

Short communication

Loneliness and income disruption during the COVID-19 pandemic in Canada

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ABSTRACT

Although substantial evidence links loneliness and social isolation to adverse mental health outcomes, their socioeconomic implications remain less understood. This study examined the association between feelings of loneliness or social isolation and household income disruption among Canadian adults during the COVID-19 pandemic. Data were drawn from the 2021 Survey on COVID-19 and Mental Health conducted between February 1 and May 7, 2021 (N = 8,032). Self-reported changes in household income were categorized as decreased, increased, or no change (reference category). Weighted multinomial logistic regression models were estimated while adjusting for sociodemographic, health, COVID-19-related, and community-level factors. Individuals reporting feelings of loneliness or social isolation were significantly more likely to report a decrease in household income relative to no change (relative risk ratio [RRR] = 1.30, 95% CI = 1.07–1.59). No significant association was observed between loneliness/social isolation and increased household income (RRR = 0.99, 95% CI = 0.71–1.39). These findings suggest that loneliness and social isolation were closely linked to economic vulnerability during the COVID-19 pandemic and highlight the importance of addressing social disconnection in future public health and socioeconomic interventions.

1. Introduction

Loneliness has emerged as a major public health concern with implications extending beyond mental health into broader social and economic domains (Barreto et al., 2021; Boco, 2024). Defined as the subjective perception of a discrepancy between desired and actual social relationships (Perlman and Peplau, 1981), loneliness differs from social isolation, which refers to the objective absence or infrequency of social contact (Wigfield et al., 2022). Although conceptually distinct, these constructs often overlap and became particularly salient during the COVID-19 pandemic (Holt-Lunstad, 2021). In Canada, more than one-third of adults reported heightened loneliness during pandemic-related restrictions (Lin, 2023; Ooi et al., 2023), reflecting the widespread social disruption associated with lockdowns and distancing measures.

A substantial body of research links loneliness and social isolation to poorer mental and physical health outcomes, including depression, anxiety, suicidal ideation, and mortality (Holt-Lunstad et al., 2015; Leigh-Hunt et al., 2017; Longo et al., 2026; Macchia and Fett, 2025; Ooi

et al., 2023; Stickley and Koyanagi, 2016). Recent pandemic-era studies further demonstrate that loneliness intensified during COVID-19 and was associated with worsening psychological well-being. Canadian longitudinal evidence from the Canadian Longitudinal Study on Aging (CLSA) documented increased loneliness during the pandemic and its association with depressive symptoms among older adults (Kirkland et al., 2023; Wister et al., 2023). International evidence similarly highlights the emotional burden of loneliness during COVID-19, particularly among vulnerable populations (Bhatta et al., 2021; Bu et al., 2020; Chai et al., 2025; Rebecchi et al., 2024; Schenk et al., 2025). While the mental health consequences of loneliness are well established, comparatively less attention has been paid to its potential socioeconomic implications.

Emerging evidence suggests that loneliness and social isolation may also be linked to adverse economic outcomes (Engel et al., 2025). Longitudinal research indicates that loneliness is associated with lower earnings, employment instability, and reduced socioeconomic attainment over time (Bryan et al., 2024b). Other studies suggest that loneliness may negatively affect labor market participation, workplace

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productivity, and absenteeism (Bryan et al., 2024a; Kung et al., 2021). At the same time, the COVID-19 pandemic produced substantial economic disruption, including job losses, reduced working hours, and household income instability (Golden and Kim, 2023; Jones et al., 2023; McKibbin and Fernando, 2023). In Canada, millions of individuals experienced employment and income shocks during the first year of the pandemic (Statistics Canada, 2022a). Despite these parallel trends, the relationship between loneliness and income disruption during the pandemic remains insufficiently understood.

This study is guided by an integrated conceptual framework that draws on social support theory, the stress process model, and fundamental cause theory (Cohen and Wills, 1985; Link and Phelan, 1995; Pearlin et al., 1981). These perspectives suggest that loneliness and social isolation may reduce access to coping resources during periods of economic stress, while economic hardship may intensify social disconnection, pointing to potentially reciprocal relationships (Bhatta et al., 2021; Pieters, 2013). Economic hardship may increase loneliness through stress and reduced social participation, and loneliness or social isolation itself may shape economic trajectories by affecting productivity, job retention, and adaptive capacity during crises. Using data from the 2021 Survey on COVID-19 and Mental Health (SCMH), this study examines the association between feelings of loneliness or social isolation and changes in household income among Canadian adults during the COVID-19 pandemic. Although the cross-sectional nature of the data precludes causal inference, the findings contribute to understanding how social disconnection is linked to economic vulnerability during a period of major societal disruption.

2. Data and methods

2.1. Data and participants

We analyse data from Statistics Canada's 2021 Survey on COVID-19 and Mental Health (SCMH) (Statistics Canada, 2022b). The SCMH is designed to collect data to assess the mental health and well-being of Canadians during the pandemic. The 2021 SCMH collected cross-sectional data from February to May 2021. The target population consists of adults aged 18 years or older residing in the ten provinces and the three territorial capital cities. Details on the survey have been described elsewhere (Liu et al., 2022). The response rate for the 2021 SCMH was 49.3%, with 8,032 respondents. For the present study, we excluded individuals with missing data on key variables of interest (income change and loneliness or social isolation), resulting in an analytical sample of 7,970. The regression sample ($N = 6,867$) reflects further listwise deletion due to missing covariate information included in the fully adjusted model.

2.2. Variables of interest

The dependent variable in this study is the self-reported change in household income due to the COVID-19 pandemic (increased, decreased, or no change, the reference, as the base outcome), a categorical variable derived from the 2021 SCMH's question TH1_Q10, "How has your total amount of household income changed due to the COVID-19 pandemic?" The key independent variable captures a combined construct of perceived loneliness or social isolation due to the COVID-19 pandemic (Yes=1, No=0), a binary variable derived from the respondent's answer to the single-item question IM_Q10 "Have you experienced any of the following impacts due to the COVID-19 pandemic? Feelings of loneliness or isolation." While loneliness and social isolation are conceptually distinct, the SCMH item does not allow separate identification. Accordingly, results should be interpreted as reflecting a composite measure of perceived social disconnection.

To account for potential confounders (Di Pietro, 2022; Romeu Gordo et al., 2024), the following covariates are included in our multivariate model: age group of respondent (18 to 24 years, 25 to 44 years, 45 to 64

years, 65 years and older), Gender of respondent (Female, Male), Visibility minority (No, Yes), Indigenous identity (Non-Indigenous identity, Indigenous identity), Immigration status (Non-immigrant, Immigrant/Non-permanent resident), Marital status (Married, Living common law, Never married (not living common law), Separated (not living common law), Divorced (not living common law), Widowed (not living common law)), Highest level of education (High school or lower, Post secondary [trade or college certificate], University [Bachelor's degree or higher]), Total household income (Under \$10,000 to \$39,999, \$40,000 to \$79,999, \$80,000 to \$149,999, \$150,000 or more), Number of people in household 18 and over (3 categories: 1, 2, 3 and more), Province, territories of residence of respondent (Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia, Yukon Northwest Territories and Nunavut), Population centre or rural area type (Rural, Urban (Population Centre)), Diagnosed with COVID-19 – Yourself (No, Yes), Worked in past week (No, valid skip, Yes), Sense of belonging to local community (Very strong, Somewhat strong, Somewhat weak, Very weak), Perceived mental health (Poor, Fair, Good, Very good, Excellent).

2.3. Statistical analysis

In the descriptive analysis, we use cross-tabulations and Pearson's chi-square tests to compare the distributions of study participants' background characteristics by loneliness status (Yes or No). In the multivariate analysis, we estimate an adjusted multinomial logistic regression model to assess the independent association between loneliness and changes in household income. Our model allows us to estimate the adjusted effect of each variable while controlling for other factors associated with the outcome. This model is suitable for our categorical outcome variable, which has more than two levels (Long, 1997). The model estimates relative risk ratios (RRRs) with 95% confidence intervals (CIs) for reporting a decrease or an increase in household income relative to no change, comparing those who report loneliness or social isolation to those who do not. The model can be expressed as:

$$\log(P(Y_i = j)/P(Y_i = \text{nochange})) = \beta_0j + \beta_1j \times X_i + \beta_2j \times Z_i, \quad (1)$$

where Y_i is the income change category for individual i ($j = \text{increase or decrease}$), β_0j is the intercept for outcome j , X_i is the loneliness or social isolation indicator, β_1j is the coefficient for loneliness for outcome j , Z_i is the vector of control variables, β_2j is the vector of coefficients for control variables for outcome j . To account for the survey design and ensure the results are representative of the Canadian population, the regression model is weighted by sampling weights provided by Statistics Canada. All analyses are performed using Stata v16.0 (StataCorp, College Station, TX, USA) at the Canadian Research Data Centre Network, University of Lethbridge.

3. Results

For the descriptive analysis, we provide the characteristics of the analytic sample ($n = 7970$) by loneliness status in Appendix Table A1. In the 2021 SCMH, 45.2% of respondents reported feeling lonely or socially isolated due to the COVID-19 pandemic (Appendix Table A1). Among these individuals, 32% reported a decrease in household income, compared to 22.2% among those who did not report loneliness or social isolation (Fig. 1). These figures highlight the prevalence of loneliness or social isolation and its potential association with economic outcomes during the COVID-19 pandemic.

The story becomes relatively straightforward when the background characteristics are considered in a multivariate analysis. Table 1 presents our main results for the multinomial logistic regression predicting changes in household income during the COVID-19 pandemic. The regression analysis results are reported as a relative risk ratio (RRR),

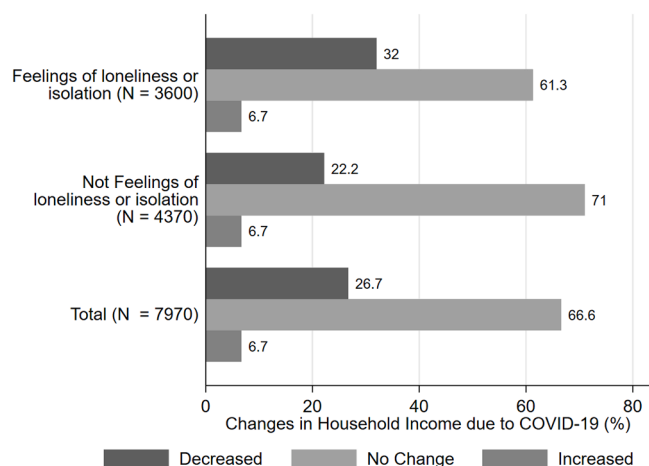


Fig. 1. Self-reported changes in household income by loneliness status due to the COVID-19 pandemic

Note. Unweighted crosstabulation (%) between self-reported changes in household income and loneliness status due to the COVID-19 pandemic. Pearson chi2 test & P-value: Pearson chi2(2) = 97.7212 Pr = 0.000 (See Appendix Table A1).

Source: Statistics Canada. Survey on COVID-19 and Mental Health (SCMH), February to May 2021.

which represents the ratio of the probability of being in one outcome category relative to the reference category.

After accounting for covariates included in this analysis, results indicate that individuals who report loneliness or social isolation are 30% more likely to report a decrease in household income (RRR = 1.30, 95% CI = 1.07–1.59) compared to those reporting no change in household income. No significant association is observed between feelings of loneliness or social isolation and the likelihood of reporting an increase in household income during the pandemic. Additional findings highlight significant associations between loneliness or social isolation and income decreases, compared with no change, in certain subgroups, including visible minorities (vs. non-visible minorities), individuals who self-identify as male (vs. female), those living in households with three or more people (vs. single-person households), and residents of Alberta (vs. Newfoundland and Labrador) (Appendix Table A2).

To further illustrate the results of the multinomial logistic regression model, Figure A1 presents the predicted probabilities of reporting an increase, a decrease, or no change in household income according to whether respondents experienced feelings of loneliness or social isolation during the COVID-19 pandemic. The figure shows that the probability of reporting no change in household income was highest for both groups, although it was lower among respondents reporting loneliness or social isolation (56.1%) than among those who did not (60.6%). In

contrast, respondents experiencing loneliness or social isolation had a higher predicted probability of reporting a decrease in household income (36.6%) than those who did not report loneliness or social isolation (31.3%). The predicted probability of reporting an increase in household income was comparatively low and similar across groups, ranging from approximately 7% to 8% (7.1% among those reporting loneliness/social isolation versus 7.9% among those not reporting it). Overall, the results suggest that feelings of loneliness or social isolation were associated primarily with a greater likelihood of income loss rather than income gain during the pandemic (Figure A1).

4. Discussion

This study examined the association between feelings of loneliness or social isolation and household income disruption among Canadian adults during the COVID-19 pandemic. Using nationally representative data from the 2021 Survey on COVID-19 and Mental Health, we found that individuals reporting loneliness or social isolation were significantly more likely to report a decrease in household income relative to no change, even after accounting for sociodemographic, health, and contextual factors. No significant association was observed between loneliness/social isolation and increased household income. These findings contribute to a growing body of evidence suggesting that loneliness or social isolation is linked not only to mental and physical health outcomes, but also to broader socioeconomic vulnerability.

Our findings are consistent with emerging evidence linking loneliness or social isolation to lower earnings, employment instability, and reduced labor market participation (Bryan et al., 2024a; Bryan et al., 2024b; Kung et al., 2021). The results may also be understood through the study’s conceptual framework, integrating social support theory, the stress process model, and fundamental cause theory. From a social support perspective, loneliness may reflect reduced access to emotional and instrumental resources that help individuals cope with economic shocks (Cohen and Wills, 1985). The stress process model further suggests that loneliness may amplify vulnerability to adverse events such as job loss or reduced work hours during the pandemic (Pearlin et al., 1981). Conversely, fundamental cause theory highlights how socioeconomic disadvantage may itself contribute to psychosocial distress and, in turn, social disconnection (Link and Phelan, 1995), pointing to potentially reciprocal relationships between loneliness and economic hardship (Wister et al., 2023).

Several limitations should be acknowledged. First, the cross-sectional design precludes causal inference and limits the ability to establish temporal order. Second, the key measure combines loneliness and social isolation into a single survey item, preventing separate analyses of these distinct constructs. Third, all measures are self-reported and may be subject to reporting bias. Finally, unmeasured factors, such as pre-pandemic employment instability or personality characteristics, may partially explain the observed associations. Despite these limitations, the findings underscore the importance of considering social

Table 1
Weighted multinomial logistic regression predicting changes in household income during the COVID-19 pandemic.

Independent variables	Decreased vs. no change			Increased vs. no change		
	Relative risk ratio (RRR)	Sig.	95% Confidence Interval	Relative risk ratio (RRR)	Sig.	95% Confidence Interval
Feelings of loneliness or isolation						
No	1		[1.00,1.00]	1		[1.00,1.00]
Yes	1.30	***	[1.07,1.59]	0.99		[0.71,1.39]

Note. Full regression results for all covariates are presented in Appendix Table A2. N= 6867 respondents aged 18+. ***, ** and * indicate significance at the 1%, 5%, and 10% level respectively. Model adjusted for: age group of respondent, gender of respondent, visibility minority, Indigenous identity, immigration status, marital status, highest level of education, total household income, number of people in household 18 and over, province, territories of residence of respondent, population centre or rural area type, Diagnosed with COVID-19 – yourself, worked in past week, sense of belonging to local community, perceived mental health. An RRR above (below) 1 indicates that a change is more (less) likely than no change. (See Appendix Table A2).

disconnection in broader discussions of economic vulnerability during public health crises. Future longitudinal research is needed to better understand the temporal and reciprocal relationships among loneliness, social isolation, and economic outcomes.

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Data availability

Data are available at the Statistics Canada Research Data Centre. For more information, please visit: <https://www.statcan.gc.ca/en/microrodata/data-centres/access>.

Declaration of generative AI in scientific writing

The authors declare that generative AI or AI-assisted technologies were not used in any way to prepare, write, or complete this manuscript.

CRedit authorship contribution statement

Adebiyi G. Boco: Conceptualization, Formal analysis, Methodology, Writing – original draft, Writing – review & editing. **Lars K. Hallstrom:** Funding acquisition, Project administration, Resources, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.jadr.2026.101099](https://doi.org/10.1016/j.jadr.2026.101099).

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