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Results from the National Population Health Survey**

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Social Determinants of Health in Canada's Immigrant Population: Results from the National Population Health Survey

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ABSTRACT:

As part of the Metropolis project—a large-scale investigation of immigration and integration, including well-being of immigrants in a number of areas of social life—in this paper we investigate the social determinants of health in Canada's immigrant population using Canada's National Population Health Survey (NPHS). Specifically, we examine the differences in health status and health care utilization between immigrants and non-immigrants, immigrants of European and non-European origin, and immigrants of less-than-ten years and greater-than-ten years' residence in Canada. We also examine the social determinants of health care utilization and health status in immigrants and non-immigrants; and evaluate the utility of large-scale, national databases for these purposes. Our theoretical approach draws upon a 'population health' perspective, which suggests that the most important antecedents of human health status are *not* medical care inputs and health behaviours (smoking, diet, exercise, etc.), but rather social and economic characteristics of individuals and populations. We find no obvious, consistent pattern of association between socio-economic characteristics and immigration characteristics on the one hand, and health status on the other, in the NPHS data. This does not mean that socio-economic factors in Canada are not influential in shaping immigrants' health status. In fact, the results of the logistic regression models calculated for immigrants and non-immigrants on four outcome variables in this study suggest that socio-economic factors are more important for immigrants than non-immigrants, although in ways that defy a simple explanation. The complexity of immigrants' experiences, combined with the inherent limitations of cross-sectional survey data are discussed as major limitations to this kind of research.

Introduction

As part of the Metropolis project—a large-scale investigation of immigration and integration, including well-being of immigrants in a number of areas of social life—in this paper we investigate the social determinants of health in Canada’s immigrant population using Canada’s National Population Health Survey (NPHS). There are a wide variety of potential reasons for studying the health of immigrants as a distinct group. Immigrants coming from countries with poorer health status may be of concern with respect to their future health care utilization, for instance. Usually, however, the opposite effect—a ‘healthy immigrant’ effect—is seen due to medical testing used to screen immigrants for entry. Yet another reason to study immigrant health is that it represents a ‘natural experiment’ that allows for the investigation of the effects of social environments on human health (see for example Marmot et al.1975; Nichaman et al.1975; Syme et al.1975; Worth et al.1975). In this paper, we undertake the following investigations: a) examine differences in health status and health care utilization between immigrants and non-immigrants, immigrants of European and non-European origin, and immigrants of less than ten years and greater than ten years residence in Canada; b) examine the social determinants of health care utilization and health status in immigrants and non-immigrants, and c) evaluate the utility of large-scale, national databases for these purposes.

In this paper, we specifically adopt a ‘population health’ or, alternatively, a ‘social determinants of health’ perspective. This is a perspective based on a synthesis of a diverse public health and social scientific literature, which suggests that the most important antecedents of human health status are *not* medical care inputs and health behaviours (smoking, diet, exercise, etc.). Rather, they are social and economic characteristics of individuals and populations (Evans et al.1994; Frank 1995; Hayes and Dunn 1998). This literature strongly suggests that mechanisms related to societal power relations, social identity, social status, and control over life circumstances are highly influential on the differential distribution of health status across social strata (Dunn 1996, 1998). These mechanisms can be expected not only to be influential across socio-economic differences, but also across class, gender, race, ethnicity, language, and age differences. For immigrants, power relations, identity and status issues, and control over life circumstances

would be expected to be influential on the relative success of their migration and integration.

Past literature on the social determinants of health in immigrants is sparse, and the results ambiguous. Although there is a vast literature on differences in health status of groups categorized according to ‘race,’ particularly in the United States, it is largely unhelpful for our purposes. First, it tends to combine ‘race’ and immigrant status, and rests on an unexamined assumption that the differential distribution of health status could be reduced to biological and genetic factors. Second, it tends to treat ‘race’ as a static, unproblematic category, as opposed to investigating processes of *racialization* (see, for instance, Anderson 1987, 1991), which may result in the social and economic marginalization of certain social groups. Indeed, it has been shown that ‘racial’ differences in health status can largely be accounted for by differences in individuals’ social and economic circumstances (Wilkinson 1996). This adds to the timeliness of the present investigation.

We use data from the National Population Health Survey (1994–5) to investigate the determinants of health status, chronic conditions, overnight hospitalization, and reporting of unmet needs for care, making comparisons between immigrants and non-immigrants. Explanatory variables considered include individual socio-economic characteristics, coping and stress indicators, and immigration characteristics. The results are ambiguous. We find that the NPHS data are of limited utility for this purpose, and that existing conceptual and theoretical development of the social determinants of immigrant health is equally constraining.

Background and Context

In recent years, Canadian health policy discourse has increasingly been characterized by a concern with the ‘social determinants of health,’ as evidenced by its strong presence in health policy rhetoric and academic research (see Bhatti & Hamilton 1996; Hayes & Dunn 1998; Hayes 1998, 1994; Evans, et al. 1994; British Columbia 1992, 1994, 1995, 1996; Hertzman and Weins 1996; National Forum on Health 1997; etc.). Analysis of the social determinants of health status for human populations has led to an emerging

‘population health’ perspective on human health (Hayes and Dunn 1998). Proponents of this perspective claim that

[T]he major determinants of health status, particularly in countries at an advanced stage of economic development, are not medical care inputs and utilization, but cultural, social and economic factors—both at the population and individual levels. The influence of these factors is ubiquitously manifested in profound social gradients in health status, which are surprisingly independent of diagnostic categories of illness, tending to persist across shifts in disease pattern and in hazardous exposures over time, and across societies (Frank 1995, 162).

Despite this certainty about the strength and importance of the ‘social and economic environment’ upon health status, there remain many unanswered questions about the important elements of these environments for health and the mechanisms through which they might shape the health status of individuals and populations (Blomley 1994), leaving it a matter of speculation as to what kinds of policy interventions might reduce health inequalities. But some compelling recurrent themes emerge when reading contemporary population health research that suggest that mechanisms of power, identity, status, and control—as they are embedded in the social and economic environments of individuals and populations, are highly influential upon the differential distribution of health status.

The importance of power relations, social identity, social status, and control over life circumstances for health status follows from the evidence upon which the population health perspective is based. This evidence can be usefully grouped into three broad categories: social inequalities in health within and between societies; social support and health; and workplace characteristics and health. Supplementing these categories is an additional dimension, which shall be called ‘a life-course perspective’ (see Dunn 1996, 1998). Each of these categories of evidence, as well as the life-course dimension, requires a brief explication.

The literature on social inequalities in health repeatedly demonstrates a positive association between social status and health status, however measured. Life expectancy, for instance, increases with socio-economic status in nearly all developed countries (Hertzman and Weins 1996). The pattern is not, however, typically a simple difference between the wealthy and the poor. Rather, it is almost invariably “a monotonic ‘gradient,’

wherein successive population quantiles, graded according to increasing levels of income or education, or by occupational class, enjoy increasingly long and disability-free lives” (Hertzman and Weins 1996, 1084). The magnitude of social inequalities has remained constant throughout the twentieth century despite a complete change in the principal causes of morbidity and mortality over that period, suggesting that

the diversity of the conditions of life can somehow become directly embedded in human biology, such that human vitality can be affected by social hierarchies in a consistent manner across wide expanses of space and time (Hertzman and Weins 1996, 1084).

Not only is social status associated with health status thus creating health inequalities between individuals within the same society (i.e. within societies), but the scale of social inequality in individual societies has been shown to be associated with health status between those societies as well. International comparisons have shown an association between Gini coefficients of post-tax income inequality (adjusted for household size) and life expectancy across OECD countries. In other words, the countries with the longest life expectancy are those with the smallest spread of incomes (between richest and poorest) and the smallest proportion of the population in relative poverty (Wilkinson 1994).

This has led Wilkinson (1994; 1996) to one of the most important recent findings in this field, namely, that population health is affected “by differences in *relative* income (differences between groups of people within the same society), not by the absolute level of average incomes for each society as a whole” (Wilkinson 1994, 68). Furthermore, his analysis suggests that “between one-half and three-quarters of the differences in average life expectancy from one developed country to another may be attributed solely to differences in income distribution” (ibid. 69). This observation in itself is not so important for understanding the health of individual immigrants. Rather, what is important is Wilkinson’s argument for a “psychosocial interpretation” of these findings, claiming that there

are a number of different ways in which psychosocial links might be involved in the association between socio-economic status and health. For example, the stresses of economic insecurity or relative deprivation may impact directly on health, affecting both the endocrine and immune

systems. Relatedly, psychosocial stress may cause people to start smoking or engage in other behaviours which are detrimental to health (1994, 71; see also Saplosky 1992, 1994).

While the substance of these explanatory hypotheses is not new, it would seem that Wilkinson's work does break important new ground in understanding the 'something' that Evans (1994) suggests underlies the social gradient in health. Specifically, Wilkinson's 'psychosocial interpretation' of the importance of relative income

suggests that psychosocial factors related to deprivation and disadvantage are involved. That is to say, it is less a matter of the immediate physical effects of inferior material conditions than of the *social meanings attached to those conditions and how people feel about their material circumstances and about themselves* (1994, 70, emphasis added).

These claims, if valid, strongly suggest that further innovation in the field of population health will take place through the understanding of how power relations and processes of social differentiation leading to social identity formation and social status hierarchies manifest in the differential distribution of health status.

The importance of social identity formation and social status hierarchies is also observed in the relationship between social support and health. It is now widely acknowledged that the quantity, and particularly the quality, of social contacts individuals have is strongly associated with a wide variety of threats to health status (House, et al. 1988). The Alameda County study, one of the most widely cited examples, showed individuals' scores on a combined social network index¹ predicted mortality with a relative risk ratio of 2.0 in an analysis that controlled for self-reports of physical health, SES, smoking, alcohol, exercise, obesity, race, and life satisfaction (Berkman and Syme 1979). This study has been replicated in other locales by other investigators. There are two major hypotheses by which social support is believed to influence health. The 'buffering hypothesis' suggests that support may reduce the importance of the perception that a situation is stressful, and second, it may in some way tranquilize the neuroendocrine system so that people are less reactive to perceived stress. The direct effect hypothesis, on the other hand, suggests that direct benefits of social support occur as a result of the

perception that others will provide assistance in the event of stressful occurrences, and result in “increased overall positive affect and in elevated senses of self-esteem, stability, and control over the environment” (House et al. 1988). These psychological states, Cohen and Syme suggest, “may in turn influence susceptibility to physical illness through their effects on neuroendocrine or immune system functioning, or through changes in health promoting behaviors” (1985, 6). Another way the direct effect hypothesis of social relations is believed to operate is through “increased senses of predictability, stability and control because they [social relations] provide the opportunity for regularized social interaction and the concomitant feedback that allows for the adoption of appropriate roles and behaviors” (Cohen and Syme 1985, 6).

Research on the relationship between workplace characteristics and health has also been influential on the population health perspective. The findings of such studies are neatly summarized as the ‘demand-control’ model of workplace health. Numerous studies in the U.S., Scandinavia, and the U.K. find that health risks are incurred more frequently by persons working in jobs that are psychologically demanding, and which offer little control, decision latitude, or skill discretion. A third factor strongly contributes to health outcomes in the workplace as well: social support from co-workers.

Attention to the influence of social and economic factors on human health and development across the life-course is the final element of the population health perspective. This idea is driven by the notion of ‘biological embedding’—that “the conditions of life, filtered through a perceptual screen, could affect vitality through a wide variety of pathological mechanisms” (Hertzman and Weins 1996, 1084). Studies of behaviour, social structure and health outcomes in primates (Saplosky 1994), neurological research on critical periods in brain development (Cynader 1994), and research in psychoneuroimmunology and psychoneuroendocrinology (Saplosky 1994) all suggest that the notion of ‘biological embedding’ of social influences, or a “sociobiological translation” (Tarlov 1996) are highly plausible notions. Supporting this, several studies have shown the ‘buffering’ influence of high socio-economic status. They suggest that higher status

¹ constructed from self-report data from 4775 survey respondents on four types of social contacts / activities (marriage, contacts with family and friends, church membership, and formal and informal group affiliation).

not only protects healthy children from future risks and vulnerabilities but can actually reverse the latent impact of risks which already exist (e.g., mild lead poisoning, perinatal stress) (Hertzman and Weins 1996).

Social influences during ‘sensitive’ periods of human development can have lifelong influences as well. A recent study, for instance, found low education to be associated with an increased prevalence of clinically diagnosed dementia in six different studies in different parts of the world (Katzman 1993). Those with more education, it is hypothesized, have greater brain capacity in the form of an increased density of neural interconnections (increased synaptic density) in areas of the brain associated with learning and memory. By the time they reach old age and synaptic density begins to decline naturally, individuals with a ‘reserve capacity’ of neural connections can endure the losses without substantial decrements in mental function (Hertzman and Weins 1996). A great deal more evidence of the importance of a life-course perspective exists, but these illustrations serve our purpose. Immigration and integration necessarily involve processes which occur over time, and interpretation of these events must be situated in the context of the life-course of individuals to be fully understood.

Materials and Methods

The National Population Health Survey (1994–5) Public Release ‘Health File’ consists of data from telephone interviews with 17,626 Canadians, including 2,400 immigrants. The health file contains data on a wide range of health outcomes, socio-demographic characteristics, health-related behaviour characteristics, and coping indicators.

The analysis that follows is organized into three sections. First, we present a brief description of the socio-economic characteristics of the immigrant sample and the Canadian-born sample. Next, we examine differences between sub-groups defined by three different immigration characteristics: immigrant vs. Canadian-born; country of origin; and length of time in Canada. Finally, we use logistic regression analysis to examine the simultaneous influence of a range of socio-economic characteristics, coping and stress indicators, and immigration characteristics on health outcomes for immigrants and non-immigrants in the NPHS sample.

Table 1 shows the relevant survey question for each of the four outcome variables considered in the analysis. Note that all are self-reported measures. Self-rated health status is a very widely used measure across the world (van Doorslaer 1997) that has been shown to be strongly correlated with other ‘harder’ physical measures of health status (mortality, clinically diagnosed morbidity, symptom reporting, health care utilization) (Hoeymans et al. 1997; Miilunpalo et al. 1997), and also functional status (Gold et al. 1996). The presence of a chronic condition is included as a health measure for its sensitivity to the notion of health as a ‘resource for living’: it indicates deficiencies in that regard for individuals reporting such conditions. Overnight hospitalization is another measure of deviations from health as a resource for living, but measures acute (as opposed to chronic) interruptions. Finally, unmet need for care is an outcome of particular interest to investigators of immigrant health given cultural and language differences between health care practitioners and patients that have the potential to create barriers to (appropriate) care provision.

TABLE 1: OUTCOME VARIABLES	
VARIABLE	QUESTION / RESPONSE OPTIONS
Self-Rated Health Status	In general, how would you describe your health? (Poor; Fair; Good; Very Good; Excellent)
Presence of Chronic Condition	No long-term conditions diagnosed by a health professional? (yes / no)
Respondent Hospitalized in Last Year?	In the past 12 months, have you been a patient overnight in hospital, etc.? (yes / no)
Respondent Had Any Unmet Need For Care?	During the past 12 months, did you ever need health care or advice but not receive it? (yes / no)

Descriptive Results

Table 2 shows the relative distribution of explanatory variables between: the immigrant and Canadian-born samples; immigrants from ‘European’ (Europe, Australia, United States) and ‘non-European’ (Asia, Africa, South America) origins; and immigrants of less-than-ten years and ten years or more. The parameters for this table were selected for their theoretical importance as provided by the population health perspective, and knowledge of immigrant integration. Past research has suggested that it

**TABLE 2
SAMPLE PROFILES**

	Immigrants	Canadian-born	European	Non-European	0-9 years	10+ years
SOCIO-DEMOGRAPHICS						
age						
12 to 19 years	7.1%	15.7%	3.7%	11.7%	14.6%	4.0%
20 to 29 years	13.1%	16.9%	9.4%	17.9%	20.7%	9.8%
30 to 49 years	42.0%	38.8%	37.6%	46.9%	46.5%	40.4%
50 to 65 years	20.4%	15.8%	24.0%	15.9%	10.1%	24.8%
65+ years	17.4%	12.7%	25.3%	7.6%	8.1%	21.0%
gender						
% male	44.9%	45.8%	49.1%	47.6%	45.7%	48.9%
city location						
Montreal	7.5%	5.2%	9.7%	13.9%	14.4%	11.4%
Toronto	23.0%	5.9%	30.7%	44.1%	43.6%	33.5%
Vancouver	9.9%	3.0%	9.2%	16.0%	14.2%	11.1%
All others	59.7%	85.9%	50.4%	26.0%	27.8%	44.0%
urban/rural						
% rural	15.2%	31.5%	12.8%	1.9%	2.4%	10.1%
income quintile						
lowest	8.7%	7.8%	6.9%	8.8%	11.4%	6.5%
lower middle	15.8%	14.5%	10.8%	17.7%	20.0%	11.1%
middle	31.7%	30.3%	29.3%	35.9%	39.1%	30.2%
upper middle	30.0%	34.8%	34.6%	27.1%	22.5%	34.3%
highest	13.8%	12.5%	19.3%	10.5%	7.0%	18.0%
income source						
wages / salaries	72.0%	74.0%	65.6%	80.2%	77.5%	69.8%
UI / comp / welfare	8.3%	6.6%	5.8%	11.4%	14.0%	6.0%
dividends / interest	15.7%	16.2%	25.1%	3.9%	4.4%	20.4%
seniors' benefits	0.3%	0.3%	0.1%	0.6%	0.4%	0.2%
child tax credits / alimony	1.9%	1.3%	1.8%	2.1%	1.6%	2.0%
other	1.7%	1.5%	1.6%	1.8%	2.1%	1.6%
education						
no schooling	14.0%	9.6%	14.3%	13.9%	16.2%	13.2%
some secondary school	13.5%	25.2%	12.5%	15.2%	14.0%	13.4%
secondary school	15.6%	14.4%	16.3%	15.1%	15.2%	15.8%
some post-secondary	22.9%	23.0%	23.0%	22.2%	21.5%	23.5%
trade school or college	17.2%	15.6%	18.6%	15.2%	16.4%	17.7%
complete bach or more	16.7%	12.1%	15.3%	18.5%	16.7%	16.5%
housing tenure						
% owners	67.4%	70.1%	74.4%	59.8%	47.1%	76.1%

**TABLE 2
SAMPLE PROFILES**

	Immigrants	Canadian-born	European	Non-European	0-9 years	10+ years
household type						
couple with children < 25	31.5%	35.3%	37.6%	45.3%	46.4%	38.5%
couple+kids >=25 &/or relatives	3.8%	3.3%	5.1%	8.3%	7.2%	5.9%
single	24.0%	20.7%	14.6%	6.4%	7.4%	12.9%
single with others	1.8%	3.2%	1.6%	1.4%	2.6%	1.1%
couple + kids < 25 + relatives	4.6%	2.6%	6.0%	16.8%	12.7%	9.5%
couple - no children	25.4%	23.5%	28.8%	10.3%	13.1%	23.7%
single parent + kids < 25	5.3%	8.0%	2.8%	6.4%	5.9%	3.7%
other single parent	2.5%	2.5%	2.7%	3.9%	3.3%	3.7%
other	1.1%	0.8%	0.8%	1.2%	1.5%	0.9%
main activity / labour force status						
caring for family	14.8%	13.7%	15.3%	17.0%	19.9%	14.8%
working for pay / profit	33.9%	36.7%	36.3%	38.8%	36.6%	37.5%
caring for family & working	12.6%	14.0%	13.3%	15.2%	12.6%	14.8%
going to school	6.3%	9.0%	3.6%	15.1%	16.4%	5.4%
recovering from illness	2.7%	3.3%	2.5%	1.4%	0.6%	2.5%
looking for work	3.0%	3.6%	2.0%	4.2%	4.7%	2.4%
retired	25.5%	18.4%	25.7%	7.6%	8.3%	21.4%
other	1.3%	1.4%	1.4%	0.7%	1.1%	1.2%
type of drinker						
regular drinker	47.6%	54.6%	57.8%	30.9%	32.4%	51.4%
occasional drinker	20.0%	21.8%	19.0%	20.6%	18.9%	19.8%
former drinker	15.0%	13.8%	13.3%	13.7%	15.5%	12.7%
never drank	17.4%	9.8%	9.8%	34.8%	33.1%	16.1%
% with smoker in house	23.0%	39.6%	28.1%	16.9%	21.1%	23.8%
SOCIAL SUPPORT						
someone to make you feel loved?						
no	4.2%	3.1%	2.7%	3.6%	3.1%	2.9%
someone to advise you on personal decisions						
no	9.9%	7.6%	8.4%	10.9%	9.0%	9.5%
have a confidant?						
no	12.2%	10.5%	10.8%	5.6%	10.9%	13.3%
have someone to help?						
no	7.0%	4.6%	5.9%	9.4%	7.8%	7.1%

is after a period of roughly ten years in a new country that immigrants report a distinctive sense of comfort and familiarity with their new country (Hiebert 1998), and their earnings begin to reach 'average' levels (Fagnan 1995). Those of non-European origin could be expected to encounter more difficulties associated with cultural and language differences between their country of origin and Canada.

The table shows that the age distribution differs quite markedly between immigration sub-groups on a number of potentially relevant characteristics. Immigrants as a whole are older than non-immigrants, with ages 50 and older being overrepresented amongst immigrants and ages 12–19 being underrepresented. Immigrants of European origin, however, appear to account for much of this difference, as the middle two columns of Table 2 show. European origin immigrants are underrepresented in the 12–19 and 20–29 age groups, while non-European immigrants are underrepresented in the 50–65 and 65 and older age groups. A similar pattern occurs with the distribution by length of time in Canada: more recent immigrants are younger and more established ones are older.

No sizable differences exist in the gender distribution across immigration parameters in Table 2, but the results of this analysis do show that non-European immigrants have a strong bias towards living in Canada's major metropolises. Immigrants were significantly overrepresented in Toronto, Vancouver, and Montreal, and underrepresented in other locations. Similarly, within the immigrant group itself, non-Europeans were significantly overrepresented in the three major cities, and underrepresented in other locations. Recent immigrants also appear to have a bias toward Toronto, as those living in Canada less than 10 years were overrepresented in Toronto, and underrepresented in locations outside the three major metropolises. The urban orientation of recent, non-European immigrants is also reflected in the percentage living in rural locations.

There were surprisingly few significant income differences between immigration sub-groups. Immigrants were significantly underrepresented in the upper middle-income quintile, and non-European immigrants significantly underrepresented in the highest income quintile. The biggest differences concerned length of time in Canada. Immigrants living in Canada less than 10 years were significantly overrepresented in the lowest and

lower middle income quintiles, and were significantly underrepresented in the highest quintile. In terms of income source, immigrants were significantly more likely to have employment insurance, worker's compensation, welfare, child tax credits, or alimony as their primary source of income than non-immigrants. Established European immigrants were significantly more likely to have dividends and interest as their main source of income and significantly less likely to be collecting employment insurance, worker's compensation, or welfare, compared to less-established (i.e., less-than-ten years), non-European immigrants.

Differences in educational attainment were also surprisingly few in number. Immigrants were significantly overrepresented in the 'no schooling' and 'completed bachelor's education or more' categories, and non-immigrants were overrepresented in the 'some high school' category. Non-European immigrants were slightly underrepresented in the 'no schooling' category and slightly overrepresented in the 'completed bachelor's education or more' category, and more recent immigrants were overrepresented in the 'no schooling categories' and underrepresented in the 'some post-secondary' category. On the whole then, immigrants' educational attainment is polarized, and non-European well-established immigrants are less likely to be very poorly educated.

Concerning the prevalence of various household types for immigration sub-groups, immigrants were significantly less likely than non-immigrants to be part of a household that consists of a couple with children less than 25, a single person living with others, or a single parent with children under age 25. Within the immigrant sub-group, non-Europeans were significantly more likely than Europeans to be in a household that consists of: a couple with children under 25, a couple with children over 25 and/or relatives, a couple with children under 25 and relatives, or a single parent with children under 25. Non-European immigrants were significantly less likely to be single living alone, or a couple with no children at home. Less-established immigrants (< 10 years) were significantly more likely to be in a household that consists of: a couple with children under 25, a single person with others, a couple with children under 25 and relatives, or a single parent with children under 25, and were significantly less likely to be single living alone, or be a couple

with no children. In short, less-established, non-European immigrants were more likely to have children under 25 and be living in an extended family arrangement.

Consistent with expectations, immigrants were significantly underrepresented in home ownership, especially non-European, less well-established immigrants (i.e., < 10 years). The labour force activity also differed for different immigration sub-groups. Immigrants were significantly underrepresented among those working for pay or profit, or going to school, and were significantly overrepresented among those retired. European immigrants in particular were underrepresented amongst those going to school and overrepresented amongst those retired. Non-European immigrants, on the other hand were significantly more likely than Europeans to be working for pay, going to school, or looking for work and were significantly less likely to be retired. Less well-established immigrants were significantly overrepresented, compared to well-established immigrants, amongst those caring for family or going to school, and were underrepresented amongst those retired. Many of these significant relationships are linked to age—especially the likelihood that non-European, less well-established immigrants are more likely to be active at school, work, or looking for work, and well-established European immigrants are more likely to be retired.

In terms of behaviours commonly associated with adverse health outcomes, smoking and drinking of alcohol are considered here. Immigrants were significantly underrepresented amongst regular drinkers and overrepresented amongst those who never drank. Less well-established (i.e., < 10 years), non-European immigrants, it appears, account for much of this pattern as individuals from these groups are also significantly underrepresented amongst regular drinkers and are overrepresented amongst those who never drank. A similar pattern exists for smoking, except that the length of time in Canada does not appear to be important. Non-European immigrants are significantly underrepresented amongst those who have a regular smoker in their household.

The final few measures considered concern social support. Our expectations about differences in social support across different immigration sub-groups can be guided by two contradictory logics. First, immigrants are likely to have less social support because of their arrival in a new country and language and cultural barriers, and second, they are

likely to have more social support because of an enclaving effect, whereby they draw on ties with others from the same language and cultural background for mutual aid and benefit. Data from the National Population Health Survey seem to support the former hypothesis. Non-European, less well-established immigrants were overrepresented among those reporting that they *did not*: have someone to make them feel loved, have someone to advise them on personal decisions, have someone to confide in and talk about personal matters, and have someone to help if they needed it. Social support is also commonly associated with health status, and it remains to be seen in the subsequent analyses if it emerges as an important determinant of health for immigrants.

Immigration Sub-Groups and Health Outcomes

Table 3 shows differences between immigrants and native-born Canadians on the five health outcomes of interest. The table shows the percentage of the samples reporting each outcome. The number in parentheses beside each proportion is the standardized residual, indicating the difference between the observed and expected proportion of respondents in each category. The column labelled ‘test statistic’ gives the value of Kendall’s tau-c for each comparison, with the significance level indicated by asterisks (* p < .05; ** p < .01; *** p < .001). The same display format is used in Table 4 and 5.

TABLE 3			
HEALTH INDICATORS X IMMIGRANTS VS. CANADIAN-BORN			
	immigrants	Canadian-born	test statistic (* p < .05; ** p < .01; *** p < .001)
self-rated health status			
poor	4.2 % (4.2)	2.5 % (-1.7)	
fair	10.2 % (.5)	9.8 % (-.2)	
good	28.3 % (1.7)	26.2 % (-.7)	
very good	34.1 % (-2.8)	38.1 % (1.1)	
excellent	23.3 % (-.1)	23.4 % (0)	tau-c = .01699**
chronic condition?	57.1 % (-.2)	57.5 % (.1)	tau-c = .00177
activity limitation?	22.9 % (-.4)	23.4 % (.2)	tau-c = .00218
hospitalization (o/n)?	11.0 % (.5)	10.6 % (-.2)	tau-c = .00192
unmet need for care?	3.7 % (-2.1)	4.8 % (.8)	tau-c = .00497*

The results from Table 3 suggest a significant difference between immigrants and native-born Canadians for self-rated health status and unmet need for care. Specifically, immigrants reported ‘poor’ and ‘good’ health more frequently than expected (large,

positive residuals), and ‘very good’ health less than expected (large negative residuals). A counter-intuitive result was found for unmet need for care: immigrants reported unmet needs less frequently than expected.

Tables 4 and 5 show differences within the immigrant population. Country of origin is one of the variables measured in the NPHS, but data were available only for very coarsely defined categories. Immigrants from the United States and Mexico were included in the same category, for instance, as were immigrants from Africa and South America. Even so, the number of individuals occupying any one category was still small, so the data were further aggregated into those immigrants originating from Europe, the U.S. and Mexico, and Australia on the one hand, and Asia, Africa, and South America on the other. Significant differences between these groups were shown for all five outcome variables (see Table 4). Immigrants from Europe, the U.S. and Australia reported ‘fair’ or ‘poor’ health more frequently than expected, and reported ‘excellent’ health less frequently than expected. This result was reflected in the remaining four outcomes: immigrants from Europe, the U.S. and Australia reported chronic conditions, activity limitations, hospitalizations, and unmet needs for care more frequently than their counterparts from other parts of the world. These differences, however, can likely be accounted for by differences in the age structure of the groups as seen in Table 2. Indeed, the age distribution of immigrants from Europe, the U.S. and Australia was skewed towards older ages. These findings are consistent with Gliberman’s (1998) findings using the same data.

TABLE 4			
HEALTH INDICATORS X IMMIGRANTS COUNTRY OF ORIGIN			
	Eur/US/Aust	Asia/Afr/S.America	test statistic (* p < .05; ** p < .01; *** p < .001)
self-rated health status			
poor	4.8 % (1.2)	2.9 % (-1.8)	
fair	11.3 % (1.4)	7.7 % (-2.1)	
good	28.9 % (.2)	28.0 % (-.3)	
very good	33.3 % (-.5)	35.9 % (.8)	
excellent	21.6 % (-1.0)	25.5 % (1.5)	tau-c = .07533***
chronic condition?	63.8 % (3.2)	44.3 % (-4.8)	tau-c = .16812***
activity limitation?	27.9 % (4.0)	12.5 % (-6.0)	tau-c = .13288***
hospitalization (o/n)?	12.3 % (1.5)	8.4 % (-2.2)	tau-c = .03337**
unmet need for care?	4.3 % (1.4)	2.2 % (-2.1)	tau-c = .00497**

Table 5, which shows differences between immigrants living in Canada for less than and more than ten years, shows a picture similar to that of Table 4. Immigrants in Canada for less than ten years report poor or fair health less frequently than expected, and excellent health more frequently than expected. These differences are statistically

TABLE 5			
HEALTH INDICATORS X TIME SINCE IMMIGRATION			
	0-9 years	10+ years	test statistic (* p < .05; ** p < .01; *** p < .001)
self-rated health status			
poor	1.1 % (-3.4)	5.0 % (1.8)	
fair	5.0 % (-3.7)	11.6 % (2.0)	
good	28.1 % (-.1)	28.4 % (.1)	
very good	35.9 % (.7)	33.6 % (-.4)	
excellent	30.0 % (3.2)	21.4 % (-1.7)	tau-c = .11203***
chronic condition?	35.5 % (-6.6)	63.3 % (3.5)	tau-c = .19037***
activity limitation?	10.5 % (-5.9)	26.4 % (3.1)	tau-c = .10893***
hospitalization (o/n)?	6.7 % (-3.0)	12.2 % (1.0)	tau-c = .03755***
unmet need for care?	3.3 % (-.5)	3.8 % (.3)	tau-c = .00347

significant. They also report chronic conditions, activity limitations, and hospitalizations less frequently than those in Canada longer than ten years. Again, the interpretation is similar to Table 4—the differences are almost certainly due mostly to differences in the age structures of the two sample groups. The age distribution of immigrants in Canada less than 10 years was skewed towards those under the age of 49 (see Table 2).

Logistic Regression Analyses

That the differences between sub-groups of the immigrant population on health outcomes could not be distinguished from age differences demonstrates why an understanding of the simultaneous association of the explanatory variables with the outcome would be useful. Logistic regression allows for such an analysis. It is useful for describing the simultaneous relationship of a group of continuous and/or categorical explanatory variables and a dichotomous outcome variable (DeMaris 1995; Streiner 1994; Wrigley 1985).

The results of the logistic regression analyses appear in Tables 6-9. Table 6 shows the results for the outcome self-rated health status for immigrants and non-immigrants. As described above, respondents were asked to rate their health as poor, fair, good, very

good, or excellent. The outcome variable was dichotomized between those who rated their health as very good or excellent, and those who rated their health as good, fair, or poor. The grouping of 'good' with 'fair' and 'poor' was preferred to the alternative because it was believed that there was an important qualitative difference between rating one's health as 'very good' as opposed to 'good': to answer very good requires a certain level of conviction about one's health.

Explanatory variables are listed in the left-hand column and odds ratios for the Canadian-born sample's model and the immigrant sample's model are listed in the other columns. Odds ratios that were statistically significant to the 0.001 level appear in bold type (nearly all). Lower levels of statistical significance are indicated in the customary fashion (* $p < 0.05$; ** $p < 0.01$). The odds ratio expresses the amount of increase in the outcome that would be produced by a one unit increase in the explanatory variable. In other words, looking at the 'immigrants' column in Table 6, for instance, being aged 12–19 as opposed to 20–29 means that one is 1.91 times more likely to report very good or excellent health.

Looking still at the same column in Table 6, based on single statistically significant effects with an odds ratio of greater than 2.0 (or less than 0.5, the inverse), we see that immigrant respondents were more likely to report *very good or excellent health* if they: were born in Europe, the U.S., or Australia as opposed to Asia, Africa or South America; were a couple with children under 25; were single with other people as opposed to a couple with children under 25; were a single parent with children < 25 as opposed to a couple with children < 25; were any other kind of single parent household as opposed to a couple with children < 25; were in the highest income quintile as opposed to the middle; were working for pay as opposed to recovering from illness; had a trade school or college diploma as opposed to completed high school; had reported having a chronic condition; had reported an activity limitation; and had reported an unmet need for care.

Looking at the column for Canadian-born respondents to the NPHS in Table 6, we find they were more likely to report *very good or excellent health* if they: were 20–29 as

TABLE 6 EXCELLENT OR VERY GOOD SELF-RATED HEALTH STATUS: CANADIAN BORN AND IMMIGRANTS		
VARIABLE	ODDS RATIO CANADIAN BORN	ODDS RATIO IMMIGRANTS
AGE GROUP		
12-19 vs. 20-29	0.81	1.91
30-49 vs. 20-29	0.71	0.68
50-65 vs. 20-29	0.47 †	0.61 †
65+ vs. 20-29	0.42 †	0.74 †
SEX (female vs. male)	0.94	0.69
PLACE OF BIRTH (Asia/Africa/S. Amer vs. Eur/Aust/US)	n/a	0.49
IMMIGRATION TIME (0-9 yrs v. 10+ yrs)	n/a	1.06
CITY		
Montreal vs. Toronto	0.80	1.07
Vancouver vs. Toronto	0.90	1.03
all others vs. Toronto	0.94	1.23
MARITAL STATUS		
single vs. married	0.70	0.7
other vs. married	0.85	0.69
HOUSEHOLD SIZE	0.98	1.26
HOUSEHOLD TYPE		
couple & kids >= 25 &/or relatives vs. couple w kids < 25	0.85	1.00
single vs. couple w kids < 25	1.30 †	2.22 †
single with others vs. couple w kids < 25	1.16 †	2.22 †
cpl with kids < 25 + relatives vs. couple w kids < 25	0.86	1.4
couple alone vs. couple w kids < 25	0.78	1.17
single parent + kids < 25 vs. couple w kids < 25	1.21 †	5.26 †
other single parent households vs. couple w kids < 25	1.32 †	2.14 †
other vs. couple w kids < 25	0.73	1.46
NUMBER OF BEDROOMS	0.97	0.92
INCOME SOURCE		
EI / comp / welfare vs. wages	0.79	0.73
dividends / interest vs. wages	0.99	0.62
seniors benefits vs. wages	0.83	0.92
child tax credits / alimony vs. wages	1.27	0.70
other vs. wages	1.26	0.62
INCOME QUINTILE		
lower vs. middle	0.83	0.97
lower middle vs. middle	1.02	0.87
upper middle vs. middle	1.25	1.35
highest vs. middle	1.53 †	2.3 †
LABOUR FORCE ACTIVITY		
caring for family vs. working for pay	0.85	0.6
caring for family / working vs. working for pay	1.05	0.70
going to school vs. working for pay	1.17	0.57
recovering from illness vs. working for pay	0.25	0.33
looking for work vs. working for pay	0.93	1.04
retired vs. working for pay	0.62	0.86
other vs. working for pay	1.09	0.71
HOUSING TENURE (no vs. yes)	1.03	0.92
EDUCATION		
no schooling vs. high school grad	0.52	1.01**
some high school vs. high school grad	0.77	0.80
some post-secondary vs. high school grad	1.13	1.48
trade school / college diploma vs. high school grad	1.21 †	2.06 †
completed bachelor's or more vs. high school grad	1.45	1.71
RECENT LIFE EVENTS SCORE (adj.)	0.97	1.1
HAVE CONFIDANT? (no v. yes)	1.00	1.15
HAVE SUPPORT PERSON IN CRISIS? (no v. yes)	1.38	1.04
HAVE ADVISOR ON PERSONAL DECISIONS (no vs. y)	1.00	0.77
HAVE SOMEONE TO MAKE YOU FEEL LOVED? (no vs. y)	1.13	1.82
GENERAL CHRONIC STRESS INDEX	0.88	1.11
FAMILY CHRONIC STRESS INDEX	0.95	0.77
CHILD STRESS INDEX	0.97	1.23
REGULAR SMOKER IN HOUSE? (no vs. yes)	0.86	0.65
PHYSICAL ACTIVITY INDEX		
moderate vs. active	0.81	0.87
inactive vs. active	0.52	0.62
TYPE OF DRINKER		
occasional vs. regular	1.02	0.73
former vs. regular	0.85	0.91
never vs. regular	1.05	0.80
CHRONIC CONDITION? (yes vs. no)	1.81 †	3.42 †
ACTIVITY LIMITATION? (yes vs. no)	3.11 †	3.84 †
UNMET NEED FOR CARE? (yes vs. no)	1.41 †	2.42 †

† immigrant and Canadian-born logistic regression models **consistent** in direction for strong (o.r. > 2) statistically significant relationships

†† immigrant and Canadian-born logistic regression models **inconsistent** in direction for strong (o.r. > 2) statistically significant relationships

opposed to 50–65; were 20–29 as opposed to 65+; were working for pay as opposed to recovering from illness; and had reported an activity limitation.

Table 7 shows the logistic regression model for reporting a chronic condition. Again, based on significant single effects with an odds ratio greater than 2.0 (or less than 0.5), immigrant respondents were more likely to report having a chronic condition if they: were 12–19 as opposed to 20–29; were 50–65 as opposed to 20–29; were 65 or older as opposed to 20–29; were part of a couple with children < 25 as opposed to single; were part of a couple with children < 25 as opposed to a single parent with children < 25; were part of a couple with children < 25 as opposed to other single parent household; were part of a couple with children < 25 as opposed to other; had wages as opposed to seniors' benefits as their main income source; had wages as opposed to child tax credits or alimony as their main income source; if their marital status was 'other' as opposed to married; were 'going to school' as opposed to 'working for pay'; had not reported an activity limitation; and had not reported unmet need(s) for care.

Looking at the column for Canadian-born respondents in Table 7, we see that they were more likely to report having a chronic condition if they: were 50–65 as opposed to 20–29; were 65+ as opposed to 20–29; were recovering from illness as opposed to working for pay; had *not* reported an activity limitation; and had *not* reported an unmet need for care.

The third outcome variable that was modeled in this analysis was whether respondents had been hospitalized overnight in the past year (Table 8). Based on significant single effects with an odds ratio greater than 2.0 (or less than 0.5), immigrant respondents were more likely to report that they *were not* hospitalized in the past year if they: were in any age group *other than* 20–29; were part of a couple with children < 25 as opposed to single; were part of a couple with children < 25 as opposed to single living with others; had employment insurance, workers compensation or welfare as their main income source; had seniors' benefits as opposed to wages as their main income source; had some other source of income as opposed to wages as their main income source; were in the lower or lower middle income quintile as opposed to middle; were working for pay

TABLE 7 CHRONIC CONDITION REPORTED: CANADIAN BORN AND IMMIGRANTS		
VARIABLE	ODDS RATIO CANADIAN BORN	ODDS RATIO IMMIGRANTS
AGE GROUP		
12-19 vs. 20-29	1.10 †	2.21 †
30-49 vs. 20-29	1.20	1.80
50-65 vs. 20-29	2.15 †	3.13 †
65+ vs. 20-29	3.30 †	9.60 †
SEX (female vs. male)	0.79	0.79
PLACE OF BIRTH (Asia/Africa/S. Amer vs. Eur/Aust/US)	n/a	1.26
IMMIGRATION TIME (0-9 yrs v. 10+ yrs)	n/a	1.73
CITY		
Montreal vs. Toronto	0.72	1.12
Vancouver vs. Toronto	0.71	0.90
all others vs. Toronto	0.79	0.98
MARITAL STATUS		
single vs. married	0.77	1.34
other vs. married	0.96	1.88
HOUSEHOLD SIZE	0.87	0.81
HOUSEHOLD TYPE		
couple & kids >= 25 &/or relatives vs. couple w kids < 25	1.18	0.57
single vs. couple w kids < 25	0.71 †	0.30 †
single with others vs. couple w kids < 25	0.71	0.60
cpl with kids < 25 + relatives vs. couple w kids < 25	1.07	0.51
couple alone vs. couple w kids < 25	0.74	0.75
single parent + kids < 25 vs. couple w kids < 25	0.91 †	0.42 †
other single parent households vs. couple w kids < 25	1.04 ††	0.48 ††
other vs. couple w kids < 25	0.71 †	0.21 †
NUMBER OF BEDROOMS	1.00	1.08
INCOME SOURCE		
EI / comp / welfare vs. wages	0.89	1.19
dividends / interest vs. wages	1.08	0.74
seniors benefits vs. wages	0.78 †	0.14 †
child tax credits / alimony vs. wages	1.34 ††	0.38 ††
other vs. wages	1.16	0.69
INCOME QUINTILE		
lower vs. middle	0.94	1.25
lower middle vs. middle	0.91	1.07
upper middle vs. middle	1.02	1.22
highest vs. middle	1.22	1.14
LABOUR FORCE ACTIVITY		
caring for family vs. working for pay	1.05	1.21
caring for family / working vs. working for pay	0.89	1.30
going to school vs. working for pay	1.32	0.65
recovering from illness vs. working for pay	2.36 †	4.04 †
looking for work vs. working for pay	1.03	1.15
retired vs. working for pay	1.50	1.58
other vs. working for pay	1.35	0.81
HOUSING TENURE (no vs. yes)	0.95	0.96
EDUCATION		
no schooling vs. high school grad	1.17	1.00
some high school vs. high school grad	1.04	1.26
some post-secondary vs. high school grad	1.24	1.26
trade school / college diploma vs. high school grad	1.20	1.39
completed bachelor's or more vs. high school grad	1.24	1.16
RECENT LIFE EVENTS SCORE (adj.)	1.15	1.35
HAVE CONFIDANT? (no v. yes)	1.08	1.30
HAVE SUPPORT PERSON IN CRISIS? (no v. yes)	0.77	0.73
HAVE ADVISOR ON PERSONAL DECISIONS (n vs. y)	1.33	1.14
HAVE SOMEONE TO MAKE YOU FEEL LOVED? (n vs. y)	0.98	0.84
GEN. CHRONIC STRESS INDEX	1.08	1.04
FAMILY CHRONIC STRESS INDEX	1.03	1.02
CHILD STRESS INDEX	1.08	1.11
REGULAR SMOKER IN HOUSE? (no vs. yes)	0.92	0.74
PHYSICAL ACTIVITY INDEX		
moderate vs. active	1.08	1.17
inactive vs. active	1.03	1.13
TYPE OF DRINKER		
occasional vs. regular	1.16	0.63
former vs. regular	1.25	1.05
never vs. regular	1.02	1.05
CHRONIC CONDITION? (yes vs. no)	n/a	n/a
ACTIVITY LIMITATION? (yes vs. no)	0.16 †	0.21 †
UNMET NEED FOR CARE? (yes vs. no)	0.49 †	0.4 †

† immigrant and Canadian-born logistic regression models **consistent** in direction for strong (o.r. > 2) statistically significant relationships

†† immigrant and Canadian-born logistic regression models **inconsistent** in direction for strong (o.r. > 2) statistically significant relationships

as opposed to caring for family; were going to school as opposed to working or pay; were working for pay as opposed to recovering from illness; were looking for work as opposed to working for pay; were working for pay as opposed to retired; and were working for pay as opposed to classified as ‘other’ labour force activity.

Canadian-born respondents in Table 8 were more likely to report being hospitalized in the previous year if they: were 30–49 as opposed to 20–29; were 50–65 as opposed to 20–29; lived in Vancouver as opposed to Toronto; had seniors’ benefits as opposed to wages as their main income source; were working for pay as opposed to caring for family; were working for pay as opposed to recovering from illness; were working for pay as opposed to retired; and were working for pay as opposed to classified as ‘other’ labour force activity.

Table 9 shows the logistic regression model for unmet need(s) for care. Based on strong (o.r. > 2.0 or o.r. < 0.5) significant single effects, immigrant respondents were more likely to report they had *no* unmet need(s) for care if they: were aged 65 or over as opposed to 20–29; born in Asia, Africa or South America as opposed to Europe, the U.S., or Australia; living in Montreal as opposed to Toronto; were living outside a major metropolis as opposed to living in Toronto; were married as opposed to single; were a couple with children under 25 and relatives as opposed to just a couple with children < 25; were a single parent household with children < 25 as opposed to a couple with children <25; had child tax credits and alimony as opposed to wages as their main source of income; were in the lower income quintile as opposed to middle; were caring for family *and* working as opposed to working for pay; were going to school as opposed to working for pay; were looking for work as opposed to working for pay; were ‘other’ labour force status as opposed to working for pay; had no schooling as opposed to high school graduate; had some high school education as opposed to graduating; had a trade school or college diploma as opposed to a high school diploma; had someone they could count on to advise them on personal decisions; reported that they did not have somebody to make them feel loved; were moderately physically active as oppose to ‘active’; had a chronic condition; and reported an activity limitation.

TABLE 8 NO OVERNIGHT HOSPITALIZATION REPORTED IN LAST YEAR: CANADIAN BORN AND IMMIGRANTS		
VARIABLE	ODDS RATIO CANADIAN BORN	ODDS RATIO IMMIGRANTS
AGE GROUP		
12-19 vs. 20-29	0.57 ††	2.57 ††
30-49 vs. 20-29	2.08 †	3.42 †
50-65 vs. 20-29	2.26 †	3.11 †
65+ vs. 20-29	1.70 †	3.51 †
SEX (female vs. male)	1.30	0.82
PLACE OF BIRTH (Asia/Africa/S. Amer vs. Eur/Aust/US)	n/a	0.98
IMMIGRATION TIME (0-9 yrs v. 10+ yrs)	n/a	1.38
CITY		
Montreal vs. Toronto	0.92	0.88
Vancouver vs. Toronto	2.32 †	1.72 †
all others vs. Toronto	1.23	1.61
MARITAL STATUS		
single vs. married	2.45 †	1.67 †
other vs. married	1.81	1.15
HOUSEHOLD SIZE	1.04	0.89
HOUSEHOLD TYPE		
couple & kids >= 25 &/or relatives vs. couple w kids < 25	1.87	0.74
single vs. couple w kids < 25	1.13 ††	0.49 ††
single with others vs. couple w kids < 25	1.34 ††	0.13 ††
cpl with kids < 25 + relatives vs. couple w kids < 25	0.89	1.70
couple alone vs. couple w kids < 25	1.72	0.61
single parent + kids < 25 vs. couple w kids < 25	0.89	0.49
other single parent households vs. couple w kids < 25	1.04	0.75
other vs. couple w kids < 25	1.06	0.61
NUMBER OF BEDROOMS	1.13	1.00
INCOME SOURCE		
EI / comp / welfare vs. wages	0.85	2.40
dividends / interest vs. wages	1.36	1.05
seniors benefits vs. wages	2.64 †	304.29 †
child tax credits / alimony vs. wages	1.10	3.95
other vs. wages	0.63 ††	2.15 ††
INCOME QUINTILE		
lower vs. middle	0.75 †	0.45 †
lower middle vs. middle	0.84 †	0.49 †
upper middle vs. middle	1.04	0.96
highest vs. middle	0.74	0.79
LABOUR FORCE ACTIVITY		
caring for family vs. working for pay	0.47 †	0.14 †
caring for family / working vs. working for pay	1.02	0.51
going to school vs. working for pay	1.38 †	2.57 †
recovering from illness vs. working for pay	0.18 †	0.08 †
looking for work vs. working for pay	1.12 †	5.13 †
retired vs. working for pay	0.30 †	0.17 †
other vs. working for pay	0.31 †	0.10 †
HOUSING TENURE (no vs. yes)	1.01	0.63
EDUCATION		
no schooling vs. high school grad	1.48	1.28
some high school vs. high school grad	1.13	0.91
some post-secondary vs. high school grad	0.94	1.05
trade school / college diploma vs. high school grad	1.03	1.20
completed bachelor's or more vs. high school grad	1.30	0.97
RECENT LIFE EVENTS SCORE (adj.)	0.99	0.92
HAVE CONFIDANT? (no v. yes)	0.97	1.25
HAVE SUPPORT PERSON IN CRISIS? (no v. yes)	1.02	0.97
HAVE ADVISOR ON PERSONAL DECISIONS (n vs. y)	1.00	1.42
HAVE SOMEONE TO MAKE YOU FEEL LOVED? (n vs. y)	0.81	1.28
GEN. CHRONIC STRESS INDEX	0.94	1.28
FAMILY CHRONIC STRESS INDEX	1.02	0.81
CHILD STRESS INDEX	0.94	1.27
REGULAR SMOKER IN HOUSE? (no vs. yes)	1.03	1.20
PHYSICAL ACTIVITY INDEX		
moderate vs. active	0.86	0.91
inactive vs. active	0.85	0.68
TYPE OF DRINKER		
occasional vs. regular	0.80	0.78
former vs. regular	0.66	0.94
never vs. regular	0.71	1.23
CHRONIC CONDITION? (yes vs. no)	1.33	1.83
ACTIVITY LIMITATION? (yes vs. no)	2.34 †	1.78 †
UNMET NEED FOR CARE? (yes vs. no)	0.90	1.56

† immigrant and Canadian-born logistic regression models **consistent** in direction for strong (o.r. > 2) statistically significant relationships

†† immigrant and Canadian-born logistic regression models **inconsistent** in direction for strong (o.r. > 2) statistically significant relationships

Canadian-born respondents in Table 9 were more likely to report they had *no* unmet needs for care in the previous year if they: were 50–65 as opposed to 20–29; were a couple with children < 25 as opposed to single; had a chronic condition; and reported an activity limitation.

In attempting to interpret these findings there are two issues at stake. First is the consistency of models with expectations generated by a population health perspective. The results on this issue are mixed, with some models showing results that are largely consistent with a population health perspective, and others with many inconsistent effects. The second issue for interpretation is the relative similarity of determinants of health in the immigrant and Canadian-born samples. These issues are addressed for each health outcome and then at a more global level in the following section.

Interpretation: Self-Rated Health Status

For the outcome self-rated health, the logistic regression models for immigrant and Canadian-born samples are roughly consistent with one another, and most of the strong (o.r. > 2.0) statistically significant effects are broadly consistent with what would be expected on the logic of a population health perspective, with a few exceptions. Beginning at the top of Table 6, and looking at strong, counter-intuitive statistically significant relationships in both the Canadian-born and immigrant columns, Canadian-born respondents over 50 were more likely to report that they enjoyed very good or excellent health status, a result that is consistent with expectations, and was consistent with the direction of relationship calculated for immigrants on those categories. Age, however, appears to be more important to health status for Canadian-born respondents.

Immigrant respondents from the Europe, Australia and the U.S. were more likely to report excellent or very good health status, a result that is consistent with expectations. A number of strong relationships emerged within variables intended to determine household type in the immigrant sample. For immigrants, being single, single living with others, a single parent with children < 25, or a single parent of some other type (as opposed to part of a couple with children < 25) are all positively associated with the likelihood of reporting very good or excellent health status. The odds ratios on these four

TABLE 9 NO UNMET NEED FOR CARE REPORTED: CANADIAN BORN AND IMMIGRANTS		
VARIABLE	ODDS RATIO CANADIAN BORN	ODDS RATIO IMMIGRANTS
AGE GROUP		
12-19 vs. 20-29	0.68	0.96
30-49 vs. 20-29	0.96	1.11
50-65 vs. 20-29	2.01 †	1.78 †
65+ vs. 20-29	1.39 †	5.11 †
SEX (female vs. male)	0.96	0.87
PLACE OF BIRTH (Asia/Africa/S. Amer vs. Eur/Aust/US)	n/a	3.10
IMMIGRATION TIME (0-9 yrs v. 10+ yrs)	n/a	1.01
CITY		
Montreal vs. Toronto	1.20 †	5.79 †
Vancouver vs. Toronto	0.95	1.56
all others vs. Toronto	1.13 †	2.00 †
MARITAL STATUS		
single vs. married	0.71 †	0.29 †
other vs. married	0.74	0.52
HOUSEHOLD SIZE	0.91	0.69
HOUSEHOLD TYPE		
couple & kids >= 25 &/or relatives vs. couple w kids < 25	1.13 †	2.16 †
single vs. couple w kids < 25	0.48 ††	1.29 ††
single with others vs. couple w kids < 25	1.00	0.71
cpl with kids < 25 + relatives vs. couple w kids < 25	1.00	0.74
couple alone vs. couple w kids < 25	0.57	0.82
single parent + kids < 25 vs. couple w kids < 25	0.78 ††	2.41 ††
other single parent households vs. couple w kids < 25	1.07	1.86
other vs. couple w kids < 25	0.82	0.61
NUMBER OF BEDROOMS	1.02	1.55
INCOME SOURCE		
EI / comp / welfare vs. wages	1.30	0.73
dividends / interest vs. wages*	1.70	0.68
seniors benefits vs. wages	1.42	0.15
child tax credits / alimony vs. wages	1.12	94.31
other vs. wages	1.49	0.95
INCOME QUINTILE		
lower vs. middle	0.62 ††	2.18 ††
lower middle vs. middle	0.70	0.72
upper middle vs. middle	0.86	1.45
highest vs. middle	0.88	1.02
LABOUR FORCE ACTIVITY		
caring for family vs. working for pay	0.85	0.77
caring for family / working vs. working for pay	1.00 †	2.07 †
going to school vs. working for pay	1.20 †	2.83 †
recovering from illness vs. working for pay	0.84	1.42
looking for work vs. working for pay	1.01 †	517.25 †
retired vs. working for pay	0.86	0.84
other vs. working for pay	0.55 ††	7.67 ††
HOUSING TENURE (no vs. yes)	0.95	0.93
EDUCATION		
no schooling vs. high school grad	1.28 †	4.44 †
some high school vs. high school grad	1.31 †	3.87 †
some post-secondary vs. high school grad	0.85	1.41
trade school / college diploma vs. high school grad	0.86 ††	2.48 ††
completed bachelor's or more vs. high school grad	0.58	1.50
RECENT LIFE EVENTS SCORE (adj.)	0.93	0.87
HAVE CONFIDANT? (no v. yes)	1.79	1.45
HAVE SUPPORT PERSON IN CRISIS? (no v. yes)	0.89	1.54
HAVE ADVISOR ON PERSONAL DECISIONS (n vs. y)	1.10 ††	0.43 ††
HAVE SOMEONE TO MAKE YOU FEEL LOVED? (n vs. y)	0.86 ††	2.27 ††
GEN. CHRONIC STRESS INDEX	1.00*	0.70
FAMILY CHRONIC STRESS INDEX	0.85	1.32
CHILD STRESS INDEX	1.06	0.63
REGULAR SMOKER IN HOUSE? (no vs. yes)	1.01	0.87
PHYSICAL ACTIVITY INDEX		
moderate vs. active	1.07 †	4.11 †
inactive vs. active	1.04	1.73
TYPE OF DRINKER		
occasional vs. regular	0.88	0.58
former vs. regular	0.92	1.69
never vs. regular	1.20	1.09
CHRONIC CONDITION? (yes vs. no)	2.05 †	2.45 †
ACTIVITY LIMITATION? (yes vs. no)	2.60 †	2.7 †
UNMET NEED FOR CARE? (yes vs. no)	n/a	n/a

† immigrant and Canadian-born logistic regression models **consistent** in direction for strong (o.r. > 2) statistically significant relationships

†† immigrant and Canadian-born logistic regression models **inconsistent** in direction for strong (o.r. > 2) statistically significant relationships

strong relationships for Canadian-born respondents show the same direction of relationship, but strength of the relationships is much weaker for Canadian-born respondents. The suggestion that being single as opposed to being a couple with children under 25 is associated with better self-rated health status is somewhat plausible on the logic of a population health perspective given that being single is likely associated with a lower stress burden and a younger age. But this does not explain away the presumed benefits in terms of rewarding social relationships. The large odds ratios showing a benefit to being a single parent especially for immigrants is difficult to reconcile with a population health approach. One would think that such a householder would suffer adverse effects of stress associated with the added burden of being a single parent.

Considering income next, being in the highest income group as opposed to the middle was associated with a greater likelihood of reporting very good or excellent health, and the importance of income appears to be stronger for immigrants than Canadian-born respondents. This suggests that greater financial resources, or the higher status associated with income, may make it easier for immigrants to cope in Canada, a relationship that would be consistent with the logic of a population health perspective. Under labour force activity, both immigrant and Canadian-born respondents who reported working for pay as opposed to recovering from illness were, not surprisingly, more likely to report very good or excellent health status. Educational status proved to be important in one respect; those reporting a trade school or college diploma were more likely to report better health status, in both the immigrant and Canadian-born samples. This is consistent with a population health perspective. Education is a relatively well-established covariate of health status (Blane et al. 1996). The relationship was stronger for immigrants, suggesting that the advantage of job skills that accrues to immigrants may be larger than that which accrues to individuals born in Canada, but the difference in odds ratios is probably not large enough to be confident of such a conclusion.

The final three factors to contribute strongly to the models for self-rated health status concern deficiencies in physical function, and access to health care, which presumably would be important to self-rated health status, but instead, these factors operated strongly in a counter-intuitive direction. Immigrants reporting a chronic

condition were more likely to report very good or excellent health, even more so than Canadian-born respondents. The range of conditions considered in this variable (can include allergies, arthritis, high blood pressure, migraines, diabetes, stroke, acne, etc.), few of which would logically preclude someone from rating their health as very good or excellent, make this result less surprising. The same can be said of activity limitation, the reporting of which was associated with a greater likelihood of very good or excellent health status. Perhaps those individuals with chronic conditions or activity limitations have a greater consciousness of their health and a greater appreciation of their physical function and its relationship to their health in general. Finally, those who reported having an unmet need for care were also more likely to report very good or excellent health in both the immigrant and Canadian-born samples. This is somewhat counter-intuitive given the emphasis on health care as a determinant of health in public discourse, but consistent with a population health perspective which says that health care is far less important to health than commonly thought (Evans et al.1994; Frank 1995).

In short, strongly significant effects in logistic regression models for self-rated health status were broadly consistent with the population health perspective. Comparing the models for Canadian-born and immigrant respondents, there appears to be no striking difference in the determinants of self-rated health status between the two groups.

Interpretation: Chronic Conditions

The strong (o.r. > 2.0) statistically significant covariates of chronic conditions for immigrants include age, length of time since immigration, several household types, income source, and other health measures. Immigrant respondents who were 12–19, 50–65, or 65+ as opposed to 20–29 were much more likely to report a chronic condition - the same direction of relationship existed for Canadian-born respondents, but the odds ratios were much smaller. Immigrants who reported that they were single, a single parent with children < 25, some other kind of single parent, or ‘other,’ were much more likely to report a chronic condition. Again, these relationships were stronger than, but consistent in direction with, that of Canadian-born respondents, with two exceptions: for immigrants, being an ‘other single parent’ household as opposed to a couple with children < 25 was

associated with a lower probability of reporting a chronic condition (o.r. = 0.48), while for Canadian-born respondents it was associated with a slightly greater likelihood of reporting a chronic condition (o.r. = 1.04). Similarly, immigrants whose main source of income was child tax credits and/or alimony as opposed to wages were much less likely (o.r. = 0.38) to report a chronic condition, while for Canadian-born respondents, those with the same characteristic were slightly more likely to report a chronic condition (o.r. = 1.34).

These inconsistencies concerning income source and household type are not easily explained, but most of the other relationships are consistent with expectations, with the exception of reporting of activity limitations and unmet needs for care—respondents who had reported these things were much less likely to have reported a chronic condition. Does this mean that the chronic conditions reported by Canadians are mostly relatively minor conditions? One other point supporting such an interpretation is that the logistic regression model for Canadian-born respondents only had five strong, statistically significant explanatory variables in it - those aged 50–65, 65+, recovering from illness as opposed to working for pay, *not* reporting an activity limitation, and *not* reporting an unmet need for care were more likely to report a chronic condition. In other words, no variables indicating social determinants of health were strong contributors to the model. Many of the conditions listed as ‘chronic’ are ones that would not necessarily be expected to have a social distribution (e.g., acne, arthritis, migraines, diabetes).

Interpretation: Overnight Hospitalization in Past Year

The logistic regression model for overnight hospitalization in the past year produced a model with a vast mix of effects consistent across immigrant and Canadian-born respondents, many of which were inconsistent with what would be expected on the logic of a population health perspective. Based on strong (o.r. > 2.0) statistically significant effects, immigrant respondents who were any age other than 20–29 were more likely to report no overnight hospitalization, a relationship which contradicts expectations, but was largely consistent with the model for Canadian-born respondents, with weaker odds ratios. One exception to this consistency was for the 12–19 age group who, in the Canadian-born model, were less likely to report no hospitalizations in the past year (o.r. = 0.57). These

results may be attributable to a greater risk of injury in accidents amongst immigrant youth. Canadian-born respondents who lived in Vancouver as opposed to Toronto were more likely to report no hospitalizations (weaker but consistent with immigrants), as were single (as opposed to married) Canadian-born respondents (again, weaker, but consistent with immigrants).

Strong relationships were shown between two different household types in the immigrant model for overnight hospitalizations, and the direction of these relationships contradicted that of the Canadian-born model. Immigrants who were single living alone or single living with others were less likely to report no hospitalization (more likely to report a hospitalization). This may reflect a lack of functional social ties to assist if an immigrant is ill. Relationships between income source and hospitalization were in a direction *inconsistent* with a population health perspective for immigrants, but not for Canadian-born respondents. Immigrants whose main source of income was employment insurance, worker's compensation, welfare, seniors' benefits or 'other', as opposed to working for wages were more likely to report no hospitalizations in the past year. The relationship worked in the opposite direction (although much more weakly) for non-Canadians on employment insurance (EI), compensation, or welfare as opposed to wages, and those classified as 'other' as opposed to wages: they were more likely to report a hospitalization, a result consistent with expectations generated by a population health perspective. Respondents reporting seniors' benefits as opposed to wages as their main source of income were more likely to report no hospitalizations in both sample groups, but the relationship was very much stronger for immigrants than for Canadian-born respondents.

Results for income level were consistent with population health expectations for both sample groups, although immigrant lower- or lower-middle-income earners were more likely than Canadian-born respondents to report a hospitalization. Under labour force activity, many categories showed strong statistically significant relationships. Immigrants going to school or looking for work were less likely to report a hospitalization than immigrants working for pay (which may be a function of youth), and this was consistent with the direction of the weak odds ratios for Canadian-born respondents.

Both Canadian-born and immigrant respondents who were caring for family, recovering from illness, retired, or 'other' as opposed to working for pay were more likely to report an overnight hospitalization. In all cases, however, the strength of relationship was much stronger for immigrants, suggesting labour force activity is more important to that group than Canadian-born respondents. This has important potential implications for social welfare policy. It implies that attention to employment is important, and it may also signal an inability to acquire income assistance or employment insurance benefits compared to Canadian-born respondents. Finally, Canadian-born respondents reporting an activity limitation were more likely to report an overnight hospitalization (as would be expected), and a similar but weaker relationship was found for immigrants.

Interpretation: Unmet Needs for Care

The results of logistic regression models for unmet needs for care differed quite substantially between the immigrant and Canadian-born samples in the NPHS. Age was strongly (o.r. > 2.0) statistically related to unmet needs for care for one age group in each sample. Immigrants 65 years and older as opposed to 20–29 were much more likely to report *no* unmet needs for care in the past year, a result that was only weakly consistent in the Canadian-born model. In the Canadian-born model, the only strongly significant age effect was for those 50–65 as opposed to 20–29: they were more likely to report *no* unmet needs for care. Immigrants from Asia/Africa/South America as opposed to Europe/Australia/US were more likely to report *no* unmet needs for care, which may be attributable to their younger age, on average. Immigrants living in Montreal as opposed to Toronto, or outside a major metropolis as opposed to Toronto were more likely to report *no* unmet needs for care. Relationships consistent in direction but of a smaller magnitude were present in the Canadian-born model.

In terms of household type, Canadian-born respondents living alone as opposed to living as a couple with children under 25 were more likely to report an unmet need for care, which is plausible considering that living alone may imply a lack of functional support available from family and friends. Interestingly, immigrants living alone were slightly less likely to report an unmet need for care, which may be attributable to support

available from friends and family outside the household. Oddly, however, immigrants living in a household consisting of a single parent with children under 25 as opposed to a couple with children under 25 were also much more likely to report *no* unmet needs for care.

One indicator of income source was important for immigrants' chances of reporting an unmet need for care: those whose primary source of income was child tax credits or alimony were much more likely to report *no* unmet needs for care, a result that is inconsistent with the presumed effects of being a single parent. A very weak but consistent relationship was shown for Canadian-born respondents. Low-income status, again somewhat surprisingly, meant immigrants were more likely to report *no* unmet needs for care. Low-income Canadian-born respondents were slightly more likely to report an unmet need.

Like the other models, labour force activity was probably the most important predictor of unmet needs, but in this case, this factor was only important for immigrants. Immigrants caring for family, going to school, looking for work or classified as 'other' as opposed to working for pay were much more likely to report *no* unmet needs for care. The 'other' category worked weakly in the opposite direction for the Canadian-born model, but the other strong, statistically significant labour force indicators were very weakly consistent in the models for the two sample groups.

Unique to this health outcome is the effect of education for the immigrant sample. Immigrants with no schooling, some high school, or trade school/college diploma as opposed to a high school diploma were more likely (o.r. > 2.0) to report *no* unmet needs for care. These results contradict expectations. Poorer education would be expected to mean a greater likelihood of unmet needs, because those with better education would, on average, likely have a greater ability to negotiate the health care system. The strong statistically significant social support indicators also contradict one another. Immigrants who reported that they *did not* have someone close to talk to and advise them on personal decisions were more likely to report unmet needs for care (consistent with expectations), while those who reported they *did not* have someone to make them feel loved were less likely to report unmet needs for care.

Also unique to this model was a strong contribution from the physical activity index. Immigrants who were moderately active as opposed to active were more likely to report *no* unmet needs for care. Those reporting a chronic condition or an activity limitation in both samples (immigrants and Canadian-born) were more likely to report *no* unmet needs for care. This latter result could be the consequence of ongoing contact with the health care system that meets respondents' expectations.

In short, for immigrants, several social factors were associated with a greater likelihood of having *no* unmet needs for care. For Canadian-born respondents on the other hand, only age, chronic condition, and activity limitation were strongly statistically significantly related to *no* unmet needs for care—all in a direction that contradicts expectations. In other words, for the Canadian-born sample, being older (50–65 as opposed to 20–29), having a chronic condition and having an activity limitation meant you were less likely to have an unmet need for care, and only living alone increased the likelihood of an unmet need for care. The virtual absence of influence of social factors from the Canadian-born model suggests, at least in a preliminary way, that equal access to health care has been achieved for that part of the population. For immigrants, on the other hand, social factors such as place of birth, city location, income source, labour force activity, and educational attainment, are associated with a *lower* likelihood of having unmet needs, in directions that contradict expectations. Only being single as opposed to married and *not* having someone to advise on personal decisions meant a *greater* likelihood of reporting an unmet need for care.

Summary

The results of this analysis of data from the National Population Health Survey 1994-5 suggest that socio-economic factors are important to self-rated health status and presence of chronic conditions for both immigrants and non-immigrants, but more so for immigrants. Descriptive results of socio-economic characteristics show that in general, immigrants, compared to non-immigrants are older, more likely to live in a major metropolis, less likely to be wealthy, more likely to have no schooling or advanced degrees, more likely to be married, less likely to be living in a nuclear family household,

less likely to be working for pay, and have poorer social support. Non-European, less well-established immigrants are particularly disadvantaged on a number of socio-economic characteristics compared to better-established immigrants of European origin. The former group is: younger, more likely to be living in a major Canadian metropolis, poorer, less well-educated, more likely to be single, more likely to be a single parent with children under 25, be in an extended family household, be going to school, working for pay, or looking for work, and have poor social support.

Immigrants are also more likely than non-immigrants to report poor health status, but less likely to report unmet needs for health care. Immigrants of European origin compared to those of non-European origin are more likely to report poor health status, a chronic condition, an activity limitation, an overnight hospitalization in the past year, and an unmet need for care in the past year, although these differences may be attributable to the fact that European immigrants are much older, on average, than non-European immigrants. Finally, well-established immigrants (greater than 10 years) are more likely to report fair or poor health status, a chronic condition, an activity limitation, and an overnight hospitalization in the past year. Again, the older age of well-established immigrants is likely to affect these results.

Logistic regression analyses of the relationship between socio-economic and social support characteristics and health outcomes (self-rated health status, chronic conditions, overnight hospitalization, and unmet needs for care), showed that socio-economic factors may be more important to health status and health care access for immigrants than for non-immigrants. In particular, it appears that being in the highest income quintile, being single, even a single parent, and being better educated are associated with better self-rated health status. The strength of these effects is equal to that of age, however. Older Canadians are less likely to report excellent or very good health status. Within the immigrant population, those hailing from Asia, Africa, or South America are less likely to report excellent or very good health status as opposed to immigrants from Europe, Australia, and the U.S. and Mexico.

Older Canadians are also more likely to report a chronic health condition, and older immigrants are even more likely than non-immigrants to do so. Being single, even a

single parent, is associated with a lower likelihood of reporting a chronic condition for all Canadians, but especially for immigrants. Immigrants whose main source of income is child tax credits or alimony as opposed to wages are also significantly less likely to report a chronic condition, while for non-immigrants, receiving a wage is associated with a lower likelihood of reporting a chronic condition. This is perhaps due to a difference in the ability to cope with the demands of working for a wage *and* the challenges of adapting to a new culture. Within the immigrant population, less well-established immigrants (i.e., < 10 years) were more likely to report a chronic condition, which is somewhat surprising given that immigrants are screened for health conditions, and the less well-established immigrants are younger.

In terms of overnight hospitalization, age was again important for both immigrants and non-immigrants, in an unexpected direction. Younger Canadians were more likely to report an overnight hospitalization, possibly due to accidents and injuries. Socio-economic factors such as labour force activity and income source were also important contributors to overnight hospitalization. Both immigrant and Canadian-born respondents were *less* likely to have been hospitalized in the past year if they were older than 30, lived in Vancouver as opposed to Toronto, were single as opposed to married; had seniors' benefits as their main income source; were middle income as opposed to lower or lower middle; were working for pay as opposed to caring for family; recovering from illness, retired, or 'other'; were going to school or looking for work as opposed to working for pay; and had an activity limitation. On the whole, the strength of association for socio-economic indicators was greater for immigrants. The influence of certain socio-economic characteristics on overnight hospitalization differed between the sample group: single immigrants living alone or with others were more likely to report an overnight hospitalization in the past year, as were immigrants who were earning wages as opposed to employment insurance, worker's compensation, or welfare. Single immigrants may lack the functional support of family and friends when they are ill, and therefore may be more inclined to be hospitalized, but the relationship between working and hospitalization is puzzling.

Finally, unmet needs for care, which might be expected to have a social distribution and be more of a problem for immigrants especially those from non-European countries, only partly met expectations. For Canadian-born respondents, those who were 50–65, living as a couple with children under 25 and those reporting a chronic condition were significantly less likely to have an unmet need for health care. A number of socio-economic characteristics were associated with unmet needs for care for immigrants, however. Older, European immigrants who were living in Montreal or outside a major metropolis, married, living with an extended family, were a single parent with children under 25, were receiving child tax credits or alimony as their main source of income, were not working for pay, had less than high school education or a trade school/college diploma, were moderately active, had a chronic condition or an activity limitation were *less* likely to report an unmet need for health care. There appears to be no consistency between the immigrant and non-immigrant sample groups for this outcome, nor does the pattern appear to be consistent with what would be expected on the logic of a population health perspective. That being said, socio-economic indices were very important contributors to the immigrant logistic regression model, but not to the Canadian-born model for unmet needs for care, although in puzzling ways.

Discussion

In short, in data from the National Population Health Survey, there is no obvious pattern of association between socio-economic characteristics and immigration characteristics on the one hand, and health status on the other. This does not mean that socio-economic factors in Canada are not influential in shaping immigrants' health status. In fact, the results of the logistic regression models calculated for immigrants and non-immigrants on four outcome variables in this study suggest that socio-economic factors are more important for immigrants than non-immigrants, although in ways that defy a simple explanation.

There is some support for the hypothesized relationships for example, but the survey itself makes the ways in which socio-economic factors shape health outcomes

difficult to ascertain with any precision.² This is the case for surveys in general. An important limitation to using the NPHS for this purpose, therefore, is that it is particularly insensitive to the ethnocentricity and contextual aspects of many of the concepts it uses (Corin 1994, 1995). As Corin (1994) expresses it, “[P]redictive factors specific to the individual, identified in European and North American cultures, may not be sufficient, or even relevant, to explain prognosis in other cultures” (p. 96). In cross-cultural health research,

[T]he empirical study of key variables must respect the cultural meaning associated with a given concept in a given milieu. It should enable disclosure of *variations in meaning that are associated with different cultural environments*. A general tendency among Western researchers is to take for granted the universality of our own understanding of ‘social support’ or ‘coping’ (p. 124, emphasis in original).

A further methodological limitation of the present analysis is that it is cross-sectional. What would be required to assess the influence of social and economic factors on immigrants is a longitudinal study design allowing for temporal changes to be assessed, especially pre- and post-immigration data on socio-economic circumstances. Finally, the heterogeneity of the ‘immigrant population’ requires large enough samples of people from various places of origin and social circumstances to be able to make meaningful conclusions about the role of immigration in the social determinants of health.

This also speaks to analytical issues, illustrating that the social and economic characteristics used in surveys like the NPHS may be useful predictors of health status for some cultures and not for others. Most authors would acknowledge that social gradients are not about income *per se*, but the present study more acutely illustrates the need for better abstractions that encapsulate exactly what social gradients are about if they’re not about income *per se*. This will require more theoretical development, not necessarily more empirical research.

Some promising directions in this regard are already being pursued focusing in some instances of notions of ‘social capital’ (e.g., Wilkinson 1996, 1997; Kawachi et al.

² The large number of counter-intuitive associations between explanatory and outcome variables in this analysis (e.g., older people more likely to report no hospitalizations than younger people), also calls into question the quality of the data, but we had no means to evaluate this.

1997), and in others on notions of power relations, social identity, social status, and control over life circumstances (Dunn 1996, 1998). These latter notions, as they are manifest in the lives of individuals and populations, are the underlying mechanisms for the differential distribution of health status by social status. They are all relational concepts that cut across various axes of social differentiation (class, gender, ethnicity, etc.), making them appropriate conceptual constructs for investigating the health of immigrants, under a broader psychosocial interpretation of the health effects of deprivation and disadvantage.

The case of immigrant health, however, presents a number of special complexities that do not exist for other Canadians. First, various ‘filters’ that have potential health consequences exist in the immigration screening process itself. Immigrants must usually meet certain health criteria to be approved for entry, thereby self-selecting a healthier group of people. Also, a proportion of immigrants are admitted on the basis of their wealth, and the investment they will bring to Canada, or alternatively, they are sponsored, usually by a family member, who agrees to take financial responsibility for their living needs (disqualifying them for welfare, for instance). This latter complexity could conceivably make people more or less able to cope in their new country, depending largely on the reliability of support they receive from their sponsor. Individuals in the former category of immigrants would presumably accrue relative health advantages following from their economic resources, although these may (or may not) be offset by disadvantages following from language difficulties or outright discrimination that affect social and/or labour market participation. These paradoxes, contradictions, and contingencies cannot typically be sorted out with any survey data: such is the case for the NPHS also.

Second, if we accept the logic of the life-course approach to human health in the population health perspective—especially the profound influence of early childhood experiences on long-term health outcomes—then socio-demographic data on immigrants’ standard of life in their new country (which is the kind of information available in the NPHS) would not be expected to be a very good predictor of their health status. Indeed, on this logic we would expect individuals’ standard of living and related experiences in their country of origin also to be influential depending, of course, upon their age at

immigration. That being said, measures in the NPHS assessing individuals' generalized coping skills could still be used in the analysis and may provide interesting results.

Thirdly, the social determinants of the health of Canada's immigrants may be even more contingent and complex than all of the above suggest. If factors related to power, identity, status, and control are indeed influential, the most important social determinant of immigrants' well-being may be the direction of their social mobility in making the move—to the extent that such a thing can be unambiguously assessed and to the extent that it can be determined from data in the NPHS. 'Integration,' it would seem, varies spatially and temporally in ways that do not lend themselves easily to survey measurement and statistical prediction. Rather, 'the social determinants of health', although potentially subject to certain widely observed tendencies, are the outcome of highly context-sensitive processes that cannot be fully understood in the absence of concrete, in-depth research on the meanings associated with typical health determinants like 'social support,' 'coping,' or even 'health' itself.

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