

Black-white Racial Disparities in Household Food Insecurity from 2005-2014, Canada

Simran Dhunna (✉ simran.dhunna@mail.utoronto.ca)

University of Toronto <https://orcid.org/0000-0001-8353-2472>

Valerie Tarasuk

University of Toronto

Research

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Abstract

Background: Household food insecurity is a public health concern in many high-income countries. Despite two decades of research charting the socio-demographic and geographic correlates of food insecurity in Canada, the relationship between race and vulnerability to food insecurity has not been interrogated. Our objectives were to examine the association of Black-White racial identity and prevalence and severity of household food insecurity in Canada, and understand how racialized vulnerability manifests differently for key sociodemographic predictors.

Methods: Data for households with Black and White respondents with complete data on household food insecurity were drawn from the Canadian Community Health Survey cycles from 2005-2014 (N=491,400). Household food insecurity status was assessed using the Household Food Security Survey Module. Bivariate and multivariate logistic and multinomial regression models were run, including respondent's race and immigration status, as well as six well-established household-level predictors of food insecurity in the general population: household composition, income, housing tenure, highest level of education in the household, main household income source, and province/territory. To test whether the relationship between food insecurity and these predictors differed by race, additional multivariable logistic regression models were run, with race interacted with each predictor individually and predicted probabilities estimated.

Results: The weighted prevalence of household food insecurity was 10.0% for white respondents and 28.4% for Black respondents. The odds of Black households being food-insecure compared to white households fell from 3.56 (95% CI: 3.30-3.85), to 1.88 (95% CI: 1.70-2.08) with adjustment for household sociodemographic characteristics. In contrast to white households, there was relative homogeneity of risk of food insecurity among Black sub-groups defined by immigration status, household composition, education, and province of residence. Homeownership was associated with lower probabilities of food insecurity for Black and white households, but the probability among Black owners was similar to that for white renters (14.7% vs. 14.3%). Black households had significantly higher predicted probabilities of food insecurity than their white counterparts across all main sources of household income except child benefits and social assistance.

Conclusions: Being racialized as Black appears to be an overriding factor predicting vulnerability to food insecurity for the Black population in Canada.

Introduction

Household food insecurity – the inadequate or insecure access to food due to financial constraints – is increasingly recognized as a serious public health problem in many high-income countries, including Canada (1, 2). Similar to the adverse health outcomes associated with food insecurity in the US (3), food insecurity in Canada has been linked to heightened nutritional vulnerability (4), increased risk of chronic physical and mental health problems (5–8), increased health care utilization and costs (9–11), and

higher mortality rates (12). Despite this evidence, food insecurity rates in Canada remain persistently high, with 12.7% of households having experienced some level of food insecurity in 2017-18 (2).

After more than two decades of population measurement in Canada, the socio-demographic and geographic correlates of food insecurity are well understood. Vulnerability is highest among households characterized by low incomes; reliance on social assistance, Employment Insurance or workers' compensation; lower educational attainment; renting rather than owning one's dwelling; Aboriginal status; and the presence of children (13–18). In contrast, households reliant on old-age pensions and other retirement income sources, immigrant households, and those residing in Quebec appear to be protected against food insecurity, once other socio-demographic factors are taken into account (13, 17, 19). Although population survey data also indicate marked differences in food insecurity prevalence by race (2), this has not been a focus of study in Canada to date.

A wealth of literature on household food insecurity in the United States makes clear the independent role that race plays in shaping heightened vulnerability among the non-Hispanic Black population (20, 21). Several US scholars also note the effect of racial discrimination in shaping food insecurity among minorities (22–25). In Canada, where Black people comprise a much smaller proportion of the population (3.5% in 2016 (26)), there has been no focused examination of the relationship between race and vulnerability to food insecurity. However, two studies in Canada have reported elevated odds of household food insecurity in Black subgroups, independent of socioeconomic circumstances (17, 27). Under the COVID-19 pandemic, the pre-existing vulnerability and inequities experienced by Black people have been unveiled particularly in the UK and US, resulting in deeper risk of food insecurity due to additional factors such as self-isolation (28, 29). In Canada, although data sources do not allow for an assessment of how food insecurity is currently manifesting at a population level, COVID-19 is affirming the urgent need for a focused investigation of Black-white disparities food insecurity in Canada. Using pooled data from the Canadian Community Health Survey from 2005–2014, we set out to explore how Black and White populations in Canada differ in their vulnerability to household food insecurity. More specifically, the purpose of our study was to: 1) examine the association of Black-White racial identity and prevalence and severity of household food insecurity, and 2) understand how racialized vulnerability manifests differently for a set of key sociodemographic predictors.

Methods

Data Source and Design

The Canadian Community Health Survey (CCHS) is a cross-sectional population-representative survey of individuals aged 12 years and older, excluding individuals who are full-time members of the Canadian Forces, reside in prisons or care facilities, or live on First Nations Reserves, Crown Lands or in some remote regions of Quebec (30). Overall, these exclusions represent less than 3% of the population (30). Our study was limited to households with complete data on the Household Food Security Survey Module (HFSSM) and respondent's ethno-racial identity as either Black or white. Five cycles were pooled from

2005 to 2014 to yield a sample of 549,247 Black or white respondents in total, of which 491,364 were Black and white respondents with complete data in the HFSSM. CCHS cycles after 2014 were excluded because changes in the sampling design in 2015 limit the comparability of more recent cycles (31).

The HFSSM was developed by the U.S. Department of Agriculture (USDA) and is used to monitor food insecurity at the household level in the United States (32) and Canada. This well-validated metric comprises 18 questions that elucidate the severity of household food insecurity over the past 12 months – the health outcome in this study. Household food insecurity was assessed both as a binary variable (food secure/food insecure) and a four-level categorical variable (food secure, marginally food-insecure, moderately food-insecure, and severely food-insecure). Moderate and severe food insecurity were determined based on the number of affirmative responses, following Health Canada’s classification system (33). Given research suggesting that at least one affirmative response on the HFSSM denotes significant vulnerability (34, 35), as well as the adverse consequences of such vulnerability on health (36–39), households that respond affirmatively to only one question on the HFSSM were classified as marginally food insecure. The binary classification of food insecurity included marginal, moderate, and severe food insecurity.

Established socio-demographic predictors of household food insecurity in Canada were included in descriptive analyses and modeling (33, 40–42). Household-level predictors included: household composition, before-tax household income, housing tenure, highest level of education in the household, main household income source, and province/territory. The latter variable was coded as “Ontario”, “Quebec” and “Other provinces and territories,” in order to tease apart established differences in household food insecurity risk between Quebec and Ontario (27). Household income was adjusted for household size by dividing by the square root of the number of individuals in the household (43). Given that the main predictor under study was race, two other variables measured only at the respondent level were included: ethno-racial self-identification as either Black or white, and immigration status (a combination of two variables – born in Canada or abroad, and number of years in Canada after immigration). The CCHS collects information on ethno-racial identity by asking respondents if they belong to one or more “racial or cultural groups” on a list codified under the *Employment Equity Act*, within which one option is “Black” (44). These two variables were considered proxies for the household.

For all categorical variables, the category with the highest number of observations operated as the reference group. Approximately 30% of the sample did not report income, and Statistics Canada imputed values for this group. A binary variable was included to denote imputed incomes. For other variables, missing responses were coded, or in the case of main source of household income, those missing responses were grouped with “None”, in order to minimize sample loss and preserve the information provided by each observation.

Statistical Analysis

We created sociodemographic profiles of the food-secure and food-insecure households by race, expressing the aforementioned variables as proportions and means. To determine the relationship

between binary household food insecurity and Black-white race, first, logistic regression models were conducted to generate unadjusted and adjusted odds ratios of food insecurity. The adjusted model controlled for all of the nine aforementioned sociodemographic variables. Second, to identify the relationship between race and severity of food insecurity, unadjusted and adjusted multinomial logistic regression models were run, regressing the four-level household food insecurity status variable on the aforementioned sociodemographic characteristics.

Finally, in order to test whether the relationship between household food insecurity and each sociodemographic variable identified as a potent predictor of the outcome differed by race, six additional logistic regression models adjusting for the same aforementioned variables were run, with race interacted with each of the six variables individually: household composition, household education, housing tenure, main income source, immigration status, and province. Predicted probabilities from the margins based on these six adjusted models were then estimated. While predicted probabilities represent an absolute measure of association, odds ratios are relative measures. Odds ratios are useful in describing the strength of an association but tend to overestimate the magnitude of the association when the outcome is not rare (45). Thus, in presenting the results of the interactions, we focus on the predicted probabilities because they enable us to contrast the likelihood that food-insecure households are Black or white with the likelihood that food insecure households exhibit any of the characteristics in the five other sociodemographic variables. Predicted probabilities are also flexible in their analysis, in that there is no typical “reference group” when attempting to determine the statistical difference between two probabilities. All analyses were conducted with Stata 14.0, using SURVEY commands with household weights provided by Statistics Canada. Institutional ethics approval for this study was received from the Human Research Ethics Board of the University of Toronto.

Findings

The weighted prevalence of household food insecurity in the overall sample was 10.6% (not shown); it was 10.0% for white respondents and 28.4% for Black respondents. Figure 1 shows the distribution of the four-level household food security outcome by race. Table 1 presents the distribution of weighted household food insecurity status by race and sociodemographic characteristics for the entire sample.

Table 1

Sociodemographic characteristics of households, by weighted prevalence of household food insecurity and race, Canada, 2005–2014 (N = 491,364)

	Total (n = 491,364)			White		Black	
	All	White	Black	Food Secure	Food Insecure	Food Secure	Food Insecure
	NA	97.2	2.8	90.0	10.0	71.6	28.4
Household Composition^a (%)							
Unattached, living alone or with others	32.8	30.0	11.0	85.9	14.1	69.5	30.5
Couple alone, no children	29.3	33.0	33.0	95.3	4.7	85.2	14.8
Couple with children	21.3	21.0	24.0	91.5	8.5	76.4	23.6
Female lone parent	4.4	4.0	17.0	70.9	29.1	52.3	47.7
Male lone parent	1.0	1.0	1.0	84.2	15.8	59.5	40.5
Other	10.8	11.0	13.0	92.3	7.7	83.2	16.8
Missing	0.4	0.0	1.0	88.2	11.8	67.7	32.3
Household Income^b (Mean ± SEM)	52.36 ± 0.08	52.8 ± 0.081	36.86 ± 0.45	55.6 ± 0.09	27.8 ± 0.16	42.7 ± 0.55	22.2 ± 0.47
Main Source of Household Income (%)							
Wage/Salary/Self-employment	67.1	67.0	73.0	91.2	8.8	76.3	23.7
Seniors' income ^c	21.9	22.0	7.0	93.6	6.4	81.1	19.0
Employment insurance/Workers' comp.	1.0	1.0	2.0	69.5	30.5	36.7	63.3
Child Support/Child Tax Benefit	0.3	0.0	1.0	52.7	47.3	41.9	58.1

^aHouseholds identified as having children were those with at least one person under the age of 18. All household categories also may include "others", including children 18 years of age and older.

^bHousehold income ('000 s) is before-tax income, adjusted for family size by dividing by the square root of household size

^cSeniors' income includes: pension, Old Age Security, and dividends.

	Total (n = 491,364)			White		Black	
Social assistance	2.6	2.0	8.0	36.0	64.0	31.3	68.7
Other/None	2.7	3.0	3.0	82.4	17.6	61.9	38.1
Missing	4.6	5.0	5.0	93.0	7.0	80.7	19.4
Household Education (%)							
Post-secondary degree	68.6	69.0	68.0	92.1	7.9	75.2	23.8
No Post-secondary degree	26.9	27.0	25.0	84.9	15.1	60.0	40.0
Missing	4.5	4.0	7.0	88.5	11.5	68.6	31.4
Housing Tenure (%)							
Homeowner	70.9	72.0	40.0	94.6	5.4	85.8	14.2
Renter	28.9	28.0	59.0	78.1	21.9	61.8	38.2
Missing	0.2	0.0	0.0	90.0	10.0	78.7	21.4
Province (%)							
Ontario	37.8	37.0	60.0	90.2	9.8	71.4	28.6
Quebec	29.3	29.0	26.0	90.2	9.8	69.5	30.5
Other	33.0	34.0	14.0	89.5	10.5	76.1	23.9
Immigration Status (%)							
Canadian-born	86.3	88.0	27.0	89.6	10.4	71.8	28.2
Recent Immigrant (0–10 years)	2.5	2.0	26.0	89.0	11.0	66.1	33.9
Non-Recent Immigrant (11+ years)	11.0	10.0	45.0	93.2	6.8	74.6	25.5
Missing	0.3	0.0	2.0	89.2	10.8	72.8	27.2
Imputed Income							
Reported Income	72.6	73.0	70.0	89.4	10.6	70.5	29.6

^aHouseholds identified as having children were those with at least one person under the age of 18. All household categories also may include “others”, including children 18 years of age and older.

^bHousehold income (‘000 s) is before-tax income, adjusted for family size by dividing by the square root of household size

^cSeniors’ income includes: pension, Old Age Security, and dividends.

	Total (n = 491,364)			White		Black	
Imputed Income	27.5	27.0	30.0	91.5	8.5	74.3	25.7
CCHS Cycle							
2005–2006	21.1	21.0	21.0	90.4	9.6	71.4	28.6
2007–2008	18.5	19.0	14.0	90.0	10.0	70.4	29.6
2009–2010	21.0	21.0	22.0	90.5	9.5	71.5	28.6
2011–2012	21.5	21.0	21.0	89.2	10.8	73.0	27.0
2013–2014	18.0	18.0	22.0	89.7	10.3	71.3	28.7
^a Households identified as having children were those with at least one person under the age of 18. All household categories also may include “others”, including children 18 years of age and older.							
^b Household income (‘000 s) is before-tax income, adjusted for family size by dividing by the square root of household size							
^c Seniors’ income includes: pension, Old Age Security, and dividends.							

Figure 1: *Prevalence of four-level household food insecurity by racial identity*

<<Insert Fig. 1 here>>

Table 1: *Sociodemographic characteristics of households, by weighted prevalence of household food insecurity and race, Canada, 2005–2014 (N = 491,364)*

<<Insert Table 1 here>>

Logistic Regression: Black-white Racial Disparities

Table 2 presents crude and adjusted odds ratios of household food insecurity for the sociodemographic variables from Table 1. An unadjusted model with race and household food insecurity yields an OR of 3.56 (95% CI: 3.30–3.85). Adjusting for sociodemographic and household characteristics substantively reduced the measure of association for race: Black-respondent households in Canada had 1.88 times the odds of food insecurity compared to white-respondent households (95% CI: 1.70–2.08).

Table 2

Crude and adjusted odds of household food insecurity in relation to sociodemographic characteristics, Canada, (N = 491,364)

	Crude OR (95% CI)	Adjusted OR (95% CI)
Race		
White	1	1
Black	3.56 (3.30–3.85)	1.88 (1.70–2.08)
CCHS Cycle		
2005-06	1	1
2007-08	1.03 (0.99–1.08)	1.11 (1.06–1.16)
2009-10	0.99 (0.95–1.03)	1.07 (1.01–1.12)
2011-12	1.12 (1.07–1.18)	1.23 (1.17–1.30)
2013-14	1.09 (1.04–1.15)	1.21 (1.15–1.28)
Immigration Status		
Canadian-born	1	1
Recent Immigrant (0–10 years)	1.83 (1.67–2.01)	0.70 (0.63–0.79)
Non-Recent Immigrant (11 + years)	0.84 (0.80–0.89)	0.78 (0.73–0.83)
Missing	1.49 (1.05–2.13)	0.83 (0.58–1.19)
Highest Level of Household Education		
Post-Secondary Degree	1	1
No Post-Secondary Degree	2.04 (1.98–2.11)	1.08 (1.04–1.12)
Missing	1.56 (1.46–1.66)	1.29 (1.20–1.39)
Household Composition		
Couple alone, no children	1	1
Unattached	3.34 (3.20–3.49)	1.51 (1.44–1.59)
Couple with children	1.94 (1.85–2.04)	1.42 (1.34–1.49)
Female Lone Parent	8.90 (8.38–9.46)	1.84 (1.71–1.98)
Male Lone Parent	3.91 (3.34–4.58)	1.59 (1.37–1.85)
Other Household Types	1.70 (1.60–1.81)	1.35 (1.27–1.44)

	Crude OR (95% CI)	Adjusted OR (95% CI)
Missing	2.94 (2.40–3.61)	1.63 (1.29–2.06)
Household Income	0.953 (0.952–0.955)	0.96 (0.96–0.96)
Imputed Income		
Reported	1	1
Imputed	0.79 (0.77–0.82)	0.73 (0.70–0.76)
Main Household Income Source		
Wage/Salary or Self-employed	1	1
Seniors' Income (Pension, Old Age Security, Dividends)	0.69 (0.66–0.71)	0.38 (0.36–0.40)
Workers' Compensation or Employment Insurance	4.64 (4.24–5.08)	1.71 (1.55–1.89)
Child Support or Child Tax Benefit	9.27 (7.73–11.13)	1.68 (1.37–2.06)
Social Assistance	17.86 (16.73–19.06)	2.82 (2.62–3.05)
Other or None	2.22 (2.05–2.39)	0.88 (0.80–0.95)
Missing	0.78 (0.72–0.85)	0.44 (0.40–0.48)
Housing Tenure		
Homeowner	1	1
Renter	5.07 (4.92–5.22)	2.28 (2.20–2.36)
Missing	2.06 (1.53–2.76)	1.21 (0.87–1.69)
Province		
Ontario	1	1
Quebec	0.97 (0.93–1.01)	0.69 (0.66–0.72)
Other	1.00 (0.97–1.03)	1.09 (1.05–1.13)

Table 2: Crude and adjusted odds of household food insecurity in relation to sociodemographic characteristics, Canada, (N = 491,364)

<<Insert Table 2 here>>

Black-white disparity across severity of household food insecurity

The crude and adjusted odds ratios of marginal, moderate, and severe household food insecurity relative to food insecurity are presented for each of the sociodemographic variables included in the logistic regression models. In the crude multinomial regression, Black households had elevated odds of food insecurity compared to white households, a magnitude that was less for marginal food insecurity than for moderate and severe food insecurity: 2.65 for marginal food insecurity (95% CI: 2.31–3.04), 3.99 for moderate food insecurity (95% CI: 3.59–4.43), and 4.01 for severe food insecurity (95% CI: 3.50–4.59). When adjusting for the aforementioned sociodemographic variables, the odds of marginal food insecurity for Black households compared to white households reduced to 1.62 (95% CI: 1.39–1.90), to 2.02 for moderate food insecurity (95% CI: 1.77–2.30), and to 1.99 for severe food insecurity (95% CI: 1.68–2.37) (Appendix A – See Additional Files).

Differential risk profiles between Black and white households

Figure 2 presents the predicted probabilities of household food insecurity for six multivariable logistic regression models that each have the aforementioned sociodemographic variables, but different statistical interactions with race. The odds ratios from these logistic regression models are presented in Appendix B (See Additional Files).

Figure 2

Predicted Probabilities of Multivariable Regression Models with Interactions with Race

<<Insert Fig. 2 here>>

Among white households, being a recent or non-recent immigrant was protective against household food insecurity compared to being Canadian-born, but there was no statistically significant difference in predicted probability of household food insecurity by immigration status for Black households (Fig. 2a). All Black households regardless of immigration status had a significantly greater predicted probability compared to their white counterparts. Notably, 71% of individuals in the Black sample were immigrants, compared to 12% of the white population (Table 1).

Among white households, couples alone with no children had the lowest predicted probability of food insecurity, while female lone-parent households had the highest (Fig. 2b). The predicted probabilities of Black sub-groups ranged from 16.8–18.9%, illustrating little heterogeneity between Black household types. Each Black sub-group had a significantly higher probability of household food insecurity compared to their white counterpart, save male lone parents and households with missing data.

For main household income source, Black sub-groups had significantly higher predicted probabilities of food insecurity than their white counterparts, with the exception of households reliant on child support or CTB, and social assistance (Fig. 2c). Households reliant on seniors' incomes were the most protected within each racial group. However, the probability of Black households on seniors' income matched that of white households reliant on income from wages/salaries or self-employment.

Black households in each education sub-group had significantly higher predicted probabilities of food insecurity than their white counterparts (Fig. 2d). Black households in which the highest level of education was 'no post-secondary degree' had the highest probability of food insecurity, while white households with someone with a post-secondary degree were most protected. Within each racial group, there were no significant differences in probability based on household education.

White home-owning households had the lowest probability of food insecurity, while Black renters had a nearly three-fold greater probability (7.5% versus 20.7%, respectively) (Fig. 2e). The probability of household food insecurity was nearly identical for white renters and Black homeowners.

Finally, white households in Quebec were significantly protected against food insecurity compared to those in Ontario (Fig. 2f). However, living in Quebec was not protective for Black households, as both Black sub-groups had nearly identical predicted probabilities. Black households in each provincial sub-group had significantly higher predicted probabilities compared to their white counterparts.

Discussion

Our analysis of population-representative data from 2005–2014 reveals that being racialized as Black is a potent predictor of household food insecurity. Even after adjusting for other socio-demographic characteristics, Black-respondent households experienced almost double the odds of food insecurity of white-respondent households – an association as strong in magnitude as other commonly reported predictors of vulnerability, such as female lone-parenthood. Our findings demonstrate that the differential in household food insecurity between Black and white households exists on a national level, which is consistent with observations in two smaller Canadian studies (46, 47). Our predicted probabilities showed that characteristics traditionally denoting vulnerability to household food insecurity among the general population, which is predominantly white, do not shape Black vulnerability in the same way. Not only did all Black sub-groups present with higher probabilities of food insecurity compared to their White counterparts, but there was relative homogeneity of risk among Black sub-groups for immigration status, household composition, and province. Thus, being racialized as Black was a dominant predictor of elevated risk of household food insecurity.

The observed protective effect of immigration – in this case for white households – is consistent with other studies (27). By contrast, research on immigrants for other health outcomes finds that immigrant groups with a longer duration of residency in Canada exhibit worse cardiovascular risk factor profiles than recent immigrants, as part of the “healthy immigrant effect” (48). In this study, we find that traditional understandings of the “healthy immigrant effect” in the broader immigrant and white population do not sufficiently explain risk of household food insecurity for the Black population. Black people, whether they have been in the country for 5 years or 50 years, experience a similar level of vulnerability to household food insecurity. Further, while living in Quebec was protective for white households, Black households in Quebec had the same probability of food insecurity as Black

households in Ontario. That living in Quebec affords no discernible protection for the Black population suggests that race is uniquely shaping the vulnerability of this group.

Social epidemiologists and public health scholars have long argued that racial differences in economic outcomes are manifestations of structural racism, and are powerful in shaping racial disparities in health (49–51). Scholars in the US have also established a potential relationship between racial discrimination and an elevated risk of food insecurity (22–25). In their study of African-American food-insecure households with children, Burke et al. (2018) found that even after adjusting for socio-demographic factors, a one-unit increase in the frequency of lifetime racial discrimination was associated with a 5% increase in the odds of very low food insecurity (22). Odoms-Young and Bruce argue that in order to address racial disparities in food insecurity, interventions should target structural racism as well as class inequality (52). Given the potent role of race in our study, one prominent mechanism through which anti-Black racism may be manifesting is wealth inequity – specifically the accumulation of wealth among white households and the disenfranchisement of Black households. Numerous studies in Canada have noted the widening economic gap between racialized groups and white counterparts, as well as the particular economic disparities facing Black people in Canada (53–55). In addition to adjusting for income, our models included two markers of economic security: main source of household income and housing tenure. One reason for why the predicted probability of food insecurity among Black households reliant on seniors' income was on par with white working households could be that Black seniors acquired fewer material assets during their working age – possibly due to being streamlined into more precarious, low-wage work (56–58) – compared to white counterparts, and that economic disadvantage followed them to old age. Similarly with housing tenure, Black homeowners may have similar vulnerability as white renters because homeownership may manifest differently for Black households (e.g., they may have homes worth less potentially due to racism in the housing market, or have houses with higher mortgage debt (18)). While assets and debt differentials could not be examined with the data available in the CCHS, studies have shown that racialized neighborhoods, particularly in Toronto, Montreal, and Vancouver, are overrepresented in experiencing household indebtedness (59, 60). Scholars have long noted how racism operates at individual and structural levels, such that the metaphorical 'tip' of the iceberg represents interpersonal acts of racism, but beneath the water's surface there are structural modes of racism that manifest through socio-economic systems (61–63). Structural racism may explain the racial differences in our findings, which show that Black sub-groups that would in theory be protected from household food insecurity given their greater income security or material wealth (e.g., seniors' income, homeowners) are instead as vulnerable as the more disadvantaged white subgroup. Notably, we still see that Black homeowners fare better than Black renters, suggesting that material circumstances continue to shape disadvantage within racial groups.

Strengths of our study include the large, population-representative sample, inclusion of a broad array of sociodemographic characteristics, use of a well-validated scale to assess household food insecurity, and multivariable models that examine both statistical interactions and severity of food insecurity. Several limitations remain in this study. First, our dataset from 2005–2014 reflects a dated sample. While the national prevalence of food insecurity has remained very stable over time (2), it's possible that studies of

race with more recent cycles of the CCHS may yield different results. Secondly, given the cross-sectional nature of the data, we cannot make inferences or gauge temporal relationships. Third, as with most studies on marginalized populations, the sample size for Black households was very small, which limits the precision of the estimates for this group and the possible analytic approaches. A small sample size therefore required a relatively creative and unconventional analytical approach. Finally, we were limited by the lack of breadth and specificity of variables offered by the CCHS. The CCHS contains no data on the stability of household income, sub-types of immigrants (e.g., refugees), the nature of employment of all household members, and wealth (i.e. assets, mortgages, other household debts). Our data source also did not provide any direct measure of participants' exposure to and experiences of racial discrimination, particularly that which might manifest among the sociodemographic predictors we include in our models (e.g., main household income, housing tenure, etc.). In particular, given the disproportionately high probability of food insecurity among households reliant on Employment Insurance and workers' compensation, as well as the differential labour market experiences of Black and white populations, data on employment and economic indicators would be valuable for future studies.

Conclusion

Our results suggest that Black racialization is an overriding factor shaping household-level susceptibility to food insecurity in Canada. This highlights the importance of addressing structural anti-Black racism in endeavors to reduce, and ultimately eliminate, racial differences in household food insecurity. Our findings lay the foundation for future work to investigate economic disparities between Black and white populations in Canada. In the midst of a pandemic where racial inequities are coming to the fore, these findings further emphasize the need to centre a discussion of race, and indeed racism, in conversations and research about material deprivation and wealth inequities at the systemic and institutional level. Furthermore, this study provides a rationale for long-overdue race-based data collection, as well as the oversampling of under-represented groups, such as Black people, in Canadian surveys.

Declarations

Ethics approval and consent to participate: We obtained ethics approval for this study from the University of Toronto Health Sciences Research Ethics Board.

Consent for publication: Not applicable.

Availability of data and materials:

The analyses presented in this paper were conducted at the Statistics Canada's Toronto Research Data Centre at the University of Toronto, which is part of the Canadian Research Data Centre Network. The authors thank the Canadian Research Data Centre Network for facilitating their access to the Canadian Community Health Survey."

The data that support the findings of this study are available from Statistics Canada's Toronto Research Data Centre, but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of the Canadian Research Data Centre Network.

Competing interests: The authors declare that they have no competing interests.

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Authors' contributions: SD cleaned the data and analyzed the outputs regarding Black-white racial disparities in household food insecurity, based on multiple statistical models. Both SD and VT collectively and iteratively interpreted the outputs and models for further analysis. Both authors read, edited, and approved the final manuscript.

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64. **ADDITIONAL FILES.**
65. 'Additional file 1' contains all tables cited as Appendices in the manuscript. They are in.docx form. These tables are the outputs for the models with interactions.

Figures

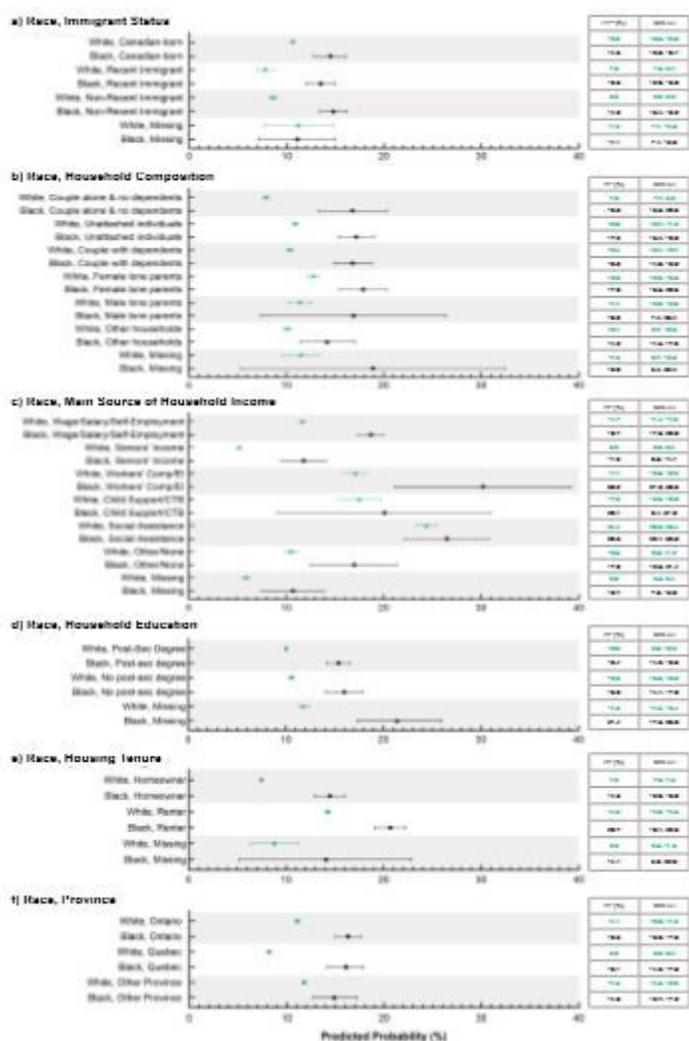


Figure 1

Predicted Probabilities of Multivariable Regression Models with Interactions with Race Within Figure 2, figures (a) to (f) refer to predicted probabilities (PP, %) that are derived from multivariable logistic

regression models that have adjusted for: immigration status, household education, household composition, household income, imputed income, main source of household income, housing tenure, province, and CCHS cycle. Each graph refers to such an adjusted model in which there is an interaction between race and the indicated variable (eg. (a) race interacted with immigration).

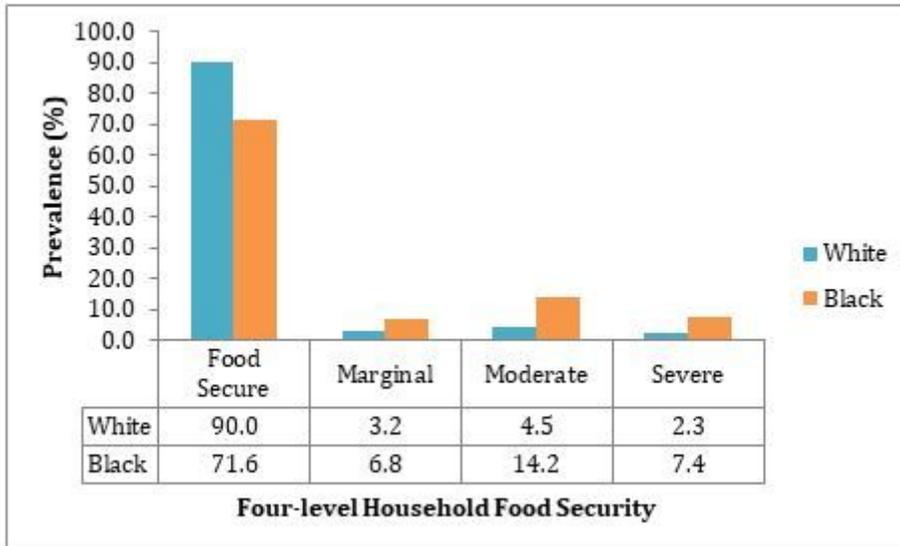


Figure 2

Prevalence of four-level household food insecurity by racial identity

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