Access to Family Physician Services in Canada: A Tale of Two Provinces

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> "If it is felt ... that all residents ... ought to have reasonably equal opportunities for their lives to 'flourish' then it follows that health care is one of the package of goods and services whose distribution must be got right if the more ultimate social aspiration is to be attained" (Culyer 1991: 18).

Over much of the industrialized world, the provision of health care has been and remains an issue of intense debate. Health-care systems, such as Canada's, that are based on some notion of universal coverage have been affected by recent attention to cost containment (Evans et al. 1991). But universality has not been rejected as a fundamental principle and continues to imply a commitment to equity. These continuing concerns over getting the population distribution of health care 'right' have led policy-makers in many countries to focus attention on policies aimed at changing that distribution. In this paper, we examine these distributional issues in Ontario and Quebec.

In Canada, the legislation governing the fiscal arrangements for federal

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support of each province's health care system is aimed to

> "...protect, promote and restore the physical and mental well-being of residents of Canada and to facilitate reasonable access to health services without financial or other barriers" (Canada Health Act 1984).

More recently the Federal Government, in reiterating its commitment to this objective, emphasized that reasonable access is based on the notion of medical necessity. Birch and Abelson (1993) show that the notion of reasonable access can be interpreted as promoting the complementary principles of horizontal equity (equal use for equal need) and vertical equity (unequal use for unequal need). But the policies used to pursue this objective have been largely limited to the removal of user fees at the point of service delivery with provincial ministries of health taking over the role of sole purchaser of insured health care services. These policies focus attention predominantly on demand for services on the assumption that demand is largely determined by the ability and willingness of individuals to meet the prices charged for services and that the removal of user fees for insured services is sufficient to achieve "reasonable access". Not surprisingly, analyses of the distribution of health-care services have found that although variations in health-service use are associated with variations in indicators of need for services, other socioeconomic factors such as education and social support, also contribute to explaining these utilization variations (for example, Birch et al. 1993; Eyles et al. 1993). But this would appear to conflict with the stated goal of reasonable access.

These findings should perhaps come as no surprise, given that the introduction of comprehensive public funding of health care in Canada essentially inherited an existing geographical distribution of service suppliers that was determined largely by willingness and ability to pay for services. Moreover, there is general recognition that because health-care providers are both suppliers of services and also agents for the consumers of services (that is, they advise or prescribe what services are required to meet the health needs of their clients), then demand for services does not arise from the independent plans of consumers but is 'conditioned' by supply factors (such as the level, organization and management of the delivery of services). In other words, attempts to achieve the desired equitable distribution of health care will necessarily have to include consideration of the role of supply-side factors (Birch and Chambers 1993) in addition to demand-side factors and the linkages between the two. There is, in fact, no reason to believe that what might represent an equitable distribution of health care among populations will emerge from the existing organization and distribution of health-care providers.

In fact, health care policy at the federal level has largely been restricted to setting conditions for the provision of 'health insurance' that must be met by provincial governments if they are to qualify for federal transfer payments for the costs of these plans. The result is a standardization across provinces of the

way 'insured' services are funded (that is, full public funding without user charges or copayments) but with considerable variation in the organization of the planning, management, delivery and distribution of these services inherited from the period prior to the introduction of publicly-funded insurance plans. Some other differences have been introduced since its inception, or reflect differences in preferences or circumstances between provinces.

The differences in utilization of medical care across provinces is most likely related to differences in both demand and supply-side characteristics, reflecting the above noted differences. In this paper, we explore the relative performance of the two provincial systems and test whether the factors associated with the use of family practitioner services were common to the populations of Ontario and Quebec. The purpose of this paper is therefore two-fold. First, it is to determine whether the distribution of physician care in Ontario and Quebec corresponds to the distribution of needs for care. This is accomplished by identifying the factors associated with the relationship between the incidence of use of family physician services and self-assessed health, using the provinces as proxies for these supply-side factors. Second, it will seek to identify the factors associated with physician use in the two provinces. If differences in health care utilization exist between the two provinces after controlling for demand (for example, need for health care and other personal effects), then we may infer that other issues, such as supply-side effects are relevant in explaining differences in health care utilization between the two provinces. Attention focuses upon a broad analysis of the factors which may influence utilization and the role of variations in need for health-care in explaining variations in use of health care services.

Health Care Services in Ontario and Quebec

In principle, the population distribution of family physician services should be closely associated with the population distribution of need for services, whether evaluated at the level of each province's population or in the combined population of Ontario and Quebec. If the distribution of need for services differs between jurisdictions, then this might imply that supply-side differences exist, despite the existence of the Canada Health Act. Boulet and Henderson (1979) compared the utilization of both physician and hospital services in Ontario with the corresponding levels of utilization in Quebec. Taking both physician and hospital services together, they found that per capita utilization in Quebec was below the mean level of utilization for Canada as a whole, but utilization in Ontario was almost identical to the national average. For physician services alone, the difference between the two provinces was even more pronounced with per capita utilization in both provinces being above the national average. Moreover, the relatively low levels of utilization among the Quebec population remained after controlling for income class.

Boulet and Henderson observed that the age-sex structures of the two provinces' populations were similar and suggested that the observed differences in utilization rates between the two populations were related to between-province differences in accessibility to services. That is, the observed differences between the two provinces were related to supply-side effects. The authors did not consider the extent to which differences in need for services between the two populations might explain the differences in utilization levels. Moreover, because the study was performed before the introduction of the Canada Health Act, these differences might be explained by between-province differences in the levels and types of user charges. But if this were the case, we would expect the implementation of the demand-side policies that emerged from the Canada Health Act to have led to the erosion of these utilization differences over the intervening years.

It is therefore possible that differences in the organization and supply of health-care services results in different distributions of services within the population of the two provinces. At the aggregate level, both Ontario and Quebec have similar physician/population ratios (0.91/1000 and 0.89/1000 respectively) (Quebec 1991) and both devote high proportions of their provincial GDP to health care (8.2 percent in Ontario and 9.0 percent in Quebec) (Quebec 1991). Quebec has a somewhat greater availability of hospital beds (8.61/1000) compared to Ontario (5.63/1000) (Health and Welfare Canada 1990). There are, however, differences in the management of physician resources. Throughout the 1980s, Ontario maintained the status quo, with fee-for-service funding and centrally determined fees. Over the same period, Quebec initiated several reforms aimed at improving access to and controlling the cost of medical services. These reforms included differential fee structures dependent upon geographic location, capitation payments and a limit on annual billings at the individual level (Barer and Stoddart 1991). Both provinces also initiated programs to alter the geographic distribution of physicians (for example, the Ontario Underserviced Area Program), although these policies have met with limited success (Anderson and Rosenberg 1990).

Methods

In previous research, we identified factors associated with the relationship between use of health-care services and need for those services using a sample of the Canadian population (Birch et al. 1993). Following the analytical approach of our previous work, we focus attention in this study on a comparison of the determinants of the relationship between the incidence of use of family physician services and need in the populations of Ontario and Quebec. Because the dependent variable in the equation for incidence of use is dichotomous, the assumptions of Ordinary Least Squares (OLS) are violated (for example, we cannot assume that the error terms are distributed normally) and

the probit model is used (Kmenta 1986). The probit model is defined by

$$P_u = F(\alpha + \beta X_i)$$

where P_u is the probability of the event occurring, $F(\bullet)$ is the cumulative normal probability function, X_i is the vector of independent variables, α is a constant and β is a vector of estimated coefficients. Since the function is non-linear, a maximum-likelihood procedure is used to estimate the coefficients.

The use of multiple regression analysis by Manga et al. (1987) in the context of an additive model is both conceptually and empirically limited. In particular, the underlying conceptual model fails to consider conditional and/or non-additive elements of use and hence the linear assumptions implicit within the models may be restrictive (Arling 1985; Beck 1973). Collins and Klein (1980) and O'Donnell and Proper (1991) have demonstrated, for example, that analyzing variations in use across groups heterogeneous in need, biases the estimates of use-need relationships if utilization occurs among those reporting no need (for example, preventative services). It is, therefore, important to consider how need interacts with other independent variables in explaining variations in use amongst similar levels of need. To explore possible interaction effects among explanatory variables, the sample was partitioned into subsamples homogeneous in need and the equations were re-estimated for incidence of use.

Thus, for the comparison of the Ontario and Quebec samples, two null hypotheses are tested:

1. the empirical model used to estimate incidence of use are identical for the two population samples and,
2. factors associated with the relationship between incidence of use and need are common to both population samples.

The first hypothesis is concerned with the set of coefficients in the model and is tested using a log-likelihood ratio test for the probit estimates for incidence of use (Kennedy 1982). Rejection of the null hypothesis indicates that the relationships between the variables within the two samples are significantly different and hence the two sets of data cannot be pooled. If this is indeed the case, then the two provinces differ in the supply of health care services.

The second hypothesis is concerned with individual coefficients and is tested using a t-test for the equivalence of coefficients on individual explanatory variables. Rejection of the null hypothesis would indicate that the association between the use-need relationship and a particular explanatory variable differs between the two population samples. For example, it might be that the relationship between use and family income among Ontarians with poor health is significantly different from the corresponding relationship among Quebecois with poor health.

Data Set

The hypotheses are tested using data on residents of Quebec and Ontario derived from the 1985 General Social Survey (GSS), a weighted random sample of the Canadian population (Statistics Canada 1987). The GSS includes data on individuals self-assessed health status, self-reported use of family physician services in the past 12 months, personal and behavioral attributes as well as various socioeconomic indicators of the population aged 15 and over. Information was collected using personal interviews for those in the sample aged 65 and over and by telephone interviews for those aged 15 to 64. Respondents were randomly selected with a sample size greater than 13,000 (approximately one per two thousand) and an overall response rate of 84.2 percent. The main exclusions from the sample were the institutionalized and persons living on Indian Reserves (elderly sample only). Use of telephone interviews is limited by non-coverage of households with no telephone (approximately 3 percent of all households, Statistics Canada 1987), which tend to be concentrated in population groups with low-educational attainment or income. However, the sample is weighted in order to reflect these deficiencies. Because of the complex sampling design, weighting of the sample data was also required to allow for the different probabilities of inclusion within the sample, ensuring that the estimated variances are meaningful. Weighting was performed using the weights developed by Statistics Canada for use in analyzing the GSS data set (Statistics Canada 1987).

Measures of use and need are both based upon self-reports and hence depend upon the recall and awareness of the respondents. However, unlike the data sets used in previous studies of utilization in Canada (see, Manga et al. 1987), the GSS provided information on needs independent of service use. It should be noted that self-assessed health status is being used here as a proxy for need for, or ability to benefit from, health care. It could be argued that the expectation of benefits from health care might not coincide with the level of (self-assessed) health status. That is, the expected improvements in health from medical service use may depend on, *inter alia*, the particular condition giving rise to the assessment of health status. In this sense, individuals in better health might have greater needs for health care than some individuals in poorer health whose conditions cannot be improved by health care interventions. Similarly, needs for health care might differ among individuals with the same level of self-reported health status. However, there is empirical support within the health-services research literature for the validity of the general health measure as a measure of self-assessed health status while the validity of other measures is less well established (Davis and Ware 1981).

Numerous studies have demonstrated statistically significant relationships between self-rated health and other measures of health status, among them physician assessments (Friedsam and Martin 1963; Maddox and Douglas 1973; La Rue et al. 1979; Linn and Linn 1980; Davis and Ware 1981), number of

medications (Fillenbaum 1979; Linn and Linn 1980), acute symptoms (Davis and Ware 1981) and composite measures of health status based on either self reports (Kaplan and Camacho 1983) or a combination of physician and self-reported conditions and health service utilization data (Mossey and Shapiro 1982).

Moreover, self-assessed health has been observed to perform better as a predictor of future mortality than other more conventional measures of health status (Mossey and Shapiro 1982; Kaplan and Camacho 1983; Idler et al. 1990) suggesting self assessments, although not a direct measure of health-care need, are probably as good a proxy for need for health care at the population level as alternative health measures or indicators.

With respect to the socio-economic variables and from a conceptual viewpoint, we would like to include a measure of ethnicity as an explanatory variable in order to separate the influences of ethnicity and other cross-provincial factors such as the organization of health care delivery. However, the variable available to us differentiated between English, French and 'other' mother tongue categories only. As one would expect, there was a strong correlation between mother tongue and province. Moreover, since the 'other' group was relatively small, any attempt to analyze beyond English and French issues would encounter sample size problems. As a result, ethnicity *per se* was excluded from this analysis. However, significant differences in the utilization of medical services between Ontario and Quebec may be a result of, *inter alia*, ethnic or cultural differences.

Because most of the variables included within the model are categorical, bivariate or multivariate representations are created. One value of each variable was selected as the reference value and a series of dummy variables created. For example, the reference category for general health (the need proxy) was poor health and dummy variables were created for the levels of excellent, good and fair health. Mean values and standard deviations for the variables are recorded in Table 1. Following Aday and Andersen (1974), explanatory variables are entered in blocks into an equation for use of services according to the 'need', 'predisposing' (age, sex etc.) or 'enabling' (income or education) categorization. Variables are forced into the equation based on *a priori* expectations concerning the relationship between incidence of use and the explanatory variable.

Results

Correlates of Health Care

A preliminary analysis of data on family physician utilization from the 1985 GSS indicates that the Ontario-Quebec differences in utilization observed by Boulet and Henderson (1979) remain. Furthermore, the results also illustrate

TABLE 1 Mean and Standard Deviations of Variables Selected for Analysis

Name	Reference[a]	Mean	Standard Deviation
Use:			
Physician Contacts		3.02	4.29
Need:			
General Health	Poor	1.91	0.80
Predisposing:			
Sex	Female	0.52	0.48
Age	$\geq$ 75	3.63	1.18
Marital Status	Divorced	1.66	0.96
Employment	Not working	2.31	1.45
Smoking	Not at all	2.34	0.92
Drinking	Not at all	2.09	1.32
Community Contact	Infrequent	0.61	0.49
Enabling:			
Household Income (000s)	---	28.88	18.51
Education	No SSGD[b]	2.27	1.23

a. Where the variable is categorized for the purposes of the analysis it is represented by a series of dummy variables.
b. SSGD - Secondary School Graduation diploma.

the importance of looking beyond simple use-income relationships and the need to control for other variables when addressing utilization issues. For example, the data in Table 2 show that the incidence of utilization, as measured by whether a person had seen a physician in the last year, is higher in Ontario than Quebec. Moreover this difference remains after controlling for the level of family income. Additionally, the probability of having visited a physician in the last year is shown to be independent of income, while a positive relationship is observed for the probability of visiting a dentist, a cost which is not generally covered by public funding. However, the probability of reporting an activity limiting problem decreases with income, suggesting that the distribution of health care may be determined in part, by factors other than needs for care (Birch and Eyles 1992). That is, equity of use is less clear since need for health care increases with lower income, even though the likelihood of use does not.

When explaining variations in health care use, relatively little attention has been given to the role of need for health care. If we consider the probability of having used a physician in the past year, given self-assessed health status, a somewhat different picture appears. In this case, those who rank their health as poor are more likely to have consulted a physician relative to those in excellent health (and the difference is statistically significant). For Ontario, incidence of use of physician services by those in poor health was 23 percent higher than those in excellent health while in Quebec, the difference was nearly 37 percent. Smaller differences in the likelihood of utilization were observed for both good and fair general health. This would suggest, therefore, that there is actually unequal access to use across population groups heterogeneous in need. More precisely, these results suggest that vertical equity (unequal use for unequal need) is indeed being met within both Ontario and Quebec.

TABLE 2 Relative Probability[a] of Health Care Use and Need for Health Care, by Personal Income: Quebec and Ontario, 1985

		Family Income ($ 000s p.a.)				
In Previous Year		< 15	15-24	25-34	35-50	> 50
Visited Dentist:	Quebec	0.42	0.49	0.50	0.75	1.00
	Ontario	0.53	0.74	0.83	0.91	1.00
Visited Physician:	Quebec	1.03	0.97	0.98	0.96	1.00
	Ontario	1.10	1.00	1.07	0.97	1.00
Had activity-limiting health problem	Quebec	5.51	2.27	2.24	2.36	1.00
	Ontario	3.38	2.42	1.43	1.48	1.00

a. Expressed relative to probability of highest income group.

Finally, in terms of the mean number of contacts with a family practitioner (assuming at least one contact) in the past year with respect to general health, utilization is once again higher in Ontario, regardless of general health status. The greatest difference in the number of contacts reported is for those in good health, with an average of 2.7 visits in Quebec and 4.1 in Ontario. Not unexpectedly, the average number of physician contacts per year increases from a low of 2.9 visits per year in Ontario and 2.4 in Quebec for those in excellent health, to a high of nearly 15 visits per year and 13 per year for Ontario and Quebec respectively for those in poor health. Once again, it appears that individuals with greater health care needs experience greater levels of utilization.

Overall, these results might seem to suggest that the Canadian health care system functions in accordance with the objectives of the Canada Health Act -- those that need health care receive it. But, inequalities with respect to utilization may still remain within the Canadian health care system and in access to those resources, even though this may not be apparent in the preceding table. The primary advantage of using univariate techniques is their simplicity in interpretation. However, it is not possible to consider how these observed relationships between use and measures of socioeconomic and sociodemographic status relate to need for care. Age, sex and income are, for example, likely to be confounders and therefore a more robust modelling technique must be used to control for specific effects. In order to explore whether these differences represent differences in "reasonable access" to care, we must consider the levels and distribution of needs for care in the two provincial populations. This is accomplished in the following section through the use of the probit model.

Incidence of Family Physician Use

The results of the probit regression for 'use-no use' of family physician services are recorded in Table 3. Separate estimates are provided for Ontario and Quebec. Each equation is significant ($p<0.05$) with rho-squared values of 0.050 for Ontario and 0.062 for Quebec. Although low, these values are not atypical for cross-sectional studies of this type (McFadden 1974). Moreover probit analyses based on large sample sizes tend to deflate the upper bound of rho-squared by an undetermined amount (McFadden ibid).

The likelihood-ratio test is significant, thus allowing the rejection of the null hypothesis that the two subgroups are homogeneous. The Ontario and Quebec samples therefore represent distinct populations, at least in-so-far as explaining the incidence of utilization of family physician services is concerned, suggesting the importance of supply-side effects, such as access and availability.

In terms of the individual explanatory variables, there are some common patterns for the two samples. In particular, the probability of use is lower among all non-poor health groups than for those in poor health. Moreover, the better the level of health (that is, the lower the level of need), the greater the difference in probability of use compared to those in poor health. This difference is significant for those in excellent health (both samples) and good health (Ontario only). A similar pattern of increasing likelihood of use with age is found for both samples although only those in the youngest age group in Quebec are significantly less likely to have used a family physician in the last year than those aged 75 or over (the reference group). This pattern might be explained by individuals being asked to rate their health status in relation to others of their own age. As a consequence, age may be representing aspects of need not covered by the health status assessment, as opposed to a barrier to access as might be implied if age remained an important explanatory variable even after controlling for need. This might also explain the significantly lower likelihood of use among males observed in both samples (for example, individuals rate their health in relation to others of the same sex).

In terms of the other coefficients, the signs are consistent for marital status (that is, compared to divorcees, single and married individuals are less likely, but widowed individuals are more likely, to have seen a physician), community contact (those with frequent contacts with family and friends are more likely to have seen a physician other things equal than those with few social contacts) and employment status (those working are less likely to have seen a physician). None of these relationships are statistically significant, but they do have signs in the hypothesized direction. This is not the case for education level and smoking or drinking status where the signs of the coefficients differ between the samples. However, in all cases the confidence intervals overlap so differences between the samples are not significant. Finally, the likelihood of use is positively related to household income in Quebec ($p<0.05$) but is independent of income in Ontario.

TABLE 3 Probit Regression: Incidence of Family Physician Contacts

Explanatory Variable		Ontario			Quebec		
		Coeff.	-CI[a]	+CI	Coeff.	-CI	+CI
General Health	Excellent	-0.618*	-1.15	-0.08	-0.766*	-1.41	-0.13
	Good	-0.558*	-1.09	-0.03	-0.440	-1.07	0.19
	Fair	-0.316	-0.88	0.24	-0.079	-0.73	0.57
Gender	Male	-0.444*	-0.60	-0.29	-0.265*	-0.44	-0.09
Age	15-19	0.148	-0.46	0.76	-0.955*	-1.57	-0.34
	20-24	-0.018	-0.51	0.48	-0.300	-0.86	0.26
	25-44	-0.053	-0.50	0.39	-0.348	-0.87	0.17
	45-64	-0.038	-0.47	0.39	-0.339	-0.85	0.17
	65-74	0.028	-0.42	0.47	-0.151	-0.69	0.39
Marital Status	Married	-0.054	-0.37	0.26	-0.115	-0.49	0.26
	Single	-0.167	-0.53	0.20	-0.091	-0.51	0.33
	Widowed	-0.006	-0.47	0.45	0.200	-0.36	0.76
Employment	Working	-0.195	-0.39	0.00	0.117	-0.09	0.32
Community Contact	Frequent	0.014	-0.13	0.16	0.021	-0.14	0.19
Smoking	Daily	-0.051	-0.22	0.12	-0.075	-0.24	0.09
	Occ.	0.019	-0.33	0.36	-0.093	-0.47	0.29
Drinking	Daily	0.082	-0.17	0.34	-0.228	-0.54	0.08
	Occ.	0.067	-0.09	0.23	-0.132	-0.31	0.04
Household Income	(000s)	0.000	-0.00	0.00	0.008*	0.00	0.01
Education[b]	SSGD	-0.071	-0.29	0.15	0.068	-0.16	0.29
	Some	0.037	-0.19	0.26	-0.013	-0.27	0.25
	Post.	0.064	-0.14	0.27	-0.049	-0.28	0.18
Constant		1.785*	1.10	2.47	1.456*	0.62	2.29
LR Test		83.60*			89.20*		
rho-squared		0.05			0.062		
N		1669			1212		
Overall % Correct		80.20			72.70		

* $p < 0.05$

a. -CI, +CI = Upper and lower confidence interval.

b. SSGD = Secondary School Graduation Diploma.

Given these findings, it is possible to construct probabilities for 'typical' individuals. Thus, for example, the probability of a male in Ontario aged 25-44, married and in employment with excellent health, who does not smoke, drinks occasionally, has post-secondary education and a household income of $ 30,000 per annum (1985 values) having contacted the family physician in the last year is 0.64 compared to 0.54 for the same individual in Quebec (the corresponding probabilities for females with the same characteristics are 0.73 and 0.60 respectively). Similar calculations can be performed for other combinations of age, income, marital status and so on.

TABLE 4 Probit Regression: Incidence of Family Physician Contacts for Excellent General Health

Explanatory Variable		Ontario			Quebec		
		Coeff	-CI[a]	+CI	Coeff	-CI	+CI
Gender	Male	-0.340*	-0.60	-0.08	-0.329*	-0.62	-0.04
Age	15-19	1.349*	0.18	2.52	-0.735	-2.09	0.62
	20-24	1.460*	0.49	2.43	-0.687	-1.97	0.60
	25-44	0.472	-0.31	1.25	-0.551	-1.79	0.69
	45-64	0.287	-0.48	1.05	-0.816	-2.06	0.43
	65-74	0.405	-0.43	1.24	-0.230	-1.51	1.05
Marital Status	Married	0.211	-0.27	0.69	0.121	-0.48	0.72
	Single	-0.255	-0.82	0.31	0.168	-0.53	0.87
	Widowed	0.055	-0.66	0.78	0.524	-0.50	1.55
Employment	Working	-0.062	-0.38	0.26	0.289	0.04	0.62
Community Contact	Frequent	-0.055	-0.30	0.19	0.144	-0.13	0.42
Smoking	Daily	-0.114	-0.42	0.19	0.097	-0.19	0.38
	Occ.	0.434	-0.26	1.13	-0.384	-1.08	0.31
Drinking	Daily	0.153	-0.28	0.59	-0.175	-0.68	0.33
	Occ.	-0.140	-0.41	0.13	-0.274	-0.58	0.03
Household Income	(000s)	-0.002	-0.01	0.00	0.010*	0.00	0.02
Education[b]	SSGD	0.002	-0.40	0.40	0.012	-0.36	0.38
	Some Post.	0.219	-0.19	0.62	-0.008	-0.44	0.42
	Post.	0.105	-0.24	0.45	-0.141	-0.53	0.24
Constant		0.503	-0.25	1.26	0.547	-0.80	1.89
LR Test		34.70*			25.30*		
rho-squared		0.058			0.049		
N		567			394		
Overall % Correct		78.20			65.50		

* $p < 0.05$
a. -CI, +CI = Upper and lower confidence interval.
b. SSGD = Secondary School Graduation Diploma.

Incidence of Use Within Need Levels

The results of estimating the equations for incidence of use for groups homogenous in need are recorded in Tables 4 to 6. Because of the small number of individuals falling into the poor and fair categories, the two need levels are combined for the purposes of this analysis. The likelihood-ratio test for equivalence of samples leads us to reject the null hypothesis that the samples are homogeneous for all subgroups. In other words, the two samples are distinct, at least in-so-far as the incidence of use of family physician services by need level are concerned.

Generally, the relationships that were observed within the complete sample are observed by need group as well. In terms of the coefficients on the individual explanatory variables, the corresponding confidence intervals for the two provincial samples overlap for all variables in each of the three levels of need, with the exception of the coefficient on sex in the equations for those in poor/fair health (see Table 6). In Ontario, males are less likely to use physicians than females ($p<0.05$) and are significantly different from the corresponding association between use and sex in Quebec.

Where other coefficients are found to be significant, these observations can be explained by the variable in question perhaps capturing aspects of need not already incorporated in the general health variable. For example, in two equations, household income was positively associated with the incidence of use for those residing in Quebec. It may be that those with higher income levels may be more familiar with the medical system, aiding their initial contact. How-

TABLE 5 Probit Regression: Incidence of Family Physician Contacts for Good General Health

Explanatory Variable		Ontario			Quebec		
		Coeff	-CI[a]	+CI	Coeff	-CI	+CI
Gender	Male	-0.457*	-0.68	-0.23	-0.396*	-0.67	-0.13
Age	15-19	-0.185	-1.11	0.74	-1.152*	-2.04	-0.26
	20-24	-0.619	-1.38	0.14	-0.167	-0.97	0.64
	25-44	-0.363	-1.09	0.36	-0.467	-1.20	0.26
	45-64	-0.243	-0.96	0.47	-0.397	-1.12	0.33
	65-74	-0.277	-1.00	0.44	-0.280	-1.06	0.50
Marital Status	Married	-0.269	-0.81	0.27	-0.224	-0.85	0.40
	Single	-0.216	-0.82	0.38	-0.032	-0.73	0.66
	Widowed	-0.074	-0.83	0.68	0.086	-0.81	0.98
Employment	Working	-0.159	-0.43	0.11	0.089	-0.21	0.39
Community Contact	Frequent	0.088	-0.12	0.30	0.026	-0.23	0.28
Smoking	Daily	-0.022	-0.25	0.21	-0.141	-0.40	0.12
	Occ.	0.274	-0.24	0.78	-0.032	-0.56	0.50
Drinking	Daily	-0.005	-0.38	0.37	-0.289	-0.81	0.23
	Occ.	0.196	-0.03	0.42	0.123	-0.15	0.39
Household Income	(000s)	0.001	-0.01	0.01	0.009*	0.00	0.02
Education[b]	SSGD	-0.200	-0.49	0.09	-0.071	-0.42	0.27
	Some Post.	-0.164	-0.49	0.16	-0.178	-0.59	0.23
	Post.	0.013	-0.29	0.31	-0.121	-0.46	0.22
Constant		1.646*	0.79	2.50	1.177*	0.25	2.11
LR Test		43.20*			30.90*		
rho-squared		0.053			0.051		
N		794			531		
Overall % Correct		79.10			73.8		

* $p<0.05$
a. -CI, +CI = Upper and lower confidence interval.
b. SSGD = Secondary School Graduation Diploma.

TABLE 6 Probit Regression: Incidence of Family Physician Contacts for Fair and Poor General Health

Explanatory Variable		Ontario			Quebec		
		Coeff	-CI[a]	+CI	Coeff	-CI	+CI
Gender	Male	-1.032*	-1.57	-0.50	0.152	-0.28	0.59
Age	15-19	-0.700	-2.12	0.72	-1.954*	-3.46	-0.45
	20-24	-0.238	-1.72	1.25	-0.303	-1.44	0.84
	25-44	-0.266	-1.33	0.80	-0.035	-1.02	0.95
	45-64	0.066	-0.85	0.98	0.319	-0.56	1.20
	65-74	0.268	-0.72	1.25	0.053	-0.86	0.96
Marital Status	Married	-0.277	-1.27	0.71	-0.531	-1.54	0.48
	Single	-0.499	-1.64	0.64	-0.889	-1.99	0.21
	Widowed	-0.504	-1.83	0.82	-0.420	-1.68	0.83
Employment	Working	-0.805*	-1.42	-0.19	-0.374	-0.89	0.15
Community Contact	Frequent	-0.159	-0.61	0.29	-0.256	-0.69	-0.18
Smoking	Daily	-0.038	-0.44	0.51	-0.091	-0.51	0.33
	Occ.	-0.920*	-1.75	-0.09	0.648	-1.28	2.57
Drinking	Daily	0.008	-0.69	0.71	-0.553*	-1.33	0.22
	Occ.	0.162	-0.33	0.65	-0.475	-0.91	-0.04
Household Income	(000s)	0.004	-0.01	0.02	-0.009	-0.03	0.01
Education[b]	SSGD	0.321	-0.49	1.14	1.079*	0.26	1.90
	Some Post.	0.275	-0.44	0.99	0.281	-0.48	1.04
	Post.	0.275	-0.41	0.96	0.659	-0.14	1.46
Constant		2.525*	1.26	3.79	2.081*	0.78	3.38
LR Test		52.70*			51.70*		
rho-squared		0.229			0.207		
N		308			287		
Overall % Correct		89.60			87.70		

* $p < 0.05$

a. -CI, +CI = Upper and lower confidence interval.

b. SSGD = Secondary School Graduation Diploma.

ever, education, particularly those who are highly educated, did not have a significant effect on use. Age was also observed to be significantly associated with incidence of use of physicians in four of the equations. Again, age may be capturing some unmeasured effect of need.

Conclusion

In this analysis, we set out to test whether the factors associated with the use of family physician services and the correlates of the relationship between use and need were common to the populations of Ontario and Quebec, and hence

indirectly if supply factors can be evoked to explain such differences. Before addressing the substantive results of this analysis, some caveats should be mentioned. First, although many of the variables were not statistically significant and the overall explanatory power of the models was low, these are not major problems for our analysis. In fact, the non-significance of these variables reinforces many of our initial hypotheses. Moreover, the primary focus of the study lay in testing for the presence of systematic relationships between use, need and other variables, not with predicting utilization *per se*. Therefore, the low levels of explanatory power which are common to studies of this type are not a major concern. A second caveat is that self-assessed health, used here as a proxy for need based on the findings of existing literature, may be more limited in terms of its use as an indicator for need for physician services per se. Although individuals with poor self-assessed health may 'need' health care, this may be expressed in the form of non-physician use, such as mental health care, hospitalization, nursing homes or nursing care.

In general, the analysis showed that in terms of incidence of use of family physician services, the two samples were statistically and significantly different, with the differences therefore being a function of variations in supply-side differences. These differences were preserved after the sample was partitioned into subgroups homogeneous in need. Observed variations between the provinces may also be associated with differences in supply-side factors at the aggregate level (for example, level of physician and hospital bed supply, physician remuneration policies, etc.). There may well be other non-supply-side factors such as cultural factors, which although not introduced in the analysis (for reasons of sample size) might also explain the differences. But, comparison of the estimated coefficients for individual explanatory variables revealed few significant differences which indicates that the underlying differences in the samples are not explained by differences in particular relationships estimated in the empirical model.

This implies that from a methodological perspective, the analyses of the utilization of health-care services using aggregate level data spanning more than one jurisdiction covered by similar legislative provisions, risk overlooking significant differences that exist among the jurisdictions. These differences might help to explain the observed variations of interest. In so far as supply-side factors such as the organization and forms of service delivery affect the distribution of service delivery within a jurisdiction, the provincial responsibility for the determination of these factors indicates that attempts to identify barriers to access to health care might need to focus on provincial level data and the comparison between provinces. At this level, differences in supply factors such as the organization and management of service delivery occur, but demand side factors are more homogeneous. However, this might lead to existing federal-level data sets being of little use as a result of small sample sizes at the provincial level. The analysis in this study did reveal jurisdictional differences that require exploration at the policy level, especially in terms of how

the organizational factors of health-care provision shape utilization in relation to need for care.

Differences in utilization of health care services may also exist at the local level. Local outcomes of any province-wide changes in the political-economic structure will frequently be unique, due to how cultural, administrative units and political organizations work in a particular locality (Jones and Moon 1987). Local gatekeepers may ration the consumption of care, meaning that access to care must be obtained by negotiating the hurdles imposed by these gatekeepers. Particular groups, such as the highly educated, may be better equipped to navigate their way. For their part, family practitioners decide whether a person is ill and what follow-up is required. While the Quebec and Ontario samples are clearly distinct with respect to physician use, the role of physicians as gatekeepers is likely to be influenced by provincially determined conditions governing the management of physicians and point to further research using either disaggregate data or other techniques at the local and provincial levels (Joseph and Phillips, 1984). Furthermore, a hypothesis worth testing in future research is the role of cultural or ethnic differences in explaining health care utilization across populations.

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