-20	0.10	-0.20	-0.15	-0.23***	-0.13	-0.01	-0.03
Neg health behav	0.11*	0.02	-0.05	0.10*	0.11*	0.04*	0.06*
Male	-0.21*	-0.23*	-0.14*	-0.23*	-0.23*	-0.19*	-0.21*
Never married	-0.31*	-0.35*	-0.32*	-0.28*	-0.30*	-0.20*	-0.30*
Previously married	-0.01	-0.12**	-0.02	-0.06	-0.14*	-0.06*	0.00
Age 20 to 24	0.11***	0.27*	0.44*	0.34*	0.42*	0.26*	0.45*
Age 25 to 29	0.22*	0.16***	0.47*	0.45*	0.46*	0.36*	0.41*
Age 30 to 34	-0.03	0.16***	0.37*	0.26*	0.29*	0.29*	0.45*
Age 35 to 39	-0.18*	-0.19***	0.10	0.25*	0.20**	0.17*	0.26*
Age 45 to 49	-0.14**	-0.03	-0.03	-0.06	0.12	-0.03	0.10*
Age 50 to 54	-0.15**	0.07	0.08	0.09	0.02	0.02	0.10*
Age 55 to 59	-0.10	-0.14	0.17***	0.06	0.39*	0.11*	0.17*
Age 60 to 64	-0.13***	-0.12	-0.21***	0.31*	0.13	0.16*	0.22*
Age 65 to 69	-0.14**	-0.19	0.07	0.29*	0.31*	0.18*	0.20*
Age 70 to 75	-0.04	0.14	0.15	0.24*	0.39*	0.21*	0.26*
Age >75 years	-0.07	0.19***	0.29*	0.37*	0.49*	0.34*	0.33*
Atlantic	0.04	0.15***	-0.06	-0.04	0.14**	0.06**	0.08*
Quebec	-0.06***	-0.02	-0.10**	0.00	0.04	0.09*	0.04**
Prairies	0.15*	0.05	0.01	0.02	0.02	0.07*	0.08*
British Columbia	0.04	0.11	-0.10***	-0.13*	0.01	0.01	0.01
Sample size	16,043	6,961	8,655	14,394	10,900	83,703	80,468

Notes: HS = high school. LF = labour force. YSI = years since immigration. Numbers represent the change in probability of a hospital admission for a change in the given characteristic from the base case (holding all else constant). The base case is a native-born Canadian female who is 40-44 years of age, reports being in good to excellent health, has a high school diploma, is employed, has no negative health behaviours, and lives in Ontario.

* significant at 99 percent level. ** significant at 95 percent level. *** significant at 90 percent level.

Source: Authors' calculations.

TABLE 7
Change in Mean Number of Nights in Hospital

Characteristics	1978	1985	1991	1994	1998	2000	2003
Poor health	8.59*	1.37*	11.84*	11.71*	13.19*	12.88*	14.59*
Poor	-0.33	0.06	2.76**	-2.05	1.16	1.80*	1.99*
Rich	-3.01*	0.12	0.09	-3.18	2.94	-1.71**	-1.82*
Less than HS	0.11	-0.75	0.62	3.41***	3.21***	-1.17**	0.41
Post-secondary	-1.34	-0.56	-1.07	2.62	3.03	0.81	-0.17
University	-1.56	-0.56	0.27	0.57	3.47***	-0.54	1.33**
Unemployed	3.90*	0.81	2.58	-0.45	-4.46**	0.09	1.49
Not in LF	2.01*	1.24**	1.25	7.05*	3.92**	8.74*	4.81*
Immigrant	0.11	-0.25	4.54*	-1.59	0.80	-2.16*	-0.50
YSI 0-5	-0.45	1.61	0.18	3.98	-2.67	0.72	-5.31*
YSI 5-10	-2.12	-1.06	-3.47	-0.91	-1.51	-0.18	-2.65**
YSI 10-15	-0.22	3.73**	4.18	2.50	-6.06**	-3.33*	-2.57**
YSI 15-20	-4.79*	-1.18	-6.50*	-6.37**	-4.54	-2.70***	-2.24
Neg health behav	1.00***	-0.12	0.71	2.96**	-0.27	-0.36	-0.33
Male	-0.11	0.06	1.51***	1.25	4.10*	2.07*	1.16*
Never married	5.46*	0.37	1.96	5.23**	7.04*	8.02*	0.33
Previously married	2.34*	0.25	1.42	2.27	13.19*	3.87*	3.32*
Age 20 to 24	-4.01*	-2.17*	-1.42	-8.53*	1.60	-1.71**	-4.56*
Age 25 to 29	-2.90*	-2.24*	0.09	-8.07*	-2.05	-0.18	-3.73*
Age 30 to 34	-3.12*	-1.30***	3.03	-7.62*	6.15***	-0.36	-3.56*
Age 35 to 39	0.45	1.06	6.05*	-4.43**	2.58	2.16**	-2.74*
Age 45 to 49	1.90	0.75	4.72***	-5.46**	4.10	0.72	-0.50
Age 50 to 54	2.34	-0.68	3.20	0.11	1.16	6.67*	-1.24
Age 55 to 59	2.12	1.49	9.26*	-6.59*	16.31*	6.76*	0.50
Age 60 to 64	1.34	-0.87	8.81*	-7.96*	11.94*	4.05*	1.41
Age 65 to 69	4.46*	1.12	7.30*	0.34	14.70*	9.37*	6.80*
Age 70 to 75	5.13*	0.50	5.96**	4.89	18.53*	7.21*	1.66
Age >75 years	4.68*	0.62	9.97*	-0.34	17.29*	13.88*	6.71*
Atlantic	-0.56	1.06	0.09	-0.45	5.88*	0.90	0.58
Quebec	-1.23***	-2.36*	-1.25	0.00	3.65**	-1.44*	-0.25
Prairies	-0.56	0.00	0.27	-4.21*	1.34	-0.45	-0.75
British Columbia	-1.23	-1.06***	-1.16	-2.05	-1.34	0.36	-1.58*
Sample size	1,950	933	1,118	1,591	999	8,418	8,031

Notes: HS = high school. LF = labour force. YSI = years since immigration. Numbers represent the changes in the population mean number of nights in hospital, conditional on staying at least one night, for the given characteristic. For example, in 2003 the mean number of nights for those in poor health was 14.59 more nights than the mean number of nights for all individuals who had at least one night in hospital.

* significant at 99 percent level. ** significant at 95 percent level. *** significant at 90 percent level.

Source: Authors' calculations.

probabilities of seeing a physician. Conditional on at least one contact, all groups of immigrants have fewer visits, on average, than do non-immigrants, and this finding is particularly true in the later years of the study.

A pattern of inequity is apparent when examining contact with specialists over time. Individuals with lower levels of SES are less likely to have contact, while those with higher SES are more likely to see a specialist. There is an evolving positive relationship between the number of visits to a specialist, conditional on one visit, and education; those with lower levels of education have fewer visits, and those with higher levels of education have more visits by the end of the study. Thus, after controlling for health status, wealthier, better educated, native-born individuals are receiving significantly different outpatient care than those who are poorer, less educated, or new to Canada.

Patterns for inpatient care are also significantly different after controlling for health status (which exhibits the strongest and most consistent relationship with hospital admissions and length of stay). Poorer individuals are slightly more likely than those from middle-income households to be hospitalized, and they spend more nights once admitted (about two nights more). Wealthier persons are about as likely as their middle-income counterparts to be hospitalized but have shorter stays (about two nights less by the end of the study). Those who are not employed (particularly individuals who are not in the labour force) are more likely to be hospitalized than the employed. Immigrants have about the same likelihood of hospitalization as native-born Canadians but, in the later period of the study, have substantially shorter lengths of stay.

DISCUSSION AND CONCLUSIONS

Substantial change has occurred in the Canadian health care system over the past quarter century. Anecdotal evidence and media coverage of difficulties in obtaining health care also seem to be on the

rise. This study set out to present evidence on utilization patterns in Canada between 1978 and 2003 to determine whether some groups (e.g., those with lower SES) are experiencing different levels of care in a system designed to offer care based on need rather than ability to pay.

The results demonstrate that health status is most strongly associated with utilization of publicly insured health care services; however, there is a strong indication of a growing trend toward higher SES groups obtaining more outpatient care. There seems to be some adjustment toward more physician visits for those in lower SES circumstances once they are able to access the system; however, this is not true for specialist services. There is a strong positive association between income and education and the probability of receiving any care from a specialist, and a strong negative relationship between education and the number of visits, conditional on one visit, in the last two study years. Non-native-born Canadians fare poorly in all measures of utilization. Canadians with lower levels of SES have higher rates of hospitalization and longer stays but, as eluded to previously, this may be due to lower levels of primary care (unfortunately, no measure of avoidable hospitalization exists in the surveys). In sum, equity seems to be more of an issue in the initial contact stage rather than in the amount of care received once in the system, and equity issues seem to be most acute for specialist services.

Education is becoming a strong indicator of health care use. It may be that better educated individuals (a) have more information on what is available (e.g., latest diagnostics) and a greater awareness of their rights within the system, and thus demand more care or are more persistent; and (b) network with individuals within the health care system (e.g., through business or social activities), and thus have better chances of obtaining services.

Decreases in the proportions of the population accessing physicians/specialists are not evident. Hospital admissions and lengths of stay have

dropped significantly over time (likely due to improved technology and outpatient services). Although a higher proportion of individuals complain about unmet needs, the increase is not nearly as substantial as anecdotal evidence and media attention suggest. Although no claims of causal relationships are made, the associations indicate that there is a growing gap between the amount of care received by the rich and poor, higher and lower educated, and native- and non-native-born Canadians. If we wish to support the intent of the *Canada Health Act*, decision-makers may wish to examine policies concerning language and cultural issues, and the necessity of care. An inability to pay for treatments and/or drugs may be a barrier to care, thus additional insurance coverage (e.g., for pharmaceuticals) may increase health care utilization by those who need but cannot afford treatment.¹⁰

Other public policy initiatives could include providing physicians in poor areas, establishing clinics in underserved areas, offering more cultural training for physicians, training more physicians from minority groups, and educating the public on the appropriate use of the health care system (information intended for immigrant communities should be language specific; Deri 2005). Given that contact with a specialist is strongly associated with SES and, in most cases, requires a referral from a general practitioner, clinical guidelines for referrals may be in order. Clinical guidelines for treatment by specialists may also be helpful in ensuring equity.

Finally, higher rates of hospitalization for people from lower SES groups may not be a positive sign. Although no measure of unavoidable hospitalizations was available in this study, several recent studies have examined equity in hospital admissions and lengths of stay and have found that at least some of the seeming advantages seen among individuals from lower SES circumstances are the result of conditions that are treatable or controllable with the provision of adequate primary care. Thus, equitable primary care is an avenue to avoid more expensive forms of treatment as well as an issue of fairness.

NOTES

The research for this project was initiated while the authors were employed in the Health Supply and Demand Analysis Division, Applied Research and Analysis Directorate, Health Canada, Ottawa. The authors would like to thank seminar participants at the Applied Research and Analysis Directorate of Health Canada, particularly Charles Mallory, Director of Health Supply and Demand Analysis, for assistance with data access; JoAnn Kingston-Riechers for insightful discussions; and Catherine Deri and two anonymous referees for helpful comments. Financial support from the Canada Research Chair (CRC) program, the Social Sciences and Humanities Research Council via CRC and Social and Economic Dimensions of an Aging Population, the Canada Foundation for Innovation, and the Ontario Ministry of Research and Innovation is gratefully acknowledged. The analyses and conclusions expressed in this paper are those of the authors and should not be taken as reflecting an official position of Health Canada or Finance Canada.

Data Sources

The analyses were performed on Health Canada's DAISnesstar editions of anonymized microdata from the 1978 Canadian Health Survey; the 1985 and 1991 General Social Survey (Health) Public Use File; the 1994 and 1998 National Population Health Survey, Health Share File; and the Canadian Community Health Survey, 2000–01 (Cycle 1.1) and 2003 (Cycle 2.1), Annual Share File. All microdata sets were prepared by the Health Statistics Division, Statistics Canada, with the exception of the 1985 and 1991 General Social Surveys, which were prepared by the General Social Survey Subdivision, Statistics Canada. The analyses were carried out using STATA 8.2 SE by the Health Supply and Demand Analysis Division, Applied Research and Analysis Directorate, Health Canada. Responsibility for the use and interpretation of these data is entirely that of the authors.

¹ Many economic studies examine the appropriate estimation of count data (e.g., Hausman, Hall, and Griliches 1984; Sarma and Simpson 2006; Winkelmann 2003) or moral hazard (e.g., Chiappori, Durand, and Geoffard 1998; Schellhorn 2001; Stabile 2001).

² The possibility of endogeneity of health status is recognized as a hurdle in this literature and this paper. However, instrumental variables analysis was impossible, as health status instruments could not be identified

in all of the surveys; the results are presented with this caveat. In a companion paper, Curtis (2006) uses measures of maternal and paternal health status, available in only two surveys, as instruments and obtains similar results.

³ Inequity in utilization may develop as a result of underutilization by those with the low levels of care or overutilization by those with high levels, or both. We examine the more basic question of whether a SES-utilization relationship exists after adjusting for “need.” We are careful to distinguish between demand for, access to, and utilization of health care. Generally, researchers are unable to observe individuals’ demand for health care or their attempts to access the system. Typically, as in this study, data are available only on the number of times a practitioner was seen; we therefore examine utilization and not access.

⁴ All data are from Statistics Canada. Share use files can be shared under the “authorized disclosures of confidential *Statistics Act* information” of the *Statistics Act* (see <http://www.statcan.ca/english/about/pia/section3.htm>)

⁵ Data on specialist visits are not available in 1978. Specialists are practitioners other than general/family physicians (e.g., surgeons, gynecologists, psychiatrists).

⁶ In 1978, poor health status is equal to one if the respondent reported a major activity limitation, inability to do a major activity, sometimes/never feeling healthy enough to carry out normal activities, or ill health often affected the amount of work done.

⁷ Household income is grouped in 1991 and 1994. For these years, the midpoint was used (e.g., the \$10,000 to \$15,000 group was assigned \$12,500). The value of the cap for the highest income groups (i.e., > \$80,000) was assigned \$80,000. Trend analyses were reasonable, and sensitivity analyses, using other income definitions, resulted in similar findings.

⁸ Different combinations of variables were explored as endogeneity may be an issue, and non-response to some of the questions was an issue. A single negative health behaviours variable avoids substantial loss of sample size, and the main results hold throughout.

⁹ Survey items associated with access are as follows: 1978 – Reason for not seeing a health professional during the last 12 months; 1994 and 1998 – Health care

needed but not received in past year; and 2000 and 2003 – In the past 12 months, was there ever a time when you felt that you needed health care but didn’t receive it?

¹⁰ Williamson and Fast (1998) find that lack of insurance is a barrier to seeking care for lower-income individuals because they cannot afford treatment. However, moral hazard may be an issue with offering added insurance (Chiappori, Durand, and Geoffard 1998; Sarma and Simpson 2006; Stabile 2001). We included insurance variables when available in the data and found, as others have, that these variables are significantly positive; other results remain intact.

REFERENCES

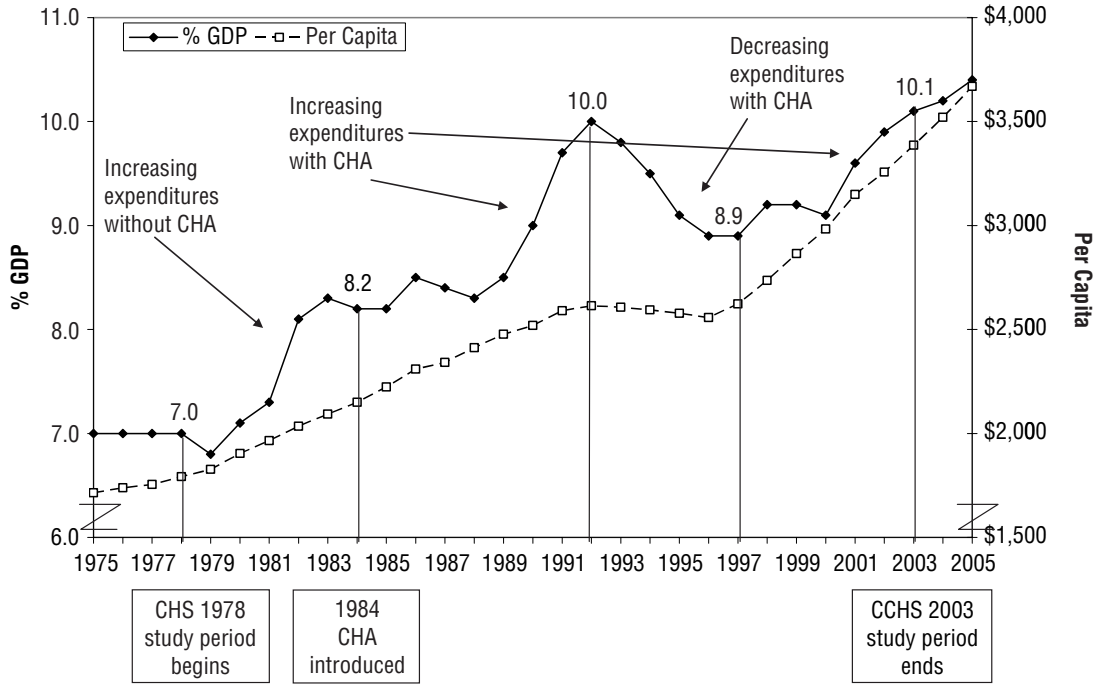
- Atella, V., F. Brindisic, P. Debe, and F.C. Rosatig. 2004. “Determinants of Access to Physician Services in Italy: A Latent Class Seemingly Unrelated Probit Approach.” *Health Economics* 13(7):657-68.
- Billings, J., G.M. Anderson, and L.S. Newman. 1996. “Recent Findings on Preventable Hospitalizations.” *Health Affairs* 15(3):239-49.
- Birch, S., J. Eyles, and K.B. Newbold. 1993. “Equitable Access to Health Care: Methodological Extensions to the Analysis of Physician Utilization in Canada.” *Health Economics* 2(2):87-101.
- Blustein, J., K. Hanson, and S. Shea. 1998. “Preventable Hospitalizations and Socioeconomic Status.” *Health Affairs* 17(2):177-89.
- Booth, G.L. and J.E. Hux. 2003. “Relationship between Avoidable Hospitalizations for Diabetes Mellitus and Income Level.” *Archives of Internal Medicine* 163(1):101-6.
- Broyles, R.W., P. Manga, D.A. Binder, D.E. Angus, and A. Charette. 1983. “The Use of Physician Services under a National Health Scheme.” *Medical Care* 21(11):1037-54.
- Cairney, J. and R. Arnold. 1998. “Socioeconomic Position, Lifestyle, and Health among Canadians Ages 18 to 64: A Multi-Condition Approach.” *Canadian Journal of Public Health* 89(3):208-12.
- Canadian Institute for Health Information (CIHI). 2005. “National Health Expenditure Trends 1975–2005.” Ottawa: Canadian Institute for Health Information.
- Carriere, K.C., L.L. Roos, and D.C. Dover. 2000. “Across Time and Space: Variations in Hospital Use During Canadian Health Reform.” *Health Services Research* 35(2):467-87.

- Case, A., D. Lubotky, and C. Paxson. 2002. "Economic Status and Health in Childhood: The Origins of the Gradient." *The American Economic Review* 92(5):1308-34.
- Chi, C. 1998. "An Event Count Model for Studying Health Services Utilization." *Medical Care* 36(12):1639-59.
- Chiappori, P.-A., F. Durand, and P.-Y. Geoffard. 1998. "Moral Hazard and the Demand for Physician Services: First Lessons from a French Natural Experiment." *European Economic Review* 42(3-5):499-511.
- Currie, J. and M. Stabile. 2003. "Socioeconomic Status and Child Health: Why Is the Relationship Stronger for Older Children?" *The American Economic Review* 93(5):1813-23.
- Curtis, L.J. 2001. "The Health Status of Lone Mothers." *Canadian Public Policy* 27(30):334-56.
- Curtis, L.J. 2006. "Snapshots of Health Care Utilization in Canada 1978 to 1998: Is the Picture Changing?" In *Health Services Restructuring in Canada: New Evidence and New Directions*, ed. C. Beach, R. Chaykowski, S. Shortt, F. St-Hilaire, and A. Sweetman. Montreal: McGill-Queen's University Press.
- Curtis, L., M. Dooley, and S. Phipps. 2004. "Child Well-Being and Neighbourhood Quality: Evidence from the Canadian National Longitudinal Survey of Children and Youth." *Social Science and Medicine* 58(10):1917-27.
- Curtis, L.J. and S. Phipps. 2004. "Social Transfers and the Health Status of Mothers in Norway and Canada." *Social Science and Medicine* 58(12):2499-507.
- Deri, C. 2005. "Social Networks and Health Service Utilization." *Journal of Health Economics* 24(6): 1076-107.
- Dunlop, S., P.C. Coyte, and W. McIsaac. 2000. "Socioeconomic Status and the Utilization of Physicians' Services: Results from the Canadian National Population Health Survey." *Social Science and Medicine* 51(1):123-33.
- Evans, R.G. 1984. *Strained Mercy: The Economics of Canadian Health Care*. Toronto: Butterworth and Co. (Canada) Ltd.
- Evans, R.G., M.L. Barer, and T.R. Marmor. 1994. *Why Are Some People Healthy and Others Not?: The Determinants of Health of Populations*. New York: Aldine de Gruyter.
- Hausman, J., B. Hall, and Z. Griliches. 1984. "Econometric Models for Count Data with an Application to the Patents R&D Relationship." *Econometrica* 52(4):909-38.
- Haynes, R. 1991. "Inequalities in Health and Health Service Use: Evidence from the General Household Survey." *Social Science and Medicine* 33(4):361-8.
- Hurley, J. and M. Grignon. 2006. "Income and Equity of Access to Physician Services." *Canadian Medical Association Journal* 174(2):187.
- Katz, S.J., T.P. Hofer, and W.G. Manning. 1996. "Physician Use in Ontario and the United States: The Impact of Socioeconomic Status and Health Status." *American Journal of Public Health* 86(4):520-4.
- Lasser, K.E., D.U. Himmelstein, and S. Woolhandler. 2006. "Access to Care, Health Status, and Health Disparities in the United States and Canada: Results of a Cross-National Population-Based Survey." *American Journal of Public Health* 96(7):1300-7.
- Lee, A.H., K. Wang, K.K. Yau, and P.J. Somerford. 2003. "Truncated Negative Binomial Mixed Regression Modelling of Ischaemic Stroke Hospitalizations." *Statistics in Medicine* 22(7):1129-39.
- Lin, G., D.E. Allan, and M.J. Penning. 2002. "Examining Distance Effects on Hospitalizations using GIS: A Study of Three Health Regions in British Columbia, Canada." *Environment and Planning A* 34(11):2037-53.
- Manga, P., R.W. Broyles, and D.E. Angus. 1987. "The Determinants of Hospital Use under a Universal Public Insurance Program in Canada." *Medical Care* 25(7):658-70.
- Mangalore, R. 2006. "Income, Health and Health Care Utilization in the UK." *Applied Economics* 38(6):605-17.
- Manning, W.G., J.P. Newhouse, N. Duan, E.B. Keeler, A. Leibowitz, and M.S. Marquis. 1987. "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment." *American Economic Review* 77(3):251-77.
- McDonald, J.T. and S. Kennedy. 2004. "Insights into the Healthy Immigrant Effect: Health Status and Health Service Use of Immigrants to Canada." *Social Science and Medicine* 59(8):1613-27.
- Mullahy, J. 1997. "Instrumental-Variable Estimation of Count Data Models: Application of Models to Cigarette Smoking Behavior." *The Review of Economics and Statistics* 79(4):586-93.
- Mustard, C.A. and N. Frohlich. 1995. "Socioeconomic Status and the Health of the Population." *Medical Care* 33(12, Supplement):DS43-54.
- Mustard, C.A., P. Kaufert, A. Kozyrskyj, and T. Mayer. 1998. "Sex Differences in the Use of Health Care Services." *New England Journal of Medicine* 338(23): 1678-83.

- Newbold, K.B., S. Birch, and J. Eyles. 1994. "Access to Family Physician Services in Canada: A Tale of Two Provinces." *Canadian Journal of Regional Science* 17(3):311-28.
- Nguyen, L., U. Hakkinen, and G. Rosenqvist. 2005. "Determinants of Dental Service Utilization among Adults – The Case of Finland." *Health Care Management Science* 8(4):335-45.
- Pappas, G., W. Hadden, L.J. Kozak, and G. Fisher. 1997. "Potentially Avoidable Hospitalizations: Inequalities in Rates between US Socioeconomic Groups." *American Journal of Public Health* 87(5):811-16.
- Pohlmeier, W. and V. Ulrich. 1995. "An Econometric Model of the Two-Part Decision-Making Process in the Demand for Health Care." *Journal of Human Resources* 30(2):339-61.
- Roos, N. and C.A. Mustard. 1997. "Variation in Health and Health Care Use by Socioeconomic Status in Winnipeg, Canada: Does the System Work Well? Yes and No." *Milbank Quarterly* 75(1):89-111.
- Sarma, S. and W. Simpson. 2006. "A Microeconomic Analysis of Canadian Health Care Utilization." *Health Economics* 15(3):219-39.
- Saxena, S., J. George, J. Barber, J. Fitzpatrick, and A. Majeed. 2006. "Association of Population and Practice Factors with Potentially Avoidable Admission Rates for Chronic Diseases in London: Cross-Sectional Analysis." *Journal of the Royal Society of Medicine* 99(2):81-9.
- Schellhorn, M. 2001. "The Effect of Variable Health Insurance Deductibles on the Demand for Physician Visits." *Health Economics* 10(5):441-56.
- Stabile, M. 2001. "Private Insurance Subsidies and Public Health Care Markets: Evidence from Canada." *Canadian Journal of Economics* 34(4):921-42.
- Van Doorslaer, E., C. Masseria, and X. Koolman. 2006. "Inequalities in Access to Medical Care by Income in Developed Countries." *Canadian Medical Association Journal* 174(2):177-83.
- Wagstaff, A. and E. van Doorslaer. 2004. "Overall Versus Socioeconomic Health Inequality: A Measurement Framework and Two Empirical Illustrations." *Health Economics* 13(3):297-301.
- Weissman J.S, C. Gatsonis, and A.M. Epstein. 1992. "Rates of Avoidable Hospitalization by Insurance Status in Massachusetts and Maryland." *Journal of the American Medical Association* 268(17):2388-94.
- Williamson, D. and J. Fast. 1998. "Poverty and Medical Treatment: When Public Policy Compromises Accessibility." *Canadian Journal of Public Health* 89(2):120-4.
- Winkelmann, R. 2003. "Health Care Reform and the Number of Doctor Visits – An Econometric Analysis." *Journal of Applied Econometrics* 19(4):455-72.

APPENDIX

FIGURE A1
Canada: Total Expenditures on Health (as % of Gross Domestic Product and Real Per Capita)



Notes: CHA = Canada Health Act. CHS = Canadian Health Survey. CCHS = Canadian Community Health Survey.
Source: Compiled by the authors with data from CIHI (2005).