

# Determinants of Self-reported Health in Middle-Aged Canadians: Examining the Role of Perceived Socioeconomic Status

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**Abstract:** This study examines the determinants of self-reported health (SRH) among 1,674 middle-aged Canadians using data from the seventh wave of the World Values Survey (WVS-7) collected between 2017 and 2022. A probit regression model was employed to analyse the influence of various factors on health outcomes. The findings highlight that perceived socioeconomic status (PSES) plays a significant role in health, with individuals in higher socioeconomic classes reporting significantly lower probabilities of poor health. Contrary to expectations, traditional demographic factors such as foreign-born status, gender, marital status, language proficiency, ethnicity, and education levels do not significantly predict poor health. The analysis of interaction terms between PSES and these variables revealed no significant interaction effects, indicating that the impact of PSES on health is consistent across different subgroups. Additionally, being employed and having children at home were identified as protective factors against poor health. Regional variations were mostly insignificant, except for Prince Edward Island, where residents were less likely to report poor health. The study underscores the importance of improving socioeconomic conditions to reduce health disparities and enhance public health among middle-aged Canadians.

**Keywords:** Perceived Socioeconomic Status, SRH, Middle-Aged Canadians

**Jel Codes:** I10, I14, J14

## *Orta Yaşlı Kanadalılarda Kişisel Beyanlı Sağlık Durumunun Belirleyicileri: Algılanan Sosyoekonomik Statünün Rolü*

**Öz:** Bu çalışma, 2017-2022 yılları arasında toplanan Dünya Değerler Anketi'nin (WVS-7) yedinci dalgasından elde edilen verileri kullanarak, 1.674 orta yaşlı Kanadalı arasında kişisel beyanlı sağlık durumunun (KBSD) belirleyicilerini incelemektedir. Sağlık sonuçları üzerindeki çeşitli faktörlerin etkisini analiz etmek için probit regresyon modeli kullanılmıştır. Bulgular, algılanan sosyoekonomik statünün (ASES) sağlık üzerinde önemli bir rol oynadığını ve daha yüksek sosyoekonomik sınıflarda yer alan bireylerin kötü sağlık bildirme olasılıklarının anlamlı derecede düşük olduğunu ortaya koymaktadır. Beklentilerin aksine, göçmen olma durumu, cinsiyet, medeni durum, dil yeterliliği, etnik köken ve eğitim seviyeleri gibi geleneksel demografik faktörler kötü sağlık üzerinde anlamlı bir etkide bulunmamaktadır. ASES ile bu değişkenler arasındaki etkileşim terimlerinin analizi de anlamlı etkileşim etkileri göstermemiş, ASES'in sağlık üzerindeki etkisinin farklı alt gruplar arasında tutarlı olduğunu ortaya koymuştur. Ayrıca, istihdam ve evde çocuk sahibi olmanın kötü sağlığa karşı koruyucu faktörler olduğu belirlenmiştir. Bölgesel farklılıklar çoğunlukla önemsiz olmakla birlikte, Prens Edward Adası'nda yaşayanların kötü sağlık bildirme olasılığı daha düşük bulunmuştur. Çalışma, sağlık eşitsizliklerini azaltmak ve orta yaşlı Kanadalılar arasında halk sağlığını iyileştirmek için sosyoekonomik koşulların iyileştirilmesinin önemini vurgulamaktadır.

**Anahtar Kelimeler:** Algılanan Sosyoekonomik Statü, Kişisel Beyanlı Sağlık Durumu, Orta Yaşlı Kanadalılar

**Jel Kodları:** I10, I14, J14

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## 1. Introduction and Background

### 1.1. Introduction

SRH status is widely used in public health research due to its strong predictive validity for actual health outcomes and mortality (Zajacova and Lawrence, 2021; Read and Gorman, 2022). Objective socioeconomic status (OSES) is one of the most critical determinants of health, influencing access to resources, health behaviours, and exposure to stressors (Marmot et al., 2021). Numerous studies over the past several decades have established a significant and consistent relationship between OSES and health (Currie et al., 2024; Papadopoulos and Sosso, 2023; Pisanty-Alatorre et al., 2024; Wang et al., 2024). This relationship reveals a distinct health gradient across the OSES spectrum, where higher levels of income, education, and employment status are linked to better physical and mental health and a reduced risk of mortality. Conversely, lower OSES is associated with poorer health outcomes and increased mortality risk (Khadanga et al., 2024; Lima et al., 2024; Patel et al., 2024; Visser et al., 2024).

Perceived socioeconomic status (PSES) describes how individuals view their position within a social hierarchy relative to others (Destin et al., 2017; Harrits and Pedersen, 2018). This perception is shaped by factors like income, education, and occupation, as well as personal experiences and comparisons with others (Langlois and Goudreault, 2019). Research highlights that PSES has a more significant impact on both mental and physical health compared to OSES (Goon, Slotnick, and Leung, 2024; Gugushvili and Jarosz, 2024; Richards, Maharani and Präg, 2023). Numerous studies document that lower PSES negatively affects individuals' SRH (Muhammad and Pai, 2023; Neubert et al., 2023; Wang, Hu, Ding and He, 2023), and this negative impact extends to cognitive functions, emotional responses, and behavioural patterns as well (Dizon and Mendoza, 2023; Niu et al., 2023; Vidal et al., 2023; Wang, Xu, Chen and Liu, 2023; Worthen, Menchaca and Laine, 2023).

This study uniquely contributes to the literature by exploring the determinants of self-reported health (SRH) among Canadians aged 40-64, utilizing data from the WVS-7 for the first time. It delves deeper into the effects of perceived socioeconomic status (PSES) on health outcomes by examining its interactions with a range of demographic and socioeconomic variables, including gender, foreign-born status, marital status, language proficiency, ethnicity, employment status, and education levels. By analyzing these interaction effects in separate models, the study provides a deeper understanding of how PSES influences health consistently across different subgroups. This comprehensive approach highlights the dominant role of PSES in shaping health outcomes and underscores the importance of addressing socioeconomic disparities to improve public health among middle-aged Canadians. The findings offer valuable insights for policymakers aiming to design targeted interventions to reduce health inequalities and enhance the overall well-being of this demographic.

The focus is on middle-aged individuals in Canada, a demographic that faces unique health challenges due to aging and socioeconomic transitions. Middle-aged individuals in Canada, specifically those aged 40 to 64, are a critical demographic for study due to their transitional phase of balancing work, family responsibilities, and the onset of age-related health issues (Public Health Agency of Canada, 2021). This demographic faces unique health challenges, making it essential to understand how socioeconomic factors impact their health outcomes. Canada's diverse population and comprehensive healthcare system provide a unique context for examining how demographic and socioeconomic factors and PSES interact to influence health outcomes (Canadian Institute for Health Information, 2021). Understanding the health dynamics of middle-aged Canadians can inform the effectiveness of current health policies and identify areas for improvement, ultimately contributing to better health outcomes for future generations.

This study utilizes data from the Canadian sample of the latest wave of the World Values Survey (WVS-7), focusing on 1,674 midlife individuals aged 40-64. The dependent variable is SRH status of individuals. Descriptive statistics indicate that most respondents rated their health as 'Good' or 'Very good,' reflecting generally positive self-perceived health in the sample. The independent variables include a range of socioeconomic and demographic factors such as PSES, foreign-born status, gender, ethnicity, education levels, employment status, and marital status, and language proficiency, presence of children at home, age, region of residence and rural residency.

PROBIT regression analysis reveals several significant determinants of self-reported poor health. Being in the working, lower middle, or upper middle socioeconomic status is associated with significantly reduced chances of poor SRH. This highlights the protective effect of higher socioeconomic status. Additionally, having children at home and being employed reduce the likelihood of poor SRH. In contrast, foreign-born status, female gender, marital status, language proficiency, and ethnicity are not significant predictors of self-reported poor health. Further analysis incorporating interaction terms shows that the influence of PSES on poor SRH does not vary significantly across different demographic and social factors, including foreign-born status, gender, marital status, language proficiency, ethnicity, presence of children at home, employment status, age, parents' education level, respondents' education level, or rural residency. This suggests that the relationship between SES and SRH is consistent, regardless of these other variables.

This study is organized as follows: Following this introduction, the next section gives the background, reviewing relevant literature on self-reported health (SRH) and the impact of perceived socioeconomic status (PSES). This is followed by a detailed description of the data and methodology, where the probit regression model used in the analysis is explained. The results are then presented, highlighting the main findings related to PSES and other factors affecting health outcomes. Finally, the discussion and conclusion interprets these findings and offers policy recommendations aimed at improving public health and reducing disparities among middle-aged Canadians.

## 1.2. Background

Health disparities across socioeconomic groups have been extensively documented (Liao et al., 2023; Bhat et al., 2023). Individuals with lower socioeconomic status tend to report poorer SRH compared to those with higher socioeconomic status, a phenomenon attributed to various factors including differential access to healthcare, variations in health behaviours (Adler et al., 2016; Marmot and Allen, 2014). These disparities are evident in numerous studies, highlighting the complex interplay between socioeconomic factors and health (Case and Deaton, 2023; Khanijahani et al., 2021).

Recent studies have shown that foreign born individuals more likely to experience poor health outcomes (Chai, 2023; Guo et al., 2023; Patel et al., 2023; Salami et al., 2023). Immigration status is linked to unique health challenges, including difficulties with language, cultural disparities, and restricted access to medical care (Castañeda et al., 2015; Shirmohammadi et al., 2023). Also, immigrants often face structural barriers in job market that impede their ability to access quality healthcare, leading to disparities in health outcomes (Raihan et al., 2023). In addition to immigration status, gender differences significantly influence health outcomes, with women often reporting poorer health compared to men (Amerio et al., 2022; Connor et al., 2020). This disparity may result from differences in social roles, stressors, and health behaviours, as well as biological factors (Lipsky et al., 2021; Oksuzyan et al., 2010). For instance, women are more likely to experience chronic conditions and mental health issues, which can contribute to lower SRH status (Torche and Nobles, 2024; White et al., 2024).

Marital status has also been linked to health, with married individuals generally reporting better SRH than their unmarried people (Akhtar et al., 2023; Krajc et al., 2023; Zhang et al., 2024). The protective effect of marriage on health is thought to result from

both social support and economic advantages. However, recent research suggests that the quality of the marital relationship also plays a crucial role in health outcomes (Novak et al., 2023). Recent studies emphasize the importance of language education in enhancing SRH for non-English speakers (Raihan et al., 2023). Language proficiency is a critical element of good health, as effective communication within the healthcare system is essential for accessing care and adhering to medical advice (Kjøllestad et al., 2023). Individuals who speak languages other than the dominant language in the country may also face additional barriers, such as in the job market exacerbating health disparities (Stevenson et al., 2023).

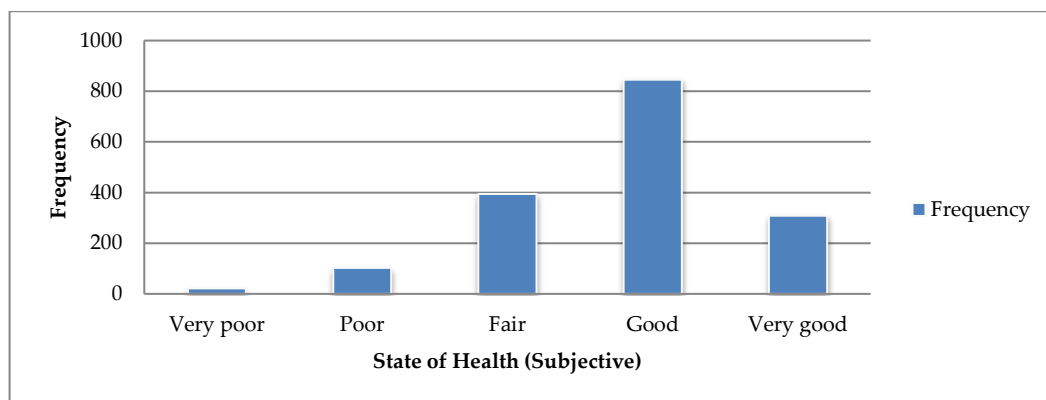
Ethnicity is a fundamental determinant of health, with racial and ethnic minorities often experiencing disparities due to systemic inequalities and discrimination (Abrahamowicz et al., 2023; Gutterman, 2024; Thomas et al., 2024). These groups may face chronic stress and limited access to healthcare resources, contributing to poorer health outcomes (Guo et al., 2024; Wang et al., 2024). The presence of children at home can also influence health outcomes through increased stress and resource allocation (Nomaguchi and Milkie, 2020). Parents, especially single parents, often report higher levels of stress and poorer health outcomes due to the demands of childcare and limited resources (Nowland et al., 2021; Wang and Lu, 2023).

Employment status is directly related to health through access to income, health insurance, and occupational health risks (Benach et al., 2021; Irvine and Rose, 2024). Unemployed individuals are more likely to experience poor health due to financial strain and lack of access to healthcare (Byaro et al., 2023; Sochas and Reeves, 2023). Age is another well-known determinant of health, with older individuals generally reporting poorer health outcomes due to the natural aging process and the accumulation of health risks over time (Gorman and Read, 2021). Moreover, the education levels of parents and respondents significantly influence health behaviours and access to information, thereby affecting overall health (Brunello et al., 2016; Dilmaghani, 2020; Janke et al., 2020; Jiang et al., 2020; Özer et al., 2018). Higher educational attainment is associated with better health literacy, healthier behaviours, and improved access to healthcare services (Özer et al., 2018; Özer et al., 2023; Özer et al., 2024). Living in rural areas is often associated with poorer health outcomes due to limited access to healthcare facilities, higher levels of poverty, and health risk behaviours (Bennett et al., 2019). These disparities are compounded by geographic isolation and resource limitations (Probst et al., 2019).

## 2. Data

### 2.1. Variables

This study utilizes the Canada sample from the WVS-7, which was collected during the seventh wave of the World Values Survey between 2017 and 2022. Specifically, the Canadian sample was gathered in 2020. The analysis focuses on data from 1,674 midlife individuals aged 40-64 residing in Canada, representing the middle-aged population living in the country. The research includes detailed socio-economic and demographic variables to examine the determinants of SRH among midlife individuals in Canada. Further, analysis incorporates the effect of interaction terms between PSES and the remaining independent variables on SRH.



**Figure 1.** Distribution of Self-Reported Health Status

**Source:** Author's own calculations based on the Canada sample from the WVS-7

The dependent variable in this study is the SRH status, which is coded as zero for respondents reporting good or very good health, and one for those reporting very poor, poor, or fair health. Categorizing the SRH variable into two categories is a well-established and widely accepted practice in the literature. Several studies have used this approach to simplify analysis and improve interpretability without compromising validity (Liu and Hummer, 2008; Özer, 2023; Özer, 2024; Özer and Fidrmuc, 2024; Schellekens and Ziv, 2020; Spuling et al., 2017). The bar chart in figure one shows the distribution of SRH statuses among 1,674 midlife individuals (aged 40-64) in Canada. Most respondents rated their health as "Good" or "Very good," indicating generally positive self-perceived health among the sample.

In this study, the original five-category perceived socioeconomic class variable was transformed into a four-category independent variable. The middle-high and high socioeconomic classes were merged to ensure a sufficient number of observations in each category, thereby increasing the reliability of the analyses. Specifically, groups four and five, representing the upper-middle and highest socioeconomic classes, were combined into a single category labelled four. A dummy variable was created for the foreign-born status of respondents, coding foreign-born individuals as one and non-foreign-born individuals as zero. Another dummy variable was included for gender, with female participants coded as one and male participants as zero. Additionally, an ethnicity dummy variable was used, with the 'white' ethnic group as the reference category and all other ethnic groups coded as one. The study also employs variables representing the "respondent's education Level" and "parents' education level," categorized into three main levels: 'low,' 'medium,' and 'high.' The 'low' education category includes individuals with less than high school education; the 'medium' category includes those with high school or equivalent education; and the 'high' category comprises individuals with university-level or higher education. Separate dummy variables were created for each category, with the 'low' education level serving as the reference category.

Additionally, an employment status dummy variable was defined, coding employed individuals as one and unemployed individuals as zero. A variable indicating whether respondents have children at home was also included, coding those with children at home as one and those without as zero. To control for the effect of age, both age and age squared were included in the model. A variable indicating whether respondents speak a language other than English or French was created, coding those who speak English and French as zero and those who do not as one. A 'married' dummy variable was used to represent marital status, with 'married' and 'living as married' grouped as 'married' and all other statuses classified as 'single'. To analyse the impact of the geographic location of participants, two main types of variables were utilized: a "rural" and dummy variables representing Canada's 12 regions. The "rural" distinguishes between respondents living in rural areas (one) and urban areas (zero). Dummy variables

for each of Canada's 12 regions were included, with each variable coded as one for respondents living in the respective region and zero for those living in other regions.

## 2.2. Descriptive Statistics

Table 1 presents the descriptive statistics for the variables used in the study, including measures of central tendency and dispersion for the sample of 1674 observations. The variables include SRH, subjective socioeconomic status, education level, age, gender, foreign born status, marital status, employment status, language use, and ethnicity, presence of children at home, parents' education level, and rural residency.

**Table 1.** Weighted Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
SRH	1674	3,718	0,868	1	5
Subjective socioeconomic status	1674	2,961	0,953	1	5
Education level (low=1, mid=2, high=3)	1662	2,340	0,594	1	3
Age	1674	52,392	7,179	40	64
Female	1674	0,504	0,500	0	1
Foreign born	1674	0,154	0,361	0	1
Marital status (married)	1674	0,648	0,477	0	1
Employment status-employed	1674	0,637	0,481	0	1
Language used other than French and English	1674	0,047	0,211	0	1
Ethnicity (non-white)	1657	0,151	0,358	0	1
Have children at home	1671	0,624	0,484	0	1
Parents' education level (low=1, mid=2, high=3)	1482	1,974	0,762	1	3
Rural	1674	0,252	0,434	0	1

The sample consists of 1,674 individuals, with a balanced gender distribution, where approximately 50.4% are female. The average SRH status is relatively high, with a mean of 3.72 on a 5-point scale, indicating generally positive health perceptions among the respondents. The subjective socioeconomic status (PSES) also shows a mean of 2.96, suggesting that participants perceive themselves as middle-class on average. Respondents' education levels in the sample are moderately high, with an average score of 2.34 on a scale from 1 (low) to 3 (high), indicating that most participants have at least a mid-level education. The average age of the respondents is 52.4 years, ranging from 40 to 64, reflecting the focus on middle-aged people. In terms of demographic characteristics, 15.4% of the sample is foreign-born, and 64.8% are married. Employment status is high, with 63.7% of the respondents being employed. A small portion of the sample (4.7%) uses a language other than French or English at home, and 15.1% identify as non-white. Additionally, 62.4% have children living at home, while 25.2% reside in rural areas. Parents' education levels show an average score of 1.97 on a scale from 1 (low) to 3 (high), indicating that many parents have low to mid-level education. Overall, the sample is diverse in terms of socioeconomic and demographic factors, which allows for a comprehensive analysis of the determinants of SRH among middle-aged Canadians.

## 3. Methodology

This study investigates the determinants of poor SRH and subsequently estimates 11 separate regression models to analyse the interaction effects between various independent variables and socioeconomic status on self-reported poor health. Each model includes interaction terms for one independent variable with socioeconomic status dummies, along with all other independent variables.

Torres-Reyna (2008) notes that PROBIT and LOGIT models are fundamentally similar, differing only in their distribution functions. The PROBIT model uses the cumulative standard normal distribution ( $\Phi$ ), while the logit model uses the cumulative standard logistic distribution ( $F$ ). As demonstrated in Table 2, the AIC (Akaike Information Criterion) and BIC (Bayesian Information Criterion) values, which are commonly used to evaluate model fit and complexity (Burnham and Anderson, 2004;

Vrieze, 2012), are closely aligned for both models, reinforcing the assertion of their underlying similarity. In this study, the PROBIT model was chosen due to the comparable results it yields with the logit model. This analysis employs the PROBIT regression method, which is particularly well-suited for modeling binary (dichotomous) dependent variables (Greene, 2012). This method allows for modelling the probability that the dependent variable falls into a particular category based on a set of independent variables. The PROBIT model is specified as follows:

$$P(Y_i = 1) = \Phi(X_i' \beta) \quad (1)$$

where  $Y_i$  represents the dependent variable indicating self-reported poor health,  $X_i'$  denotes a vector of independent variables,  $\beta$  is a vector of coefficients to be estimated, and  $\Phi$  is the cumulative distribution function of the standard normal distribution.

**Table 2.** Comparison of AIC and BIC Values for PROBIT and LOGIT Models

Model	AIC	BIC
<b>Probit</b>	1728,411	1871,267
<b>Logit</b>	1726,934	1869,79

The dependent variable, SRH, is coded as a binary variable, where 1 indicates poor health and 0 indicates otherwise. The independent variables included in the analysis are foreign born status, gender (female), marital status (married), language used other than French and English, ethnicity (non-white), having children at home, employment status (employed), age, age square, parents' education level, respondents' education level, living in a rural area, and region of residence fixed effects.

The diagnostic tests conducted on the Probit model given in equation one provide several insights into the model's adequacy and the relationships among the covariates. The goodness-of-fit test indicates that the model fits the data well. This is evidenced by a Pearson chi-square value of 1450.36 with 1411 degrees of freedom and a p-value of 0.2276. These results suggest that the model's predictions are consistent with the observed data. The link test results show that the model is correctly specified, with the  $\hat{\gamma}$  variable being significant and the  $\hat{\gamma}^2$  variable not significant. These suggest no omitted variable bias or model misspecification. Finally, the Variance Inflation Factor (VIF) test reveals that multicollinearity is not a serious concern, with a mean VIF of 3.65 and a maximum VIF of 8.24 for the variable age. These indicate that while some variables are correlated, it is within acceptable limits for the model's stability. Overall, these diagnostics suggest that the model is robust, appropriately specified, and suitable for making inferences about the determinants of poor health.

**Table 3.** Diagnostic Test Results for Probit Model on Poor Health

Test	Statistic	Result
<b>Goodness-of-Fit (estat gof)</b>	Number of observations	1467
	Number of covariate patterns	1438
	Pearson Chi2 (df=1411)	1450.36
<b>Link Test (linktest)</b>	Prob > Chi2	0.2276
	$\hat{\gamma}$ Coefficient	1.147961 (p < 0.001)
	$\hat{\gamma}^2$ Coefficient	0.1665941 (p = 0.214)
	Constant Coefficient	0.0007873 (p = 0.989)
<b>Variance Inflation Factor (VIF)</b>	Mean VIF	3.65
	Maximum VIF	8.24 (for age)

To comprehensively understand the interaction effects of socioeconomic status with various demographic and socioeconomic factors on self-reported poor health, 11 separate models are estimated. Each model incorporates the relevant interaction term between

perceived socioeconomic status and one of the independent variables, along with all other independent variables.

The general form of the PROBIT regression model with interactions used in this study is specified as follows:

$$Probit(Y_i = 1) = \Phi(\beta_0 + \beta_1 \cdot SES_i + \beta_2 \cdot IV_i + \beta_3 \cdot (SES_i * IV_i) + \sum_{j=4}^n \beta_j * X_{ij}) \quad (2)$$

In the second model,  $Y_i$  is the binary dependent variable indicating poor self-reported health (SRH). The term  $SES_i$  represents the socioeconomic status of individual  $i$ , while  $IV_i$  denotes the independent variable that is being interacted with socioeconomic status. The interaction term between socioeconomic status and the independent variable is represented as  $SES_i * IV_i$ . Additionally,  $X_{ij}$  includes other control variables in the model. The coefficients to be estimated are  $\beta_0, \beta_1, \beta_2, \beta_3$ , and  $\beta_j$ . For example, to analyse the interaction between socioeconomic status and foreign born status, the model includes the interaction term  $SES_i * ForeignBorn_i$  along with all other control variables. Each of the 11 models follows this structure, with the interaction term varying according to the specific independent variable under consideration.

By employing the PROBIT regression method, this study captures the non-linear relationships and interaction effects between socioeconomic status and other variables, providing a deep understanding of the factors influencing SRH. However, the non-linear relationship between independent and dependent variables complicates the interpretation of slope coefficients. To address this, I used the margins command in Stata 13.2 to estimate marginal effects. Greene (2012) noted that this approach allows for an interpretation similar to that of linear regression. These marginal effects show how a one-unit change in explanatory variables affects the probability of reporting a particular health status, holding other factors constant. This approach within a logit regression framework provides a clearer understanding of the relationship between income levels and health outcomes. To address potential heteroscedasticity and ensure the reliability of the results, robust standard errors were used throughout the analysis.

#### 4. Results

The PROBIT regression results in Table 4 identify several significant determinants of poor SRH. Being in the working socioeconomic status, lower middle socioeconomic status, and upper and upper middle socioeconomic status are all associated with significantly reduced probabilities of reporting poor health, with coefficients of -0.662, -0.862, and -1.340, respectively, all significant at the 1% level.



**Table 4.** Determinants of Self-Reported Poor Health among Middle-Aged Individuals in Canada

Variables	Coef.	Std. Err.	Significance
Working class	-0.662	(0.209)	***
Lower middle class	-0.862	(0.199)	***
Upper and upper middle class	-1.340	(0.204)	***
Foreign born	0.198	(0.147)	
Female	0.015	(0.091)	
Marital status (married)	-0.042	(0.100)	
Language used other than French and English	-0.308	(0.214)	
Ethnicity (non-white)	-0.114	(0.140)	
Have children at home	-0.165	(0.094)	*
Employment Status (employed)	-0.205	(0.106)	*
Age	-0.000	(0.001)	
Age squared	-0.004	(0.014)	
Parents' education level (mid=2)	-0.061	(0.114)	
Parents' education level (high=3)	0.166	(0.126)	
Education level (mid=2)	-0.074	(0.211)	
Education level (high=3)	-0.095	(0.214)	
Rural	-0.023	(0.107)	
Region (Colombie-Britannique)	0.178	(0.160)	
Region (Manitoba)	-0.079	(0.214)	
Region (Nouveau-Brunswick)	0.076	(0.220)	
Region (Terre-Neuve-et-Labrador)	0.072	(0.237)	
Region (Nouvelle-Ecosse)	-0.167	(0.241)	
Region (Ontario)	0.009	(0.158)	
Region (Prince-Edouard)	-0.924	(0.492)	*
Region (Quebec)	-0.122	(0.155)	
Region (Saskatchewan)	-0.375	(0.236)	
Constant	0.722	(0.297)	**

**Note:** Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Foreign born status, female gender, and marital status, uses of a language other than French and English, and non-white ethnicities was not significant predictors of self-reported poor health. Having children at home and being employed were associated with a reduced probability of poor SRH, with coefficients of -0.165 and -0.205, respectively, both significant at the 10% level.

Neither age nor age squared was a significant predictor. Parents' education levels and the respondent's own education levels were also not significant. Residing in a rural area and regional variables were mostly insignificant, with the exception of residing in Prince-Edouard, which was associated with a reduced probability of poor SRH (coefficient of -0.924, significant at the 10% level). The constant term was positive and significant at the 5% level. These results highlight the importance of socioeconomic status and certain demographic factors in determining SRH outcomes.

As seen from the table, the coefficients of perceived socioeconomic status on poor SRH intensify as one moves up the socioeconomic ladder. This suggests that individuals with higher socioeconomic status report significantly better SRH. For further analysis, I will explore how the interaction between socioeconomic status and other variables, such as demographic and objective socioeconomic factors, influences SRH. This will provide a deeper understanding of health disparities across different socioeconomic groups.

The results in Table 5 show the interaction effects of perceived socioeconomic status with various independent variables on poor SRH. Notably, none of the interactions between working socioeconomic status, lower middle socioeconomic status, or upper and upper middle socioeconomic status with foreign born status, gender, marital status, language, ethnicity, presence of children at home, employment status, age, parents' education level, respondents' education level, or rural residency showed statistically significant coefficients. This suggests that the effect of socioeconomic status on poor SRH does not vary significantly across these different demographic and social factors. Each interaction was tested using separate PROBIT regressions. The lack of significant

interaction effects implies that the relationship between socioeconomic status and poor SRH is robust, regardless of the influence of these other variables.

**Table 5.** The Interaction Effects of Perceived Socioeconomic Status with Various Independent Variables on Self-Reported Poor Health Among Middle-Aged Individuals in Canada

Models with Interactions	Coefficients	Std. Err.	Significance
<b>Model 1 Foreign Born</b>			
Working class # Foreign born	-0.727	(0.680)	
Lower middle class # Foreign born	-0.280	(0.660)	
Upper and upper middle class # Foreign born	-0.981	(0.662)	
<b>Model 2 Female</b>			
Working class # Female	0.003	(0.400)	
Lower middle class # Female	-0.182	(0.375)	
Upper and upper middle class # Female	-0.365	(0.380)	
<b>Model 3 Marital status (married)</b>			
Working class # Marital status (married)	0.179	(0.407)	
Lower middle class # Marital status (married)	0.296	(0.385)	
Upper and upper middle class # Marital status (married)	0.237	(0.398)	
<b>Model 4 Language used other than French and English</b>			
Working class # Language used other than French and English	0.766	(0.497)	
Lower middle class # Language used other than French and English	0.851	(0.480)	*
Upper and upper middle class # Language used other than French and English	No observation		
<b>Model 5 Ethnicity (non-white)</b>			
Working class # Ethnicity (non-white)	-0.029	(0.595)	
Lower middle class # Ethnicity (non-white)	0.789	(0.549)	
Upper and upper middle class # Ethnicity (non-white)	0.190	(0.559)	
<b>Model 6 Have children at home</b>			
Working class # Have children at home	-0.144	(0.411)	
Lower middle class # Have children at home	0.219	(0.381)	
Upper and upper middle class # Have children at home	0.386	(0.385)	
<b>Model 7 Employment Status (employed)</b>			
Working class # Employment Status (employed)	-0.168	(0.442)	
Lower middle class # Employment Status (employed)	0.108	(0.420)	
Upper and upper middle class # Employment Status (employed)	0.181	(0.427)	
<b>Model 8 Age</b>			
Working class # Age	-0.028	(0.033)	
Lower middle class # Age	-0.006	(0.032)	
Upper and upper middle class # Age	-0.015	(0.032)	
<b>Model 9 Parents' education level</b>			
Working class # Parents' education level (mid=2)	-0.216	(0.461)	
Working class # Parents' education level (high=3)	-0.069	(0.586)	
Lower middle class # Parents' education level (mid=2)	-0.262	(0.434)	
Lower middle class # Parents' education level (high=3)	-0.224	(0.553)	
Upper and upper middle class # Parents' education level (mid=2)	-0.364	(0.451)	
Upper and upper middle class # Parents' education level (high=3)	-0.679	(0.559)	
<b>Model 10 Respondents' education level</b>			
Working class # Education level (mid=2)	0.116	(0.609)	
Working class # Education level (high=3)	-0.680	(0.655)	
Lower middle class # Education level (mid=2)	0.241	(0.579)	
Lower middle class # Education level (high=3)	-0.689	(0.617)	
Upper and upper middle class # Education level (mid=2)	0.227	(0.723)	
Upper and upper middle class # Education level (high=3)	-0.506	(0.745)	
<b>Model 11 Rural</b>			
Working class # Rural	-0.065	(0.406)	
Lower middle class # Rural	-0.179	(0.383)	
Upper and upper middle class # Rural	0.025	(0.390)	

**Note:** Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Each model includes the following variables: foreign-born status, gender (female), marital status (married), language used other than French and English, ethnicity (non-white), having children at home, employment status (employed), age, age squared, parents' education level, respondents' education level, living in a rural area, and region of residence fixed effects. Additionally, each model incorporates the interaction terms of the related variable with the categories of perceived socioeconomic status (PSES).

## 5. Discussion and Conclusions

The findings of this study provide significant insights into the determinants of poor SRH among middle-aged individuals in Canada. Our analysis confirms the strong influence of perceived socioeconomic status (PSES) on SRH, with higher PSES associated with decreased probabilities of poor SRH. This aligns with existing literature highlighting the critical role of socioeconomic factors in shaping health outcomes (Marmot et al., 2021; Currie et al., 2024).

PSES emerged as a consistent and robust predictor of SRH, regardless of various demographic and socioeconomic variables. The lack of significant interaction effects between PSES and factors such as foreign-born status, gender, marital status, language proficiency, and ethnicity, presence of children at home, employment status, age, parents' education level, respondents' education level, and rural residency suggests that the impact of PSES on SRH is universally applicable across these groups. This finding indicates that interventions aimed at improving PSES could have broad and beneficial effects on health outcomes across diverse populations.

Interestingly, variables traditionally considered influential in health outcomes, such as gender, foreign-born status, marital status, and language proficiency, did not show significant effects in our analysis. This may indicate that, within the specific context of middle-aged Canadians, the influence of PSES overshadows these other factors. Alternatively, it may reflect the relatively inclusive access to healthcare services in Canada, which could mitigate the impact of these demographic variables on health outcomes.

The protective effect of having children at home and being employed against poor SRH highlights the importance of social roles and economic stability. Employment not only provides financial resources but also contributes to a sense of purpose and social integration, which are crucial for maintaining good health (Benach et al., 2021; Irvine & Rose, 2024). Similarly, the presence of children may offer emotional support and a sense of responsibility that positively influences health behaviours and outcomes. Focusing on middle-aged Canadians, a demographic undergoing significant life transitions, provides valuable insights into how socioeconomic factors impact health during this critical period. As individuals in this age group balance work, family responsibilities, and the onset of age-related health issues, understanding the determinants of their health outcomes can inform policies aimed at mitigating health disparities.

That said, the current paper is not without its limitations. One limitation of this study is its reliance on self-reported health (SRH) as the dependent variable, which may introduce bias due to subjective interpretation and reporting differences among respondents. Additionally, the cross-sectional nature of the data limits the ability to infer causality between perceived socioeconomic status (PSES) and health outcomes. Finally, the study focuses on a specific demographic group (middle-aged Canadians), which may limit the generalizability of the findings to other age groups or populations in different socio-economic contexts.

The findings highlight the importance of addressing socioeconomic disparities to improve health outcomes among middle-aged Canadians. Policymakers should prioritize initiatives that enhance socioeconomic conditions, such as improving access to quality education, creating stable employment opportunities, and ensuring adequate income support. By focusing on reducing economic inequalities and supporting those in lower socioeconomic positions, public health interventions can significantly improve both perceived and actual health status, ultimately reducing health inequities in this demographic.

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