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OF A UNIVERSAL HEALTHCARE SYSTEM. THE CASE  
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## **ABSTRACT**

Even under a universal regime of healthcare insurance, some people find it difficult to access primary healthcare. This research aims to identify individual and social factors that contribute to these difficulties in the province of Québec. We extracted the data from the public use dataset of the Canadian Communities Health Survey (2.1). We fitted three logistic regression models to test the significance of associations of covariates with outcomes, guided by Andersen's behavioral model of access to care. The dependent variable is a dummy which accounts for self-reported unmet needs for care. The results suggest unmet needs of healthcare are associated with needs variables rather than with variables related to predisposing characteristics or to enabling resources. The geographic factor also is not significant, save for the health region of Québec.

Key words: access, healthcare, unmet needs, healthcare utilization, Québec, Montréal, CCHS.

## **RÉSUMÉ**

Même sous un régime d'assurance universelle, certaines personnes éprouvent des difficultés à accéder aux soins de santé primaires. Cette recherche identifie les facteurs individuels et sociaux qui contribuent à ces difficultés au Québec. Les données proviennent du fichier de données à grande diffusion de l'ESCC (cycle 2.1). Nous développons trois modèles de régressions logistiques pour tester la signifiante des associations des variables explicatives à la variable expliquée, par référence au modèle comportemental de l'accès aux soins de santé. La variable dépendante est dichotomique et rend compte de l'auto-déclaration concernant les besoins non comblés. Les résultats suggèrent que l'insatisfaction des besoins en soins de santé est associée aux variables relatives au besoin plutôt qu'aux variables relatives aux caractéristiques pré-disposantes ou à celles liées aux ressources. Le facteur géographique est aussi insignifiant sauf pour la région socio-sanitaire de Québec.

Mots-clés : accès, soins primaires, besoins non comblés, Québec, Montréal, ESCC.



## INTRODUCTION

According to the provision of the 1984 Canada Health Act, the goal of the health care system is "*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*" (Guest, 1995). Mention of the elimination of financial and other types of barriers to access to healthcare in the law underlines the importance Canada attaches to the equity of the system. Indeed, this implementation of a system based on need rather than on income has reduced disparities in health services utilization, and improved access to healthcare services as a whole (Badgley, 1991; Eyles, Birch and Newbold, 1995). It also distributes more evenly the financial burden of healthcare in the population (Shortt 1999; Shortt and Shaw, 2003). However, as reported in both specialized literature and in newspapers, access to healthcare continues to be a major preoccupation for decision makers, medical practitioners, and the public at large (Sanmartin, Gendron, Berthelot and Murphy, 2004). It seems that access to care, particularly access to specialized medical care remains a major problem in Canada (Anonymous, 2004). And there is a perception which translates into a pervasive sentiment of "a continuous crisis of the healthcare system" in the population (Sanmartin, Gendron, Berthelot and Murphy, 2004; Rosenberg, 2002).

This research aims to characterize the barriers which limit access to primary healthcare services in the province of Québec, Canada. We seek to identify and test the statistical significance of the associations between individual and environmental attributes and unmet needs for primary healthcare. The final goal is to provide elements of an answer to the following question: why in Québec, despite a universal healthcare system, some persons still find it difficult to access primary healthcare services? The introduction of prescription insurance in Québec triggered vivid reactions because of fears that it might limit access to healthcare by disadvantaged groups (Anonymous, 2005; Gagnon, 2002). This sentiment of frustration was exacerbated by the appearance of private health insurances.

Among Canada's provinces, Québec has the lowest accessibility to a regular family physician and the most barriers to access to routine care. One over five individuals who needed care faced barriers to access (Sanmartin, Gendron, Berthelot and Murphy, 2004). Only 76 percent of the population benefit from the care of a family physician while the average is 89 percent for all of Canada. The mean waiting time for a regular family physician (24 days) is also relatively longer in Québec (Haggerty *et al.*, 2004). This is also true for the waiting time for specialized interventions. A case in point is the waiting

time for the treatment of breast cancer which increased by 37 percent between 1992 and 1998 (Mayo, Scott, Shen, Henley, Goldberg and MacDonald, 2001). Less than one percent of the respondents to the National Survey on Population Health (ENSP) reported that healthcare was not available or it was inaccessible in their area when needed (Wilson and Rosenberg, 2002).

Important disparities among health regions remain with regard to several factors of access. Some analysts consider the perception of one's own health status an essential component of the need for care which determines service utilization (Pampalon, Duncan, Subramanian, Jones, 1999). This suggests that problems of access to primary healthcare might as well not be the result of lack of supply but the result of other factors to be explored. The literature suggests that even under a universal health insurance regime, access to primary healthcare remains influenced by individual and social factors which determine waiting time and service utilization (Mayo, Scott, Shen, Henley, Goldberg and MacDonald, 2001; Pampalon, Subramanian and Jones, 1999).



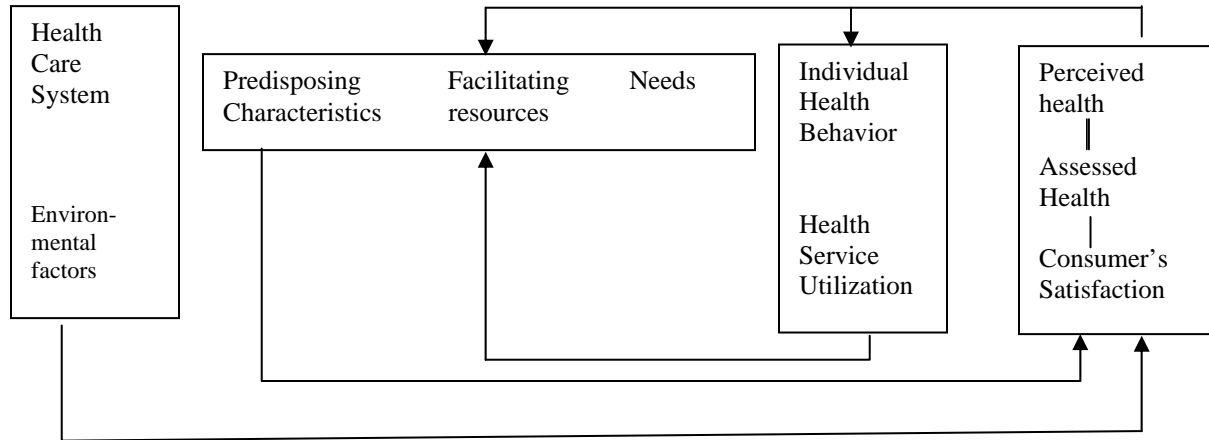
## CONCEPTUAL FRAMEWORK

We use Andersen's behavioral model (Andersen, 1995) of access to healthcare as an organizing conceptual framework. The postulates and hypotheses of the model are particularly well-suited to the analysis of the Canadian healthcare system. Based upon a philosophical postulate which considers access to healthcare as a human right, Kehrer and Andersen developed the first version of the model which provided, in a simple form, a conceptual framework that has allowed researchers to organize their diverse studies on access to healthcare and service utilization in the United States and Canada (Kehrer, 1972; Andersen, 1968).

The model has been subjected to critiques (Mechanic, 1979; Rundall, 1981) which lead the authors to introduce gradual but substantial changes since to its initial formulation, especially through the work of Aday and colleagues (Aday, 1993; Aday and Andersen, 1981, 1974) and that of Andersen (Andersen, 1995). Initially conceived around the family as a unit of analysis, empirical studies quickly showed the need to orient it towards the individual in order to overcome methodological challenges related to the study of the family. Therefore, the model gained in complexity through the integration of new dimensions of analysis (Andersen, 1995) and refinement of concepts. One such conceptual refinement divides access to healthcare in two categories: (1) *potential access* which refers to the possibilities the healthcare system makes available to the population, and (2) *realized access* to healthcare services which denotes the actual utilization of healthcare services by those who need it.

Universal healthcare insurance maximizes potential access since service is available to all regardless of ability to pay. *Realized* access however can be hindered by non financial barriers; thus the importance of focusing the research on this type of access and its determinants (Aday, Begley, Lairson and Slater, 1998). In its present form (Figure 1), the model provides a powerful analytical tool as an organizing framework for the identification and the testing of causal relationships between access to care as outcome and individual and contextual factors which determine that access. We use it to tease out the determinants of unmet needs for healthcare in Québec.

**Figure 1**  
**Behavioral model of access to healthcare**



## DATA

We extracted the individual data from the public use dataset of the *Canadian Community Health Survey* (CCHS cycle 2.1). CCHS is a multi-round cross sectional survey which collects information about health, health services utilization, and the determinants of the health of the Canadian population. CCHS (cycle 2.1) was implemented in 2003. Data were collected from persons living in private dwellings for about 98 percent of the Canadian population 12 years old and older. The CCHS sample was designed to provide accurate information at the health region level. The health region is the administrative unit for healthcare and social services delivery in Canada's provinces. The sample was selected following a multistage stratified sampling scheme where the primary sampling unit (PSU) is the cluster of households from which the final sampling units (the respondents) were selected according to a selection probability proportional to the household composition.

Our survey sub-samples are composed of 16 999 and 1 709 persons representative of the 15 to 80 years old populations of the province of Québec and of Montréal health region. We also collected contextual data from census data sources and other health administration sources. We linked the CCHS data for Québec to demographic and socioeconomic indicators describing the health regions so as to provide background characteristics of the respondents. Control for the contextual characteristics requires data at lower geographic subdivisions that are more likely to correspond to real communities and neighborhoods. The needed variables for such detailed control variable are not provided in the public use dataset. Therefore, we limited the control for the contextual characteristics to the variable *health region* which identifies the respondent's region of residence. It is modeled as a categorical variable with Montréal as reference category.

Table 1 displays the sample's composition according to the demographic, socioeconomic and health characteristics of the respondents. All the variables besides language and ethnic origin do not pose any representativeness problems. The French speaking population is over represented in the sample while visible minorities which refers to sizable ethnic subpopulations are under represented. French is the spoken language of more than 90 percent of the respondents, and white is the ethnic origin of 96 percent of the respondents.

A high proportion of both male and female respondents report a chronic health condition but the proportion of women (75 percent) is substantially higher than that of men (64 percent). Access to a regular family physician is a problem for almost a third of men and about a sixth of women. Nine out of ten respondents possess prescription drug insurance

coverage and more than half of the respondents have an insurance for hospital related costs.

**Table 1**  
**Québec's sub-sample's characteristics, Canadian Community Health Survey cycle 2.1**

Variables	Males		Females		Total	
	Number of respondents	Percent	Number of respondents	Percent	Number of respondents	Percent
<b>Age</b>						
20-34	2 318	21	2 728	21	5 046	21
35-49	3 199	29	3 279	25	6 478	27
50-64	3 223	30	3 701	28	6 924	29
65-79	1 807	17	2 679	20	4 486	19
80 &+	359	3	735	6	1 094	5
<b>Marital Status</b>						
Married	4 528	36	4 730	32	9 258	34
Common Law	1 991	16	2 149	14	4 140	15
Widowed/Sep/Divorced	1 748	14	3 879	26	5 627	20
Single/Never Married	4 386	35	4 117	28	8 503	31
<b>Employment status</b>						
Worked at a job or business	8 248	75	7 764	62	16 012	68
Did not work: job or business	2 707	25	4 836	38	7 543	32
<b>Education</b>						
Less than Secondary Grad.	4 292	35	5 314	36	9 606	36
Secondary Graduation	1 521	12	2 037	14	3 558	13
Some Post-Secondary	772	6	877	6	1 649	6
Post Secondary Graduation	567	47	6 354	44	12 121	45
<b>Income Adequacy</b>						
Lowest Inc. Quartile	1 123	10	2 333	19	3 456	15
Lower Inc. Quartile	2 509	23	3 146	26	5 655	25
Upper Middle Inc. Quartile	4 038	38	4 172	34	8 210	36
Highest Inc. Quartile	3 043	28	2 592	21	2 592	25
<b>Languages</b>						
English	737	8	959	8	1 696	8
French	8 338	91	11 546	92	19 884	91
Other	69	1	110	1	179	1
<b>Ethnic Background</b>						
White	11 400	96	13 572	96	24 972	96
Visible Minority	501	4	509	4	1 010	4
<b>Standard Weight</b>						
Underweight	108	1	524	4	632	3
Normal Weight	4 586	42	6 770	54	11 356	48
Overweight	4 542	42	3 556	28	8 098	34
Obese	1 620	15	1 782	14	3 402	14
<b>Has a Chronic Condition</b>						
Yes	8 146	64	11 193	75	19 339	70
No	4 488	36	3 701	25	8 189	30
<b>Has a Regular Doctor</b>						
Yes	9 148	72	12 617	85	21 765	79
No	3 486	28	2 274	15	5 760	21
<b>Insurance Prescription</b>						
Yes	10 808	88	12 806	88	23 614	88
No	1 497	12	1 755	12	3 252	12
<b>Insurance Hospital</b>						
Yes	6 883	59	7 539	55	14 422	57
No	4 727	41	6 152	45	10 879	43
<b>TOTAL</b>	<b>12 681</b>	<b>46</b>	<b>14 918</b>	<b>54</b>	<b>27599</b>	<b>100</b>

The largest of Canada's provinces, Québec's territory is divided into eighteen health regions of unequal areas and unequal population densities. Table 2 displays the social and demographic characteristics of Québec's health regions. In addition to the estimates we calculated from the survey's micro data, we collected some data from several sources that are in the public domain. There is little variation in the regions' main social and demographic characteristics. The most important differences are in the number of physicians per 100 000 residents. This ratio is not proportional to the size of the health region. In that respect, the Gaspésie — Îles-de-la-Madeleine, for example, is ranked close to the large urban centers such as Montréal and Québec.

**Table 2**  
**Socio-demographic characteristics of health regions, Québec 2001**

<b>Health Region</b>	<b>Total Population</b>	<b>Percent Elderly</b>	<b>Percent Unemployed</b>	<b>Percent Low Income</b>	<b>Percent less than Secondary Educated</b>	<b>Physicians per 100 000 Population</b>
Abitibi-Témiscamingue	146 100	11.5	6.9	25.4	34.1	192.9
Bas-Saint-Laurent	200 630	15.7	6.3	26.7	30.4	209.2
Chaudière-Appalaches	383 375	13.1	3.1	23.4	27.5	157.5
Côte-Nord	97 750	9.8	7.9	26.3	33.3	207.2
Estrie	2 856 715	14.2	3.4	22.5	26.1	235.6
Gaspésie — Îles-de-la-Madeleine	96 925	15.7	10.0	28.4	40.0	257.6
Lanaudière	388 495	10.8	3.2	22.7	25.9	130.8
Laurentides	461 360	11.1	3.3	21.5	23.5	135.4
Laval	343 005	13.2	2.9	20.1	21.6	141.4
Mauricie et Centre-du-Québec	473 770	15.3	4.2	25.2	28.3	150.5
Montréal-Centre	1 812 720	15.3	4.6	23.7	22.3	298.2
Montérégie	1 276 385	11.6	3.1	21.3	23.4	143.5
Outaouais	315 545	10.3	3.1	20.7	24.0	148.4
Québec-Capitale-Nationale	638 910	14.2	3.9	22.9	20.2	277.2
Saguenay — Lac Saint-Jean	278 275	12.7	6.6	28.5	26.4	173.2

## METHODS

We fitted three logistic regression models in which the outcomes variables account of unmet need for primary healthcare. The survey asked “*During the last 12 months, was there a time when you thought you needed healthcare but you did not get it?*” We used the responses to this question to create the outcome as a dummy variable wherein 1 denotes “no access to care when needed.” We fitted two logistic regression models to the data for the whole province, and one model to the data of Montréal health region. All explanatory and control variables are categorical except *age* which is modeled as five year age group covering the age span 20 to 80 years. Montréal health region is the reference category when *health region* is included in the province’s models as a control variable.

In the statistical modeling, we used the weights provided by Statistics Canada in the public use dataset. The weights are designed to warrant that the results apply to the whole population. And they account for the complex design of the sample in the variance estimation. We implemented a stepwise procedure to select the best model. The results lead to the selection of the three models that represent the best fit based on theoretical considerations and on the BIC (Bayesian Information Criterion) test. The only contextual control in the models for the whole province is *health region* with Montréal as reference.





## RESULTS AND DISCUSSION

We report in Table 3 the *odds ratios* and the levels of statistical significance for the two logistic regression models for the province and the single model for Montréal health region. The results show that overall unmet needs for healthcare are clearly associated with need variables rather than with the resources or *predisposing* characteristics.

Medical research has established that self perceived health is a powerful indicator of actual health, and compares favorably with clinical assessments. This variable is a good proxy of need for healthcare, and as expected it is the most significant determinant of unmet needs for primary care in the province of Québec and in the Montréal health region. Its impact is gradual varying with the health condition of the respondent; the worse the self-reported health status, the higher is the likelihood of reporting unmet needs. In the province as a whole, respondents who assess their own health as good are **50 percent** more likely to have experienced unmet needs for care than those who assess their health as excellent. And the odds are almost double, and almost triple if the reported health status is good or fair. But if the respondent is in poor health, he/she is five times more likely to report unmet needs.

In the Montréal health region, the figures are statistically significant only for the two worse health conditions, but the odds are markedly higher if the respondent reports poor health. The chances for a resident of the Montréal health region who is in fair health of reporting unmet needs are comparable to those of a resident of the rest of the province. However, if the resident of Montréal health region is in poor health the odds are more than eight to one of reporting unmet needs compared to more than five to one if the respondent is a resident of the rest of the province. Given the concentration of health facilities in Montréal, this finding means either people in poor health come to seek care in Montréal, therefore cluttering the services, or else there is a higher prevalence of sick people in Montréal, which would also lead to the cluttering of healthcare facilities.

Health research also provides overwhelming evidence about the adverse impact of obesity on health. Used as a proxy for need for primary healthcare, this variable turned out to be a statistically significant determinant of unmet needs but not in the expected direction. One would expect obesity to increase the odds of reporting unmet needs. It did not. However, suffering from a chronic health condition is associated with higher (75 and 86 percent) odds of reporting unmet needs for the residents of the province and the residents of Montréal's health region, respectively.

Satisfaction with life in general might be a marker of need and its association with unmet needs is as important as self-rated health with some nuances. The increment in the odds of reporting unmet needs is 27 and 75 percent for residents of the province and those of Montréal if they declare being satisfied with health in general as compared to *very satisfied*. The odds increase considerably if they declare they are *neither satisfied nor dissatisfied* in a range of 2 to 1 and 3.5 to 1, or if they declare being *very dissatisfied* in a range of 3 to 1 and 4.5 to 1.

The *enabling* characteristics did not matter much as one would expect in a universal and free primary healthcare system. Having access to a regular medical doctor actually reduces the chances of reporting unmet needs by about 20 percent for the residents of the province. But access to four types of insurances actually increases the odds of reporting unmet needs by about 65 percent.

The rating of the availability of healthcare in the community is a marker of the subjective perception of the respondent, which some researchers identify as an important determinant of access to care. Our results lend support to this assertion. Indeed, the worse the respondents rate the availability of healthcare in the community the higher the chances they report unmet needs; and this is true across the board for the province and for the Montréal's region. If a resident of the province rates the availability of health care in the community as *good* compared to *excellent*, he (or she) is about 37 percent more likely to report unmet needs. But the odds are more than double and quadruple if the rating is fair or poor. The same is true for a resident of Montréal's health region with a difference of scale; the odds are double and about triple only. As expected, a strong sense of belonging to the community reduces the chances of reporting unmet needs.

The *predisposing* characteristics are expected to have minor impact on unmet needs. Indeed, the impact of age on unmet needs is marginal. The odds of reporting unmet needs are, on average for every five years of age, 10 percent lower for a resident of the province. Women are 20 percent more likely to report unmet needs than men, and single and never married people are 25 percent less likely to report unmet needs than married persons. Education is also associated with about 50 percent increase in the odds of reporting unmet needs but only at the *secondary* and *some postsecondary* levels and only for the province as a whole.

Health region is included in the model as a categorical variable with Montréal's health region as reference category. Québec is the only health region for which the results are statistically significant. Residents of Québec's health region are about 30 percent less

likely to report unmet needs than residents of the health region of Montréal, all else being equal.

Other *enabling* characteristics turned out marginally significant or not significant with regard to unmet needs for primary care. *Home ownership* has a little or no influence on access to primary healthcare in Québec. *Visible minority* turned out statistically not significant even for Montréal's health region where the ethnic origin is a strong social marker.

**Table 3**  
**Logistic regression models of unmet needs for primary healthcare in Québec 2003**  
**Odds ratios and statistical significance of covariates (A summary table)**

Covariates	Québec province		Montréal Health region
	Model 1	Model 2	Model 1
<b>Needs Characteristics</b>			
<i>Self-perceived health (Omitted:excellent)</i>			
Very Good	1.596***	1.588***	1.649
Good	1.932***	1.920***	1.649
Fair	2.706***	2.697***	2.474**
Poor	5.306***	5.272***	8.334***
<i>Standard Weight (Omitted: underweight)</i>			
Normal weight	0.554 **	0.556 **	0.424*
Overweight	0.503**	0.505 **	0.310**
Obese	0.528**	0.532 **	0.341**
Has a chronic health condition	1.861***	1.864 ***	1.753*
<i>Satisfaction with life in general (Omitted: very satisfied)</i>			
Satisfied	1.265*	1.266*	1.753*
Neither satisfied nor dissatisfied	2.087***	2.089***	3.573***
Dissatisfied	1.771**	1.758**	2.388*
Very dissatisfied	2.972**	2.986**	4.548*
<b>Enabling Characteristics</b>			
Have 4-coverage health insurance	-----	-----	1.645*
Has a regular medical doctor	0.786*	0.788*	-----
<i>Rating availability of community health care (Omitted: excellent)</i>			
Good	1.366*	1.375*	-----
Fair	2.448***	2.498***	1.996**
Poor	4.413***	4.577***	2.807***
<i>Sense of belonging to local community (Omitted: very strong)</i>			
Somewhat strong	0.754**	0.753**	-----
Somewhat weak	0.898	0.898	0.755
Very weak	-----	1.496	-----
<b>Predisposing Characteristics</b>			
5-year age groups (continuous 15 to 80 years)	0.904***	0.904***	0.914*
Female	1.196*	1.197*	-----
Single/Never Married (omitted: married)	0.749**	0.747**	-----
Visible Minority	1.288	1.316	-----
<i>Education (Omitted: Less than secondary graduate)</i>			
Secondary school graduation	1.588**	1.577**	-----
Some post secondary	1.508***	1.496***	----
Post secondary graduation	0.870	0.872	1.388
Health region (omitted Montréal)	0.699**	-----	-----

Source \*p<0.05; \*\* p<0.01; \*\*\* p<0.001.

## CONCLUSION

The main conclusion of the study is the highlight of the significance of the covariates related to need rather than to predisposing or enabling characteristics of the respondent. It comes as no surprise in a free and universal healthcare system. The associations of the need variables with outcomes remain stable throughout the modeling process involved in the stepwise procedure. And this is true for the province as a whole as well as for the Montréal health region.

It is also important to note the low significance of regional disparities, whose proxy in the model is the *health region*. The association of the *health region* with unmet needs is statistically significant only for the health region of Québec compared to that of Montréal. One explanation might be the unequal distribution of resources mentioned in the literature (Statistics Canada, 2004; Trottier, Cantandriopoulos, and Champagne, 2006; MSSS, 2005; 2002).

As regards services availability, all types of health service facilities are concentrated in the Montréal region. For some types, the number of facilities is three time higher in the health region of Montréal than in that of Québec. The proportion of family physicians and of specialty physicians is also higher in Montréal's health region than in Québec's. The figures are 191 and 150 per 100 000 inhabitants. This might partly explain the gap between Montréal's and Québec's health regions with regard to unmet needs.

Contrary to our expectations, we find that spoken language is not a significant determinant of unmet needs. Speaking at home only English, only French, or only another language has no bearing on access to primary healthcare. However, it comes as no surprise that household income and the respondent's employment status have no impact on access to primary care, due to the fact that primary healthcare services are universal and free of charge.

The study has some limitations related to the nature of the data. First, the data analyzed are cross sectional, therefore limited when it comes to ascertaining causal relationships because of lack of control of the required time order. On the other hand, this study is one of very few statistical analyses of Québec's survey data. Thus, the lack of previous studies means that is necessarily an exploratory analysis since there is little ground on which one could build hypotheses. Another major limitation is the geographic size of the health regions, making them less than optimal as control for the contextual background of the respondents.

Also, some variables come pre-coded in the public use dataset at levels of aggregation that limit their usefulness as explanatory variables. The language spoken and the respondent's immigration status are two examples of such precoded variables in a way that is likely to hide important variations.

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