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Does Immigration Status Matter?**

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SEDAP Research Paper No. 230

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Ethnic Differences in Health: Does Immigration Status Matter?

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Abstract:

This study examines health differences between first-generation immigrant and Canadian-born persons who share the same the ethnocultural origin, and the extent to which such differences reflect social structural and health-related behavioural contexts. Data from the 2000/2001 Canadian Community Health Survey show that first generation immigrants of Black and French race/ethnicity tend to have better health than their Canadian-born counterparts, while the opposite is true for those of South Asian, Chinese, and south and east European and Jewish origins. West Asians and Arabs and other Asian groups are advantaged in health regardless of country of birth. Health differences between ethnic foreign- and Canadian-born persons generally converge after adjusting for socio-demographic, SES, and lifestyle factors. Implications for health care policy and program development are discussed.

Keywords: self-rated health; functional health; ethnicity; race; immigration.

JEL Classification: I18

Résumé :

Cette étude examine les différences de l'état de santé entre les immigrants de la première génération et les personnes nées au Canada partageant les mêmes origines ethnico culturelles et à quel point ces différences reflètent les comportements sociaux structurels et relatifs à la santé. Les données 2000/2001 de l'enquête sur la santé dans les collectivités canadiennes montrent que les immigrants de la première génération de race noire ou d'origine française semblent être en meilleure santé que leurs homologues nés au Canada, alors que l'opposé est vrai pour ceux d'origines sud asiatiques, chinoises, européennes du sud et de l'est et juives. Les Asiatiques et les Arabes occidentaux ainsi que d'autres groupes d'asiatiques sont en meilleure santé indépendamment de leur pays de naissance. Les différences entre l'état de santé des personnes d'une même origine ethnique nées à l'étranger et au Canada convergent généralement une fois que sont prise en compte les facteurs sociodémographiques, l'état de santé subjective, et le style de vie. Les implications par rapport à l'élaboration de politiques et programmes de promotion de la santé sont discutées.

INTRODUCTION

Although research into the health of Canadians has grown considerably over the past few decades, the study of health differences across a wide spectrum of ethnocultural groups has received little attention (Gee *et al* 2006). A recent exception to this is Wu and Schimmele's (2005) study examining health disparities across eleven ethnic groups. Using data from the 1996-97 National Population Health Survey, their findings interestingly provide no clear evidence of a relationship between behavioural or socioeconomic differences and ethnic health disparities, nor do the authors find a definitive pattern between ethnicity and functional and self-reported health in their analysis. This, they point out, is in contrast to U.S. studies which have consistently demonstrated such health disparities between whites and non-Hispanic Blacks due, in large part, to variations in "exposure" to health risks.

Wu and his colleagues (2003), using the same data, did however observe differences in mental health by ethnicity. Of particular interest is the finding that two of the largest visible minority groups (defined as persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour), the Chinese and the South Asians, report better mental health than English Canadians, and that Jewish Canadians have comparatively poorer mental health. Such results provide counter evidence to the long-held assumption that being a member of a visible minority group inevitably translates into having poorer mental health (Neighbors & Williams 2001). A further contribution of this paper is the recognition that SES and social support are the main factors in explaining ethnocultural differences in mental health. SES is important, the authors maintain, since it influences well-known determinants of mental health such as

access/utilization of healthcare services, physical environment, and the experience of chronic stress. Some ethnic cultures, such as Asian and South Asian, also place greater emphasis on the role of family and/or “community” as key sources of social support, which may provide a buffer against mental health problems. Given the different conclusions drawn from the Wu and Schimmele (2005) and Wu *et al* (2003) studies, albeit using different measures of health, it is important to further probe the nature of the health differences between ethnocultural groups.

While between-group comparisons allow us to establish the existence of an association between ethnicity and health, within-group differences should also be considered. Research shows that new and recent immigrants tend to have better than average health. Chen and his colleagues (1996a) find that newer immigrants to Canada are less likely to have chronic conditions and disabilities, and that this effect is strongest for those from non-European countries. Other research using a number of different measures of health such as self-rated health, heart disease, diabetes, cancer, depression and substance abuse, and life expectancy have found similar results (Parakulam *et al* 1992; Chen *et al* 1995; Chen *et al* 1996b; Dunn & Dyck 2000; Hyman 2001; Meadows *et al* 2001; Ali 2002; Perez 2002; Newbold & Danforth 2003; McDonald & Kennedy 2004). This “healthy immigrant effect” may help to explain some of the ethnic-based differences in health since the vast majority of new/recent immigrants are visible minorities with China (including Hong Kong), India, Pakistan, the Philippines, Korea, Iran, Romania, and Sri Lanka being the leading source countries (Citizenship and Immigration Canada 2002).

Two explanations for the health advantages of immigrants have been proposed and supported in the literature (Marmot & Syme 1976; Marmot *et al* 1984). First, the selectivity hypothesis maintains that migration is selective of healthier individuals. Healthier, younger, and better educated individuals self-select into the immigration process and health requirements in the Immigration Act for entrance into Canada tend to disqualify people with serious medical conditions (Trovato 1998; Oxman-Martinez *et al* 2000). Second, the acculturation hypothesis states that immigrants tend to have more positive health-related beliefs, attitudes, lifestyle behaviours, as well as stronger social support networks; however over time, as length of residence increases, they experience a deterioration in health due to the adoption (i.e., acculturation) of mainstream Canadian beliefs and lifestyle behaviours (Hull 1979; Chen *et al.* 1996a; Dunn & Dyck 2000; Ali 2002; Perez 2002). More recently, McDonald and Kennedy (2004) have speculated that the increased likelihood that immigrants will be diagnosed with a chronic condition may be related to processes of acculturation and familiarization with the health care system: as immigrants become more experienced and comfortable negotiating the system, they are more likely to interact with health care practitioners and thus the likelihood of illness diagnoses increases.

Comparisons of immigrant health according to country of origin have also been studied in the Canadian context. Wang and his colleagues (2000) found that the risk of arthritis is significantly lower for Asian immigrants compared to North American-born Canadians, even after adjusting for age, gender, SES, and body mass index. Further, Acharya (1998) found differences in the mental health status of immigrants and in its predictors by country of birth.

RESEARCH OBJECTIVES

These findings suggest that studies of ethnicity and health should consider immigration status. The goal of this paper is to go beyond examining the main effects of immigration status and ethnicity on health; specifically, the current study looks at both the differences in health between first generation immigrants and Canadian-born persons who share the same the ethnocultural descent, and the extent to which social structural and behavioural contexts explain any disparities.

DATA AND METHODS

Data Data come from the master file of the 2000/2001 Canadian Community Health Survey (CCHS). The CCHS is on-going, cross-sectional survey that collects information on the health status, health care utilization, and health determinants of a representative sample of Canadians aged 12 years or older living in private households. Sample weights are used in all analyses.

Measures Studies on ethnicity and health tend to use aggregate groupings, in part because of restrictions placed on public-use microdata and/or because of sample size. The CCHS master data allow the construction of a single comprehensive measure of culture, race, and ethnicity. It is based on two questions.

The first question asks, “People living in Canada come from many different cultural and racial backgrounds. Are you: ...white, Black, Korean, Filipino, Japanese, Chinese, Aboriginal, South Asian (e.g., East Indian, Pakistani, Sri Lankan), Southeast

Asian (e.g., Cambodian, Indonesian, Laotian, Vietnamese), Arab, West Asian (e.g., Afghan, Iranian), Latin American, other or multiple visible-minority origin?" A substantial majority of respondents are classified as "white," thus this group is further divided based on ethnic origin (i.e., the ethnic group which the respondent's ancestors belonged to such as Canadian, French, English). These data are combined into thirteen categories arranged under the two headings: white (Canadian, French, English, south and east European and Jewish, other west European, and multiple -- two or more of the above -- white) and non-white (Aboriginal, Black, Chinese, South Asian, other Asian -- Korean, Filipino, Japanese, and South East Asian -- West Asian and Arab, and other including non-white and white). Those of multiple white origin are selected as the reference in the analysis as it is the largest group with no single origin designated.

Health is measured on a multi-dimensional level. Self-rated health (SRH) is based on the question "In general, would you say your health is: excellent, very good, good, fair, or poor?" It is collapsed into two groups: "positive" health perception (good, very good, or excellent) and "negative" health perception (poor or fair). Functional limitations (Health Utilities Index or HUI) and disabilities (activity restriction or AR) provide a more objective measure of health. The HUI is a weighted index of an individual's overall functional health based on eight self-reported attributes: vision, hearing, speech, mobility, dexterity, cognition, emotion, and pain/discomfort. Values range from about 0 (completely unfunctional) to 1 (perfect functional health) in increments of 0.001. Activity restriction/disability refers to the need for help -- as a result of any health problem/condition, including a disability or handicap, that has lasted 6+ months -- with instrumental activities of daily living such as preparing meals, shopping for groceries or

other necessities, doing everyday housework, doing heavy household chores, and personal care.

A full range of social structural and behavioural control variables are considered. Social structural factors consist of both socio-demographic and SES variables. The socio-demographic controls are gender, age (and age-square to control for an accelerated decline in health with age), marital status (married or other), mother tongue/language (English/French or other), and length of time in Canada since immigration (1 year or less, 2-5 years, 6-9 years, 10-19 years, 20+ years). SES is measured with income and education. Income has five discrete categories, developed by Statistics Canada, where respondents are classified as having either low, low-middle, middle, upper-middle, or high income depending on the dollar-distance between their annual household income (before taxes) and the Canadian low-income cutoff lines. Education is collapsed as follows: < high school graduate, high school graduate, and postsecondary graduate.

Health behaviours include: type of alcohol drinker (regular, occasional, former, never); type of cigarette smoker (daily, former daily-now occasional, always occasional, former daily, former occasional, never); average number of times per day fruits and vegetables are consumed (<5 servings per/day, 5-10 servings per/day, 11+ servings per/day); Body Mass Index (BMI) (underweight: BMI <18.5, normal weight: BMI 18.5-24.9, overweight: BMI 25-29.9, obese: BMI 30+); and level of physical activity (inactive, moderately active, active).

Table 1 provides a description of the study variables. Dummy variables were created for variables with missing cases to keep a more robust sample that contained 102,221 Canadian-born (CB) and 26,516 foreign-born (FB) individuals.

(Table 1 about here)

Analysis Linear and logistic regression models estimate ethnocultural differences in mean HUI and in the odds of SRH/AR before and after adjusting for the combined effects of structural and lifestyle factors. Statistical significance was assessed within and between Canadian- and foreign-born populations. Two issues are noted. First, significance tests may be influenced by factors external to the size of the observed difference, namely estimated variance, chosen reference group, and sample size. Second, preliminary analysis revealed that some predicted HUI scores fell beyond its range of 0-1. Out-of range scores were relatively few in number and thus excluded from the final models.

RESULTS

Unadjusted Results Tables 2-4 show that Blacks and those of other non-white ethnic origin, especially those who are foreign born, report significantly higher HUI scores and are less likely to have an activity restriction compared to those of multiple white ethnocultural origin (the reference group). By contrast, South Asians who are Canadian-born are more likely to report positive health and to be free of disability (activity restriction) than their first-generation counterparts. Canadian-born Chinese are also more likely to be disability free than the foreign-born.

Other Asians are advantaged on all three measures of health compared to those of multiple white origin regardless of immigration status. West Asians and Arabs who are either Canadian- or foreign-born also have a much higher incidence of positive SRH and

a lower likelihood of having an activity restriction. Aboriginal persons are less likely to report positive SRH and have a lower average HUI score.

French immigrants have better health compared with Canadian-born French persons. In fact they have one of the highest average functional health (HUI) scores, as well as higher odds of reporting positive SRH and of being free of disability compared to their Canadian-born counterparts. Conversely, foreign-born persons of south and east European and Jewish origin have a lower average HUI score and are less likely to report positive SRH, while the Canadian-born report similar levels of health to those of the reference group. Interestingly foreign-born persons who define themselves as Canadian, and to a less extent the native-born, report on average higher HUI scores and have higher odds of being disability free. It is persons of English descent that are most like those of multiple white ethnocultural origin in health regardless of immigration status.

(Tables 2-4 about here)

Adjusted Results These patterns are mediated to some extent by social structural and lifestyle factors. First-generation (immigrant) Blacks and those of other non-white ethnic origin continue to report better health than those of multiple white ethnocultural origin, however those who are Canadian-born are no longer advantaged in health. The advantages reported by persons of Chinese, South Asian, and West Asian and Arab origin, regardless of immigration status, also tend to be explained by differences in social structural and lifestyle environments. They also help to account for some of the better health of persons of other Asian ethnic origins; however, both the foreign- and Canadian-born populations continue to have a higher average HUI score and odds of being disability free compared to the reference group.

Social structural and lifestyle factors also account for a considerable amount of the health inequalities of Aboriginals. The gap in overall functional health (HUI) between persons of Aboriginal and multiple white ethnocultural origin is reduced from 0.043 reporting positive self-rated health increase from 0.562 ($p < 0.001$) to 0.762 ($p < 0.01$).

The combined influence of structural and behavioural factors explain some of the health advantages of foreign-born persons of French origin, as odds of positive SRH are reduced and odds of being disability free become statistically similar to those of multiple white origin; for those who are Canadian-born, on the other hand, average HUI score increases, the odds of being disability free become statistically significant, and the disadvantage in SRH disappears. Health differences between foreign and Canadian-born persons of French descent are therefore reduced after structural/behavioural adjustment. This pattern is also generally observed for those of south and east European and Jewish origin.

In contrast, the previously suppressed differences in health between foreign- and Canadian-born persons of English descent become statistically significant, with the former reporting higher odds of positive SRH and being disability free relative to the reference group. A similar pattern is observed for those of other west European descent, where differences in average HUI score and the odds of being free of disability are significantly larger for immigrants than their Canadian-born counterparts.

DISCUSSION AND CONCLUSIONS

It has long been known that Canadian society is structured along ethnic and racial lines. The ethnic dimension of inequality in Canada was first systemically studied and highlighted by John Porter (1965) in The Vertical Mosaic. Based on national data for the period 1931-1961, he found evidence of an ethnically-ranked system in terms of occupations, income, “ethnic prestige,” and entry into the Canadian elite with those of British origins coming out on top; French Canadians were second; persons of other European origins followed - with western and northern European origins ranking higher than southern and eastern European origins; and Blacks and Aboriginals - very small groups numerically – were at the bottom of the hierarchy.

Many significant events and policy changes have occurred since the publication of Porter’s research. Important among these include: continued non-racist improvements in Canadian immigration policy; the establishment of the Canadian Charter of Rights and Freedoms; the institutionalization of Multiculturalism as a federal policy; the Employment Equity Act (which targets women, visible minorities, Aboriginals, and persons with disabilities); increasing awareness and acknowledgement of the injustices wrought on Aboriginal Canadians and nascent developments aimed at meeting their needs (Frideres 2000); and, last but not least, research revealing that biologically-based race (and racial difference) is not scientifically valid (e.g., Smaje 1996; Stolley 1999). These changes bode well for a Canadian society in which race and ethnicity are less significant as a principle of social organization and as a determinant of an individual’s

life chances. Research, although not consistent across all studies, does continue to show that ethnocultural differences exist in and across social domains.

Studies that provide health comparisons between aggregate groups of race, ethnicity, and culture such as Aboriginal and visible minority versus non-visibility minority, foreign-born versus Canadian-born, and Anglophone and Francophone versus Allophone (e.g., Young *et al* 1999; Dunn & Dyck 2000; Trovato 2001; McDonald & Kennedy 2004; Gee *et al* 2006; Newbold and Filice 2006;) indicate that disparities do exist across groups. This study, which moves beyond the individual identity markers of ethnicity and immigrant status to their intersection, further reveals health disparities within ethnocultural groups.

Visible minority persons (e.g., Blacks, other Asians), with the exception of Aboriginals, are advantaged in health, results that support Wu *et al*'s (2003) finding that visible minority status does not automatically translate into poorer health status in all domains. And, while the within-group examinations show that some visible minority immigrants as well as the foreign-born French are more likely to have better health than their Canadian-born counterparts, for the two largest ethnocultural minorities, the Chinese and South Asians, the Canadian-born actually have better health. This finding is interesting in that it stands in contrast to results from previous studies on the "healthy immigrant effect" that show foreign-born are healthier than their Canadian-born counterparts. The fact that first generation South Asians and Chinese are more likely to report a disability may, in part, be the result of changes to health screening procedures for immigrants in the recent past and/or deteriorations in health due to difficulties in transitioning to new cultural and/or physical environments.

Interestingly, the health advantages of the Chinese and South Asians, regardless of immigrant status, are explained away by differences in social structural and lifestyle environments. Although Aboriginal Canadians are under-represented in the CCHS due to the inclusion of only non-reserve-dwelling Aboriginals, it is important to highlight the finding that structural and behavioural factors account for a significant amount of the disparities in health in this population. This is, of course, not surprising given that off-reserve Aboriginals are more likely to live in poverty, to have low educational attainment, to smoke and drink, and to have poor nutritional habits (Young *et al* 1999).

These findings demonstrate that when the combined effects of key factors like SES and lifestyle are taken into account, the health of Aboriginal and visible minority Canadians converges to resemble that of non-visible minorities. These results lend support to the argument that health disparities between ethnocultural groups are at least partly attributable to structural and behavioural environments. The extent to which this is true, however, varies across and within groups; that is, the mediating effects of these control variables varies according to ethnicity and immigrant status.

A number of policy implications can be drawn from of these findings. The first, given that health disparities between ethnic and immigrant groups are tied to structural inequities and lifestyles, it is important that health care policies and programs address these issues as key determinants of health in these groups. Second, since the identity markers of ethnicity and immigrant status have been recognized alone and in intersection as salient factors affecting the health and well-being of Canadians, these markers should be included in any and all policy discussions on the restructuring of the health care system in Canada. Finally, armed with the knowledge that 18.5 percent of the current

Canadian population (Statistics Canada 2004) is foreign-born (and on the rise), and that this population is incredibly ethnoculturally diverse, it is imperative that health care policymakers at all levels of government acknowledge and address this diversity through culturally- and linguistically-relevant policies and programs, particularly in large urban centres where the vast majority of immigrants choose to settle. In addition, related to the second point, recognition of the health care needs – high versus low – of different ethnocultural and immigrant groups by gender, marital status, time since immigration and/or and place of residence, for example, is necessary if we are to create an equitable and just society for all Canadians.

While this study provides much-needed insights into the relationship between ethnicity, immigrant status, and health in Canada, the research objectives are limited by the variables that were available from the dataset, including ethnic identity, self-control/mastery, religion, and social support (Noh *et al* 1999; Wu *et al* 2003). No data were available to examine ethnocultural patterns in health by generational status of persons (first, second, third, or later generation immigrants) or by reason for immigration (those who came to Canada voluntarily, as refugees, etc.). Cultural adherence to traditional values and beliefs may also influence an individual's willingness to report health problems (Kopeck *et al* 2001; Ali 2002; Kobayashi 2003;), as there may be fundamental differences in his/her understanding of health and illness (Saldov 1991). The CCHS did not ask questions that probe levels of cultural adherence that would help to determine the extent to which cultural and linguistic (both language and dialect) differences influence the interpretation and reporting of health problems.

Future research examining dimensions of inequality in the health domain should consider the collection of primary data with a random, representative sample of Canadians from various ethnic groups, both foreign- and native-born. Questions probing such key factors as reasons for immigration, religion, and cultural beliefs and value systems are important to include as both close- and open-ended items in a semi-structured interview schedule/survey instrument. Such data collection would require knowledge of and an appreciation for both quantitative and qualitative research strategies, approaches that, given the complex nature of the relationship between ethnicity, immigrant status, and health, would work best in combination to further research in this emergent area of study.

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Table 1: Percentage Distribution (or Mean) of Study Variables for Canadian-born (CB) and Foreign-born (FB)

| | CB | FB | CB-FB | | CB | FB | CB-FB |
|----------------------------------|------|------|-------|---------------------------------|------|------|-------|
| <u>HUI (mean)</u> | .879 | .869 | *** | <u>Education</u> | | | *** |
| <u>AR</u> | | | *** | < High School † | 30.3 | 24.3 | |
| No | 87.2 | 85.5 | | High School | 18.3 | 19.5 | |
| Yes † | 12.8 | 14.5 | | Postsecondary | 50.6 | 55.3 | |
| <u>SRH</u> | | | *** | Missing | .7 | .9 | |
| Positive | 88.8 | 86.1 | | <u>Income</u> | | | *** |
| Negative † | 11.2 | 13.9 | | Low † | 3.2 | 4.5 | |
| <u>Ethnoculture</u> | | | *** | Low middle | 6.4 | 8.7 | |
| White | | | | Middle | 19.1 | 23.6 | |
| Canadian | 16.1 | .4 | | Upper middle | 32.6 | 29.6 | |
| French | 8.3 | 1.2 | | High | 29.0 | 23.0 | |
| S/E Euro & Jewish | 4.8 | 13.4 | | Missing | 9.6 | 10.6 | |
| English | 7.9 | 6.4 | | <u>Type of Smoker</u> | | | *** |
| Oth. West European | 10.7 | 9.5 | | Daily † | | | |
| Multiple † | 38.5 | 4.6 | | Fm. Daily/Now occ. | 23.8 | 12.8 | |
| Non-white | | | | Always occasional | 2.7 | 1.9 | |
| Aboriginal | 1.3 | ---- | | Former daily | 1.9 | 1.9 | |
| Black | .5 | 6.2 | | Former occasional | 23.1 | 18.5 | |
| Chinese | .6 | 13.4 | | Never | 15.1 | 12.8 | |
| Other | 10.0 | 22.4 | | <u>Type of Drinker</u> | 33.4 | 52.0 | |
| South Asian | .5 | 11.1 | | Regular † | | | *** |
| Other Asian | .6 | 7.8 | | Occasional | 60.2 | 46.2 | |
| West Asian/Arab | .1 | 3.6 | | Former | 19.4 | 20.1 | |
| <u>Gender</u> | | | | Never | 11.5 | 12.8 | |
| Male | 49.1 | 49.4 | | <u>Fruit/Veg consum.</u> | 8.8 | 20.9 | |
| Female † | 50.9 | 50.6 | | <5 servings † | | | *** |
| <u>Marital Status</u> | | | *** | 5-10 servings | 62.3 | 60.0 | |
| Married | 55.7 | 67.1 | | 11+ servings | 33.1 | 35.2 | |
| Other † | 44.3 | 32.9 | | Missing | 3.7 | 3.9 | |
| <u>Age (mean)</u> | 41.0 | 46.2 | *** | <u>Physical Activity</u> | .9 | .9 | |
| <u>Years Since Immig.</u> | | | | Inactive † | | | *** |
| 1 year or less | --- | 5.0 | | Moderate | 47.9 | 54.0 | |
| 2-5 years | --- | 11.9 | | Active | 22.6 | 18.5 | |
| 6-9 years | --- | 11.4 | | Missing | 22.4 | 16.2 | |
| 10-19 years | --- | 21.9 | | <u>BMI</u> | 7.0 | 11.3 | |
| 20+ years † | --- | 50.0 | | Underweight | | | *** |
| <u>Language</u> | | | | Normal weight | 1.6 | 3.0 | |
| English/French | 99.5 | 89.7 | | Overweight | 34.0 | 39.3 | |
| Other † | .5 | 10.3 | *** | Obese † | 23.8 | 23.1 | |
| | | | | Missing | 11.6 | 8.1 | |
| | | | | | 29.0 | 26.5 | |

CB-FB column shows statistically significant differences between corresponding CB and FB groups at: * $p < 0.05$, ** $p < 0.01$; *** $p < 0.001$.

† Represents the reference group in the proceeding models.

Distributions may not total to 100% due to rounding.

n=102,221 for CB; n=26,516 for FB.

Table 2: Unstandardized OLS coefficients for Health Utilities Index by ethnocultural group and immigration status, before and after adjustments for social structural and behavioural factors.

| | Unadjusted | | | Adjusted | | |
|--------------------------------|------------|---------|-------|----------|----------|-------|
| | CB | FB | CB-FB | CB | FB | CB-FB |
| Ethnoculture | | | | | | |
| White | | | | | | |
| Canadian | .012*** | .093*** | *** | .017*** | .091*** | *** |
| French | .009*** | .053*** | *** | .019*** | .038*** | * |
| South/East Euro & Jewish | -.004 | -.017** | * | -.009** | .001 | |
| English | -.002 | -.001 | | .006** | .015* | |
| Other West European | .001 | .001 | | .002 | .025*** | *** |
| Non-White | | | | | | |
| Aboriginal | -.043*** | ---- | | -.012* | ---- | |
| Black | .019* | .050*** | ** | .007 | .034*** | ** |
| Chinese | .041*** | .032*** | | .011 | .014* | |
| Other | -.002 | .025*** | *** | -.004* | .017** | *** |
| South Asian | .021*** | .031*** | | -.005 | .008 | |
| Other Asian | .038*** | .047*** | | .033*** | .020** | |
| West Asian/Arab | .017 | .014 | | .007 | -.005 | |
| Male | | | | | | |
| Married | | | | | | |
| Age | | | | | | |
| Age-square | | | | | | |
| Years Since Immigration | | | | | | |
| 1 year | | | | --- | .037*** | |
| 2-5 years | | | | --- | .028*** | |
| 6-9 years | | | | --- | .018*** | |
| 10-19 years | | | | --- | .014*** | |
| English/French Language | | | | | | |
| Education | | | | | | |
| High School | | | | .022*** | .021*** | |
| Postsecondary | | | | .024*** | .022*** | |
| Missing | | | | -.006 | -.001 | |
| Income | | | | | | |
| Low middle | | | | .027*** | .023** | |
| Middle | | | | .063*** | .038*** | *** |
| Upper middle | | | | .079*** | .066*** | ** |
| High | | | | .091*** | .074*** | *** |
| Missing | | | | .078*** | .055*** | *** |
| Type of Smoker | | | | | | |
| Former/Now occasional | | | | .013*** | .010 | |
| Always occasional | | | | .024*** | -.043*** | *** |

| | | | | | | |
|------------------------------|------|------|--|----------|----------|-----|
| Former daily | | | | .025*** | .012** | ** |
| Former occasional | | | | .033*** | .026*** | |
| Never | | | | .044*** | .032*** | ** |
| Type of Drinker | | | | | | |
| Occasional | | | | -.020*** | -.022*** | |
| Former | | | | -.055*** | -.036*** | *** |
| Never | | | | -.021*** | -.024*** | |
| Fruit/Veg consumption | | | | | | |
| 5-10 servings | | | | .010*** | .009*** | |
| 11+ servings | | | | .010** | -.003 | * |
| Missing | | | | -.015* | -.042*** | * |
| Physical Activity | | | | | | |
| Moderate | | | | .028*** | .030*** | |
| Active | | | | .031*** | .036*** | |
| Missing | | | | -.026*** | -.010** | *** |
| BMI | | | | | | |
| Underweight | | | | -.005 | .033*** | *** |
| Normal weight | | | | .034*** | .035*** | |
| Overweight | | | | .032*** | .028*** | |
| Missing | | | | .058*** | .070*** | * |
| Constant | .877 | .850 | | .681 | .629 | |

Within CB (Canadian-born) and FB (Foreign-born) columns, statistically different from the reference group (as shown in Table 1) at: * $p < 0.05$, ** $p < 0.01$; *** $p < 0.001$.

Within CB-FB column, difference between CB and FB is statistically significant at: * $p < 0.05$, ** $p < 0.01$; *** $p < 0.001$.

Table 3: Odds Ratio coefficients for positive self-rated health by ethnocultural group and immigration status, before and after adjustments for social structural and behavioural factors.

| | Unadjusted | | | Adjusted | | |
|--------------------------------|------------|----------|-------|----------|----------|-------|
| | CB | FB | CB-FB | CB | FB | CB-FB |
| Ethnoculture | | | | | | |
| White | | | | | | |
| Canadian | .996 | 1.466 | | 1.111** | 1.390 | |
| French | .865*** | 2.331*** | *** | 1.061 | 1.971** | * |
| South/East Euro & Jewish | .919 | .537*** | *** | .818*** | .671*** | * |
| English | .923* | 1.153 | | 1.082 | 1.413** | * |
| Other West European | .921* | .793* | | .967 | 1.086 | |
| Non-White | | | | | | |
| Aboriginal | .562*** | ---- | | .762** | ---- | |
| Black | 1.067 | 1.408** | | .721* | 1.162 | * |
| Chinese | 1.202 | 1.340** | | .539*** | 1.052 | *** |
| Other | 1.009 | 1.179 | | .952 | 1.068 | |
| South Asian | 2.195*** | 1.191 | ** | .899 | .969 | |
| Other Asian | 1.393* | 1.531*** | | 1.101 | .992 | |
| West Asian/Arab | 3.737* | 1.778*** | | 2.536 | 1.458* | |
| Male | | | | .903*** | 1.107* | *** |
| Married | | | | 1.187*** | 1.113* | |
| Age | | | | .958*** | .939*** | *** |
| Age-square | | | | 1.000* | 1.000** | * |
| Years Since Immigration | | | | | | |
| 1 year | | | | -- | 2.626*** | |
| 2-5 years | | | | -- | 1.379*** | |
| 6-9 years | | | | -- | 1.483*** | |
| 10-19 years | | | | -- | 1.144* | |
| English/French Language | | | | .929 | 1.248** | |
| Education | | | | | | |
| High School | | | | 1.443*** | 1.375*** | |
| Postsecondary | | | | 1.570*** | 1.717*** | * |
| Missing | | | | 1.157 | .957 | |
| Income | | | | | | |
| Low middle | | | | 1.311*** | 1.334** | |
| Middle | | | | 1.927*** | 1.626*** | ** |
| Upper middle | | | | 2.742*** | 2.222*** | ** |
| High | | | | 4.011*** | 2.944*** | *** |
| Missing | | | | 2.162*** | 2.031*** | |
| Type of Smoker | | | | | | |
| Former/Now occasional | | | | 1.229** | 1.204 | |
| Always occasional | | | | 1.827*** | 1.442* | |
| Former daily | | | | 1.379*** | 1.166* | * |

| | | | | | | |
|------------------------------|-------|-------|--|----------|----------|-----|
| Former occasional | | | | 2.015*** | 1.565*** | ** |
| Never | | | | 2.118*** | 1.598*** | *** |
| Type of Drinker | | | | | | |
| Occasional | | | | .669*** | .667*** | |
| Former | | | | .477*** | .494*** | |
| Never | | | | .630*** | .457*** | *** |
| Fruit/Veg consumption | | | | | | |
| 5-10 servings | | | | 1.115*** | 1.048 | |
| 11+ servings | | | | 1.021 | .901 | |
| Missing | | | | .754** | .852 | |
| Physical Activity | | | | | | |
| Moderate | | | | 1.556*** | 1.346*** | * |
| Active | | | | 2.044*** | 1.621*** | ** |
| Missing | | | | .943 | .903 | |
| BMI | | | | | | |
| Underweight | | | | 1.197* | 1.922*** | ** |
| Normal weight | | | | 1.980*** | 2.020*** | |
| Overweight | | | | 1.794*** | 1.986*** | |
| Missing | | | | 1.618*** | 1.885*** | * |
| Constant | 8.202 | 5.941 | | 6.100 | 10.007 | |

Within CB (Canadian-born) and FB (Foreign-born) columns, statistically different from the reference group (as shown in Table 1) at: * $p < 0.05$, ** $p < 0.01$; *** $p < 0.001$.

Within CB-FB column, difference between CB and FB is statistically significant at: * $p < 0.05$, ** $p < 0.01$; *** $p < 0.001$.

Table 4: Odds ratio coefficients for absence of activity restriction by ethnocultural group and immigration status, before and after adjustments for social structural and behavioural factors.

| | Unadjusted | | | Adjusted | | |
|--------------------------------|------------|----------|-------|----------|----------|-------|
| | CB | FB | CB-FB | CB | FB | CB-FB |
| Ethnoculture | | | | | | |
| White | | | | | | |
| Canadian | 1.211*** | 2.600** | * | 1.339*** | 2.615* | |
| French | .998 | 1.576** | ** | 1.216*** | 1.311 | |
| South/East Euro & Jewish | 1.086 | .944 | | 1.056 | 1.128 | |
| English | .943 | 1.034 | | 1.223*** | 1.532*** | * |
| Other West European | 1.093** | 1.041 | | 1.208*** | 1.562*** | ** |
| Non-White | | | | | | |
| Aboriginal | .937 | --- | | .930 | --- | |
| Black | 1.649** | 2.233*** | * | 1.020 | 1.418** | |
| Chinese | 4.893*** | 2.413*** | ** | 2.353*** | 1.436** | |
| Other | 1.118*** | 1.563*** | *** | 1.030 | 1.273* | ** |
| South Asian | 2.654*** | 1.522*** | ** | 1.095 | .757* | |
| Other Asian | 2.668*** | 3.074*** | | 2.503*** | 1.568*** | |
| West Asian/Arab | 2.290* | 1.668*** | | 1.245 | .756* | |
| Male | | | | 1.973*** | 2.400*** | *** |
| Married | | | | 1.082** | .975*** | |
| Age | | | | 1.004 | 1.010*** | |
| Age-square | | | | .999*** | .999*** | |
| Years Since Immigration | | | | | | |
| 1 year | | | | --- | 2.737*** | |
| 2-5 years | | | | --- | 1.565*** | |
| 6-9 years | | | | --- | 1.308** | |
| 10-19 years | | | | --- | 1.015 | |
| English/French Language | | | | .983 | 1.443*** | |
| Education | | | | | | |
| High School | | | | 1.149*** | 1.309*** | * |
| Postsecondary | | | | 1.015 | 1.231*** | *** |
| Missing | | | | .943 | .753 | |
| Income | | | | | | |
| Low middle | | | | 1.232*** | 1.364** | |
| Middle | | | | 1.752*** | 1.497*** | * |
| Upper middle | | | | 2.185*** | 1.884*** | * |
| High | | | | 2.559*** | 2.120*** | ** |
| Missing | | | | 2.134*** | 1.983*** | |
| Type of Smoker | | | | | | |
| Former/Now occasional | | | | 1.195* | 1.362 | |
| Always occasional | | | | 1.450*** | .729* | *** |
| Former daily | | | | 1.181*** | 1.149* | |

| | | | | | | |
|------------------------------|-------|-------|--|----------|----------|-----|
| Former occasional | | | | 1.591*** | 1.200* | ** |
| Never | | | | 1.528*** | 1.574*** | |
| Type of Drinker | | | | | | |
| Occasional | | | | .691*** | .854** | *** |
| Former | | | | .530*** | .659*** | *** |
| Never | | | | .617 | .778*** | *** |
| Fruit/Veg consumption | | | | | | |
| 5-10 servings | | | | .954* | 1.034 | |
| 11+ servings | | | | .954 | .767** | |
| Missing | | | | 1.015 | .642* | * |
| Physical Activity | | | | | | |
| Moderate | | | | 1.566*** | 1.420*** | |
| Active | | | | 1.846*** | 2.206*** | * |
| Missing | | | | .633*** | .927 | *** |
| BMI | | | | | | |
| Underweight | | | | 1.066 | 3.749*** | *** |
| Normal weight | | | | 1.707*** | 1.901*** | |
| Overweight | | | | 1.583*** | 1.765*** | |
| Missing | | | | 1.982*** | 2.016*** | |
| Constant | 6.382 | 4.038 | | 4.103 | 2.386 | |

Within CB (Canadian-born) and FB (Foreign-born) columns, statistically different from the reference group (as shown in Table 1) at: * $p < 0.05$, ** $p < 0.01$; *** $p < 0.001$.

Within CB-FB column, difference between CB and FB is statistically significant at: * $p < 0.05$, ** $p < 0.01$; *** $p < 0.001$.

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