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RESEARCH ARTICLE

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Loneliness and sense of community are not two sides of the same coin: Identifying different determinants using the 2019 Nova Scotia Quality of Life data

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Abstract

The purpose of this study was to explore the relative importance of lifestyle factors and living conditions when predicting loneliness and sense of community (SOC) in a representative sample of 12,871 participants from Nova Scotia collected in 2019. Using multiple regression and measures of relative importance based on the Lindeman, Merenda and Gold (lmg) method, we identified which variables are most important to predicting measures of loneliness and SOC. Twenty-two predictors accounted for 46% of the variance in SOC and the top 10 predictors accounted for 36% of the variance: satisfaction with quality of the natural environment in the neighborhood (ri = 0.09), life satisfaction (ri = 0.05), number of neighbors one can rely on (ri = 0.05), confidence in institutions (ri = 0.05), feeling better off due to government policy or programming (ri = 0.04), feeling safe walking in neighborhood after dark (ri = 0.03), mental health (ri = 0.02), number of friends one can rely on (ri = 0.02), volunteering (ri = 0.02), and perceptions of time adequacy (ri = 0.02). Only six of these variables were also the top predictors of loneliness. These results show that both community- and individual-level variables are substantial predictors of social well-being. The effect sizes differ between models, which suggests that there

may be important predictors of loneliness that we have not accounted for. This study may inform community-level programming and policy that seeks to promote social well-being for individuals and their communities.

KEYWORDS
Canada, loneliness, relative importance, sense of community, well-being

1 | INTRODUCTION

The invisible domains of health (e.g., mental and social) are arguably the most influential in quality of life. Feeling connected to others is an important part of social health thus creating a sense of belonging to something larger than oneself. Social health is the ability to build valuable and meaningful relationships with others and may include social support, social cohesion, or trust in others (Zhang et al., 2019). Past research has identified that human social connection is as important to health and well-being as eating healthy food or engaging in physical activity. Consequently, having little support or weak social connections affects all dimensions of health, and feelings of being lonely are detrimental to well-being. Arising from the global pandemic, social connections and their relation to health and well-being have become a public health topic, with efforts to create national strategies (e.g., the Canadian Institute for Social Prescribing). Understanding which individual and community level factors contribute to both dimensions of social health (i.e., the positive dimension of sense of community (SOC) and the negative dimension of loneliness) is important to not only guide further research, but to inform practice and policy to improve social health within communities. The purpose of this paper is to identify which factors are most important in predicting variance in SOC and loneliness. In the following sections, we define and describe the two main outcome variables (SOC and loneliness), then outline the limitations of previous research on these topics and how we are working to address them with this study, and finally, we provide a theoretical justification for selection of predictive factors before stating our research questions.

1.1 | Loneliness

Loneliness and social isolation are often used synonymously (Victor et al., 2000), although there are conceptual differences (Finlay & Kobayashi, 2018). Social isolation refers to the experience of being disconnected from other people and to society in general (World Health Organization, 2022). Loneliness is the subjective experience (i.e., feeling) of loneliness and comes from unmet social needs (Courtin & Knapp, 2017; Perlman et al., 1984). This is a particularly critical issue for older adults; surveys in Europe and the United States estimate the prevalence of loneliness is upwards of 43% among older adults (Beaumont, 2013; Dykstra, 2009; Perissinotto et al., 2012; Sörensen & Pinquart, 2000). In Nova Scotia, older adults are at risk for feeling lonely if they are older, unmarried, and living in low income; community social support helps mitigate this risk (Smale et al., 2022)

1.2 | Sense of community

SOC is considered a basic human need (Maslow, 1954) for quality of life. Early research identified feelings of belonging to a community as a determinant of psychological well-being (Hagerty & Patusky, 1995) and social

functioning (Hagerty et al., 1996). In Canada, high SOC is associated with better self-assessed health, even after controlling for proxies of socioeconomic status, chronic illness, health behaviors, and stress (Ross, 2002), and low SOC is associated with poor mental health (Michalski et al., 2020). Well-being is an umbrella term that refers to components of individual and collective well-being wherein an individual realizes their own abilities, copes with normal stresses in life, works productively, and contributes to their community (World Health Organization, 2004). The underlying mechanisms between SOC and well-being may be that positive social climate and tight bonds, the sense of having needs fulfilled in one's community, or having help available in case of need (McMillan & Chavis, 1986) all lead to an increase in well-being. The SOC, as defined by McMillan and Chavis (1986), has four elements: membership (e.g., relatedness), a sense of mattering (e.g., influence on others), reinforcement (i.e., integration and fulfillment of needs), and shared emotional connection (e.g., sharing history, places, time, and experiences).

Most previous research has focused on one or two contributing factors to well-being, instead of considering the contribution of multiple factors drawn from many of life's important domains. Generally, data used to examine well-being has tended to be more economic and health-related (and has not included more socio-ecological factors), and regression analyses are typically used to identify important factors in explaining differences in well-being. However, such assessments rarely consider the *relative* importance of the factors. This novel technique allows us to identify what is *most important* to predicting variance in SOC and loneliness, regardless of the order in which the many variables are entered into the model. This is a new development in the well-being field; which tends to rely on regression analysis with a limited number of predictor variables. Hill et al. (2023) were the first to use this method in the well-being science field, but on individual-level well-being rather than social well-being. Relative importance refers to the quantification of an individual regressor's contribution to a multiple regression model (Grömping, 2006) and decomposes overall R^2 into each individual predictor's contributions. The variance in the outcome accounted for by the predictors is decomposed, with the relative importance of each predictor in the overall R^2 for each possible ordering of predictors is averaged (Lindeman et al., 1980). Examining relative importance advances the well-being field by enabling researchers to identify what is *most* important. Thus, situated within well-being science, the purpose of this paper is to identify which of a multiplicity of economic, health, and socio-ecological individual and community-based factors are relatively most important in predicting variations in well-being.

1.3 | Theoretical justification for selection of predictive factors

In Nova Scotia, survey data on well-being metrics exist at the individual and community levels through the Quality of Life Initiative, led by Engage Nova Scotia (ENS; Smale et al., 2020). Based on the community well-being survey created by the Canadian Index of Well-being (CIW) and guided by its conceptual framework, the survey is designed to be used as a lens for decision-making that is situated within the science of well-being (Michalos et al., 2011). The CIW survey measures indicators in eight life domains: community vitality, democratic engagement, education, environment, healthy populations, leisure and culture, living standards, and time use (Michalos et al., 2011). To assess which individual and community factors are most important when predicting variance in well-being, we incorporated only variables that apply to all individuals (i.e., not variables contingent to answering a certain way to a previous question). For example, a measure of work-life balance would be excluded because participants could only respond to such questions if they were employed, but whether or not they are currently employed (yes/no) would be included. Therefore, by including only variables that all individuals had an opportunity to answer, rather than variables that reflected contingency questions, we ensure the sample reflects the general population without imposing any restrictions (i.e., the sample was not a subset of the population based on employment, age, or some other characteristic). Previous analyses on this data set include identifying the relative importance of individual and community factors for

individual well-being (i.e., life satisfaction and life worth; Hill et al., 2023) and on a subset of older adults, assessing determinants and mitigating factors of loneliness among older adults (Smale et al., 2020).

1.4 | Rationale

Uncovering the individual and community factors that shape social well-being is relevant to knowledge generation, policy, and practice. Moving beyond traditional regression analysis, though of relative importance as a general statistical method has been available for some time (Grömping, 2006), it is rarely applied in the well-being field. To our knowledge, this novel analysis technique has not been used for SOC or loneliness. By identifying what factors contribute most strongly to social well-being, we may find that some factors are: (a) policy-amenable and can be acted on to improve well-being at a structural level, and (b) relevant to practitioners and can be acted on to improve well-being at an individual level.

1.5 | Research question

Our primary research question is: Which individual and community factors are most important to predicting loneliness and SOC?

Our secondary research question is: How do the determinants of loneliness differ from the determinants of SOC?

2 | METHODS

Note that this paper on social well-being is archival analysis on the data set, which was used in Hill et al. (2023) on individual-level well-being. This study and that of Hill et al. (2023) conducted archival analysis on the 2019 Nova Scotia Quality of Life data set (Smale & Gao, 2020). Details on the participants, sampling procedure, survey instrument, and data weighting on that original data set are described in Hill et al. (2023) and in Appendix A. To avoid duplication, we describe only the variables and analysis plan for the current study.

2.1 | Selected measures

2.1.1 | Well-being

Well-being was measured with a single-item measure of life satisfaction (i.e., hedonic or evaluative well-being). The 10-point life satisfaction measure asks, "How satisfied are you with your life in general?" and provides two anchor labels (1 = very dissatisfied, 10 = very satisfied).

2.1.2 | Community vitality

Perceived neighborhood safety

Perceptions of being safe from crime in one's neighborhood after dark was measured on a 7-point scale (1 = very unsafe, 7 = very safe) in response to the question, "How safe from crime do you feel walking alone after dark in your neighborhood?"

Membership to a faith-based group

Belonging to a faith-based group was measured on a dichotomized scale (0 = No, 1 = Yes) in response to the question, "In the past 12 months, were you a member of, or a participant in, a faith-based group?"

Volunteer status

Volunteer status was measured on a dichotomized scale (0 = No, 1 = Yes) in response to the question, "In the past 12 months, did you do any unpaid volunteer work for any organization?"

Number of close relationships

Three variables related to social support were selected for inclusion in the analysis. number of close relatives (How many relatives (including uncles, aunts, cousins) do you have who you feel close to, that is, who you can feel at ease with, can talk to about what is on your mind, or call on for help?), number of close friends (How many friends do you have, that is, people who are not your relatives, but who you feel at ease with, to talk about what is on your mind, or call on for help?), and number of neighbors close enough to ask a favor (How many people in your neighborhood do you know well enough to ask for a favor?). An upper limit of 100 was applied to these social support variables to maintain data integrity.[1]

Confidence in systems

A measure of confidence in systems was created by combining participants' responses to four items indicating how much confidence they had in various institutions (e.g., justice system, courts, and school system). Items were measured using a 7-point scale ranging from 1 (No confidence at all) to 7 (A great deal of confidence), and the composite measure was created by calculating a mean score with higher scores reflecting greater confidence. A confirmatory factor analysis indicated that these items could be combined into a value reflecting a one-factor confidence in systems score with good internal consistency ($\alpha = 0.80$; see Supporting Information).

Trust in others

A measure of trust in others was created by combining participants' responses to nine items indicating how much trust they held in institutions (e.g., media and federal government) and others (e.g., people at work/school). Items were measured using a 7-point scale ranging from 1 (Cannot be trusted at all) to 7 (Can be trusted a lot), and the composite measure was created by calculating a mean score with higher scores reflecting greater trust. A confirmatory factor analysis indicated that these items could be combined into a value reflecting a one-factor trust score with good internal consistency ($\alpha = 0.84$; see Supporting Information).

Loneliness

To measure subjective feelings of loneliness, we used three items from the University of California (UCLA) 3-item loneliness scale: "I often feel that I lack companionship, "I often feel left out," and "I often feel isolated from others in the community" (Hughes et al., 2004) on a 7-point scale (1 = very strongly disagree; 7 = very strongly agree). A composite measure was calculated based on the mean score on all three items, with higher scores representing higher loneliness. The 3-item loneliness scale is one of the more prominent measures used by researchers (Baarck et al., 2021).

Sense of community scale

A previously validated 12-item SOC scale (Prezza et al., 2009) was adopted for this study. Participants' responses to the items comprising this scale were measured on a 7-point Likert scale from 1 (Very strongly disagree) to 7 (Very strongly agree). A sample item is, "I feel at ease with the people in my community." All 12 items are listed in full in

[1]An arbitrary upper limit of 100 was imposed on the three items measuring number of relatives, friends, and neighbors, as values higher than this are both implausible and extreme multivariate outliers. In each instance, less than 0.5% of the sample reported more than 100 persons.

the Supporting Information. For the current sample, the scale has good internal consistency ($\alpha = 0.88$), which is identical to the original validation ($\alpha = 0.88$; Prezza et al., 2009).

2.1.3 | Healthy populations

Self-assessments

Both self-rated physical health and self-rated mental health were measured on a 5-point scale (1 = poor, 5 = excellent) in response to the questions, "In general, how would you say your physical health is?" and "In general, how would you say your mental health is?"

Physical exercise

Engagement in physical exercise was measured on a 7-point Likert scale (1 = very strongly disagree, 7 = very strongly agree) in response to the statement, "In the past week, I engaged in good quality exercise."

2.1.4 | Time use

Time adequacy scale

A previously validated Time Adequacy scale (Moen et al., 2008) was adapted in two ways for this study. First, due to our interest in including only predictor variables that were noncontingent on any other variable (i.e., that all participants can provide a response for), we removed the item, "to be with the children you live with" because participants without children could not provide a response to this item. Moreover, based on feedback from stakeholders in the Nova Scotia Quality of Life Initiative, the original item—"time to nurture your spiritual and/or creative side"—was split into separate items (i.e., "time to nurture your spiritual slide" and "time to nurture your creative side"). Thus, we created a time adequacy score from 12 out of 13 items reflecting survey questions asking about the degree to which time devoted to certain activities was adequate (e.g., "To participate in or be active in your community"). Items were measured on a 10-point scale ranging from 1 (Not at all enough) to 10 (Almost always enough). A composite score was created by averaging all 12 items together. See Supporting Information for a summary of a confirmatory factor analysis demonstrating a unidimensional factor structure and a list of all items. The original time adequacy scale (Moen et al., 2008) had good internal consistency ($\alpha = 0.89$) and internal consistency was excellent in the present data set ($\alpha = 0.97$).

Democratic engagement

Perceived benefit from public policy. Perceived benefit from public policy was measured on a 7-point scale (1 = much worse off, 7 = much better off) in response to the question, "Have the programs and services of the local government (municipal, band, and/or regional) made you better off?"

2.1.5 | Environment

Satisfaction with quality of natural environment

Participants' satisfaction with quality of natural environment was measured on a 7-point Likert-type scale (1 = very dissatisfied, 7 = very satisfied) in response to the question, "How satisfied are you with the quality of the natural environment in the neighborhood in which you live?"

2.1.6 | Living standards

Financial insecurity scale

A measure of financial insecurity was created by combining participants' responses to eight items indicating how frequently their financial security was threatened in the past year (e.g., "I could not pay my bills on time"). Items were measured using a 5-point scale ranging from 1 (never) to 5 (at least once a month) and the composite measure was created by calculating a mean score with higher scores reflecting greater financial insecurity. A confirmatory factor analysis indicated that these items could be combined into a value reflecting a one-factor financial insecurity score with good internal consistency ($\alpha = 0.88$; see Supporting Information).

2.1.7 | Demographic variables

Nine demographic variables were included in the analysis. *Age* was measured as a continuous variable, in years. *Annual household income* was measured using ten groupings ranging from less than $10,000–$150,000 and higher. *Highest education level completed* was measured using six groupings starting with elementary school and ending with a graduate degree. *Proportion of lifetime spent in Canada* was calculated as age divided by years spent in Canada. Other demographic variables included were dichotomous and measured as binary variables: *gender* (i.e., male = 0 or female = 1), *immigrant status* (i.e., whether the participant was born in Canada =1 or not =0), *employment status* (i.e., works for pay =1 or not = 0), *parental status* (i.e., having at least one child = 1 or not = 0), *relationship status* (i.e., having a partner = 1 or not =0), and *disability status* (i.e., living with a disability or chronic condition = 1 or not = 0).

Variable selection process

In a previous analysis, Hill et al. (2023) assessed the relevance of each variable collected within the NS Quality of Life survey to identify variables that (a) had a compelling amount of literature suggesting influence on well-being and (b) were noncontingent on any other variable (i.e., did not involve skip logic or responses of "non-applicable"). Before analysis, a list of 31 variables was identified (see Supporting Information) and discussions with co-authors regarding the relevance of selected variables led to a consensus of 22 variables. In some instances, some variables were modified to simplify their meaning and use in the subsequent analyses. For example, originally, individual variables measured the number of kids by four age groupings; they created a dichotomized variable reflecting if someone had at least one child under 18 years of age living at home or none. In the present paper, we use the same 22 variables that have been previously associated with individual-level well-being (life satisfaction and life worth; Hill et al., 2023).

Data analysis plan

The comprehensive nature of this data set means that we were not limited to null hypothesis significance testing based on the available variables; instead, we are able to incorporate numerous predictor variables with the aim of focusing on effect size and relative importance. This data set allows us to move beyond merely testing the presence/absence of non-zero relationships to instead focus on the practical significance of various predictors of well-being. Descriptive statistics were calculated based on the data weighted by age, sex, and region to better represent the population of the regions and provinces of Nova Scotia (see Table 1). The primary analyses were then conducted without applying population weights to avoid inflating test statistics.

Data were analyzed using R (version 4.0.5). Multiple linear regression was used to predict loneliness and SOC in separate models. Given the large sample size and number of potential predictors in the data set, identifying the relative importance of each predictor is more informative than relying on traditional null hypothesis significance testing metrics. Relative importance refers to the quantification of an individual regressor's contribution to a multiple regression model (Grömping, 2006) and decomposes overall R^2 into each individual predictor's

TABLE 1 Descriptive statistics.

Domain Variable	*M*	SD	%
Demographics			
Age	50.30	17.35	
Annual household income			
Works for pay			62.1
Has children			66.6
Highest education level			
Elementary school			3.0
High school			20.1
Trade/apprentice college			19.9
College diploma			17.1
University degree			26.3
Graduate degree			13.6
Proportion of life spent in Canada			96.6
Born in Canada			92.4
Has a partner			93.1
Sex at birth			
Female			52.1
Male			47.9
Reports a disability and/or chronic illness			26.0
Annual Household Income			
Less than $10,000			5.2
$10,000–$19,999			4.3
$20,000–$29,999			7.5
$30,000–$39,999			7.9
$40,000–$59,999			15.7
$60,000–$79,999			14.6
$80,000–$99,999			12.5
$100,000–$119,999			10.5
$120,000–$149,999			9.7
$150,000 and higher			12.0
Community vitality			
Number of close relatives	5.84	5.64	
Number of close friends	4.86	4.56	

(Continues)

TABLE 1 (Continued)

Domain Variable	*M*	SD	%
Number of neighbors known well enough to ask a favor	4.17	4.60	
Overall Sense of Community scale	4.71	0.89	
Overall Loneliness scale	3.26	1.58	
Feeling of safety alone in neighborhood at dark	5.63	1.50	
Volunteered in past 12 months			52.1
Member of a faith-based group			20.4
Healthy populations			
Self-rated physical health	3.33	0.97	
Engagement in physical exercise	4.67	1.60	
Self-rated mental health	3.41	1.00	
Time use			
Time adequacy scale	7.00	2.40	
Democratic engagement			
Perception of benefiting from government policy	4.42	1.22	
Environment			
Satisfaction with quality of natural environment	5.29	1.41	
Living standards			
Financial insecurity	1.42	0.79	

Note: Descriptive statistics are presented with population weighting applied, meaning that proportions are presented as percentages without frequency counts. These values have been adapted with permission from Table 1-J10 of the first survey report from Engage NS (Smale et al., 2020).

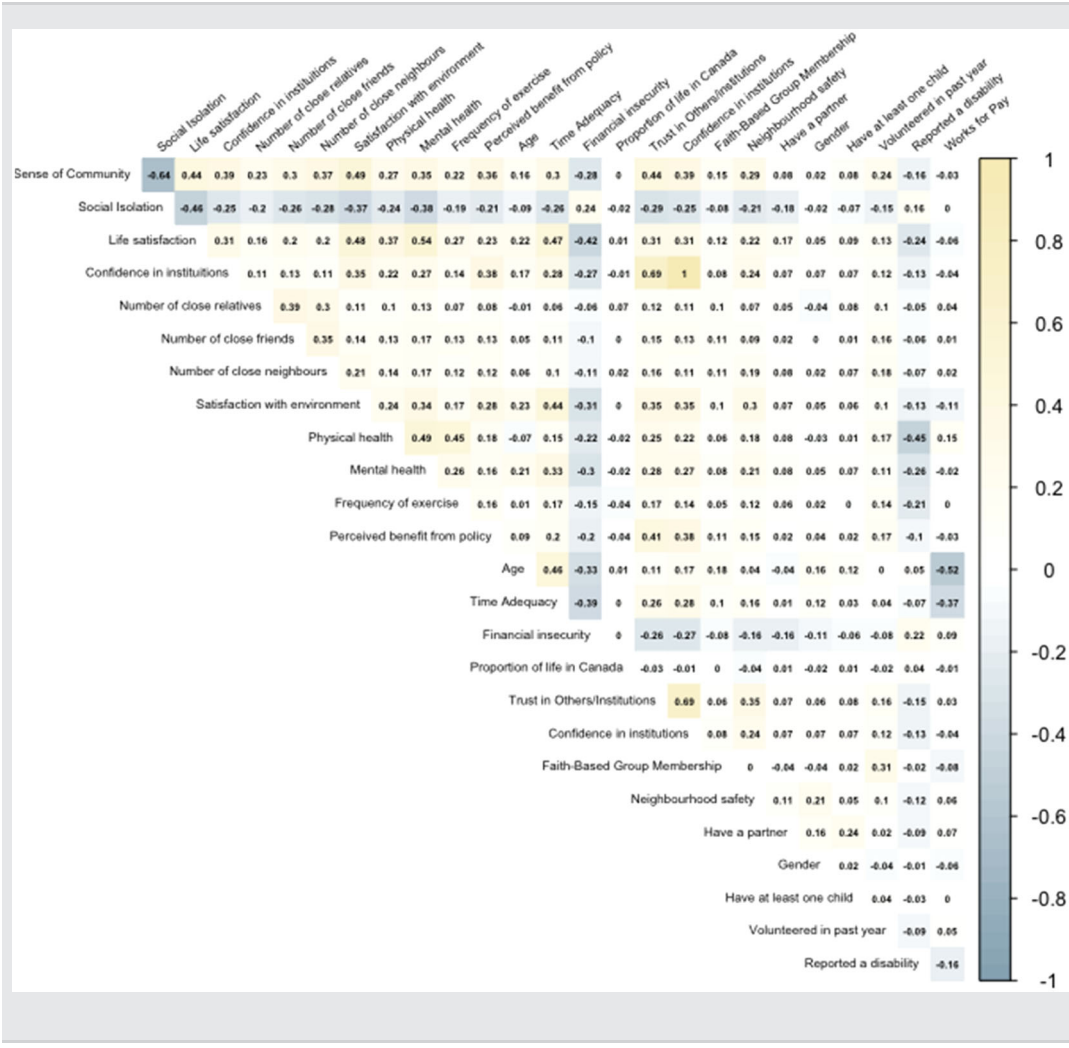
contributions. The variance in the outcome accounted for by the predictors is decomposed, with the relative importance of each predictor in the overall R^2 for each possible ordering of predictors being averaged (Lindeman et al., 1980). For effect sizes, we relied on semi-partial squared correlations (sp^2) and measures of relative importance using the Lindeman, Merenda and Gold (lmg) method in Grömping's (2006) relaimpo() package in R. Semi-partial correlations represent the proportion of unique variance in the outcome accounted for by each predictor. Relative importance is a decomposition of the total R^2 for each variable such that coefficients sum to R^2; in other words, relative importance is the proportion of the total R^2 contributed by each predictor.

3 | RESULTS

3.1 | Bivariate correlations

Bivariate correlations are presented in Table 2. Both dimensions of social well-being (i.e., loneliness and SOC) were significantly associated with all variables. Associations with social well-being varied by predictor (*r*s range from −0.28 to 0.44). In general, the predictor variables were moderately correlated with each other as one would

TABLE 2 Bivariate correlations between study variables.



Note: Yellow represents positive correlations and blue represents negative correlates. *$p < 0.05$.

expect, but none of the correlations were strong enough to raise concerns over multicollinearity (i.e., had simple bivariate correlations less than 0.70) and therefore each factor made relatively unique contributions in explaining variations in wellbeing

3.1.1 | Model 1. Multiple regression predicting loneliness

Our first regression model was built to predict loneliness based on 22 independent variables (see Table 3). We used relative importance (ri) to identify which variables predicted the most variance in the outcome. Collectively, the 22 variables predicted more than one third of the variance in loneliness ($R^2 = 0.32$), mainly due to the relative importance of six variables ($R^2 = 0.22$): mental health (ri = 0.04), life satisfaction (ri = 0.08), satisfaction with quality of the natural environment in the neighborhood (ri = 0.02), number of neighbors one can rely on (ri = 0.02), number of friends one can rely on (ri = 0.02), and perceptions of time adequacy (ri = 0.02).

TABLE 3 Multiple regression model predicting loneliness.

	Loneliness					Relative
Coefficient	***B***	***β***	**95 CI *B***	**95% CI *β***	***p***	**importance**
Intercept	6.70	−0.00	6.42–6.97	−0.02 to 0.02	**<0.001**	0.04
Mental health	−0.19	−0.14	−0.22 to −0.16	−0.16 to −0.12	**<0.001**	0.01
Time adequacy	−0.01	−0.03	−0.03 to −0.00	−0.05 to −0.00	**0.028**	0.01
Confidence in institutions	−0.13	−0.14	−0.15 to −0.11	−0.16 to −0.12	**<0.001**	0.04
Satisfaction with quality of natural environment	−0.14	−0.24	−0.16 to −0.13	−0.26 to −0.21	**<0.001**	0.08
Life satisfaction	−0.00	−0.00	−0.03 to 0.03	−0.02 to 0.02	0.880	0.01
Financial security	0.05	0.04	0.02–0.08	0.01–0.06	**0.002**	0.01
Physical health	−0.02	−0.02	−0.03 to −0.00	−0.04 to −0.00	**0.015**	0.01
Physical exercise	−0.10	−0.08	−0.13 to −0.07	−0.11 to −0.06	**<0.001**	0.01
Has a partner	0.01	0.01	−0.02 to 0.03	−0.02 to 0.03	0.541	0.01
Disability status	−0.29	−0.10	−0.35 to −0.24	−0.12 to −0.08	**<0.001**	0.01
Benefit from policy	0.04	0.01	−0.02 to 0.09	−0.01 to 0.03	0.195	0.03
Neighborhood safety	−0.03	−0.03	−0.05 to −0.01	−0.05 to −0.01	**0.002**	0.01
Age	−0.02	−0.02	−0.04 to −0.00	−0.04 to −0.00	**0.017**	0.02
Friends	0.00	0.05	0.00–0.01	0.03–0.08	**<0.001**	0.03
Neighbors	−0.02	−0.08	−0.02 to −0.01	−0.10 to −0.06	**<0.001**	0.01
Relatives	−0.02	−0.11	−0.03 to −0.02	−0.13 to −0.09	**<0.001**	0.01
Work for pay	−0.00	−0.03	−0.01 to −0.00	−0.05 to −0.01	**0.004**	0.01
Volunteer status	−0.10	−0.04	−0.14 to −0.05	−0.06 to −0.02	**<0.001**	0.01
Has kids	−0.02	−0.01	−0.07 to 0.03	−0.03 to 0.01	0.473	0.01
Faith-based group membership	0.03	0.01	−0.02 to 0.08	−0.01 to 0.03	0.232	0.01
Time in Canada	0.00	0.00	−0.05 to 0.06	−0.02 to 0.02	0.855	0.01
Gender	0.04	0.02	−0.00 to 0.08	−0.00 to 0.03	0.080	0.01
R^2	0.32					

Note: Bold values are statistically significant at $p = 0.05$. B = unstandardized coefficient; β = standardized coefficient.

3.1.2 | Model 2. Multiple regression predicting sense of community

Our first regression model was built to predict SOC based on 22 independent variables. We used relative importance (ri) to identify which variables predicted the most variance in the outcome. Collectively, the 22 variables predicted almost half of the variance in SOC ($R^2 = 0.46$), mainly due to the relative importance of ten variables ($R^2 = 0.36$): satisfaction with quality of the natural environment in the neighborhood (ri = 0.09), life satisfaction (ri = 0.05), number of neighbors one can rely on (ri = 0.05), confidence in institutions (ri = 0.05), feeling better off due to government policy or programming (ri = 0.04), feeling safe walking in neighborhood after dark (ri = 0.03), mental

health (ri = 0.02), number of friends one can rely on (ri = 0.02), volunteering (ri = 0.02), and perceptions of time adequacy (ri = 0.02) (Table 4).

A comparison of relative importance between the two models predicting variance in social well-being is presented in Table 5, showing that both measures of social well-being share many top predictors. Of note, these predictors accounted for less variance in SOC than in loneliness, and some predictors contributed to SOC but not to loneliness (i.e., confidence in institutions, perceived benefit from government, feeling safe in neighborhood after dark, and volunteer status; see Table 2).

TABLE 4 Multiple regression model predicting sense of community.

	Sense of community					Relative
Coefficient	***B***	***β***	**95 CI *B***	**95 CI *β***	***p***	**importance**
Intercept	1.57	0.00	1.40–1.75	−0.02 to 0.02	**<0.001**	
Mental health	0.05	0.05	0.03–0.07	0.03–0.07	**<0.001**	0.03
Time adequacy	−0.00	−0.00	−0.01 to 0.01	−0.02 to 0.02	0.731	0.02
Confidence in institutions	0.16	0.23	0.15–0.18	0.22–0.25	**<0.001**	0.04
Satisfaction with quality of natural environment	0.05	0.12	0.04–0.06	0.10–0.14	**<0.001**	0.09
Life satisfaction	−0.02	−0.02	−0.04 to −0.00	−0.04 to −0.00	**0.050**	0.05
Financial security	−0.02	−0.02	−0.04 to 0.00	−0.04 to 0.00	0.088	0.02
Physical health	0.03	0.05	0.02–0.04	0.03–0.07	**<0.001**	0.02
Physical exercise	0.12	0.15	0.11–0.14	0.13–0.17	**<0.001**	0.02
Has a partner	0.03	0.05	0.02–0.05	0.03–0.07	**<0.001**	0.01
Disability status	−0.01	−0.01	−0.05 to 0.02	−0.02 to 0.01	0.431	0.01
Benefit from policy	−0.03	−0.01	−0.06 to 0.01	−0.03 to 0.00	0.110	0.04
Neighborhood safety	0.08	0.12	0.07–0.10	0.10–0.13	**<0.001**	0.05
Age	0.03	0.06	0.02–0.04	0.04–0.07	**<0.001**	0.91
Friends	0.00	0.03	0.00–0.00	0.01–0.05	**0.013**	0.03
Neighbors	0.01	0.09	0.01–0.02	0.07–0.10	**<0.001**	0.05
Relatives	0.03	0.17	0.02–0.03	0.15–0.18	**<0.001**	0.01
Work for pay	0.00	0.02	0.00–0.00	0.01–0.04	**0.007**	0.01
Volunteer status	0.14	0.08	0.11–0.17	0.07–0.10	**<0.001**	0.02
Has kids	0.02	0.01	−0.02 to 0.05	−0.01 to 0.03	0.285	0.01
Faith-based group membership	0.02	0.01	−0.01 to 0.05	−0.00 to 0.03	0.150	0.01
Time in Canada	0.04	0.02	0.01–0.08	0.00–0.04	**0.012**	0.01
Gender	−0.05	−0.03	−0.08 to −0.02	−0.05 to −0.01	**<0.001**	0.01
R^2	0.46					

Note: Bold values are statistically significant at $p = 0.05$. B = unstandardized coefficient; β = standardized coefficient.

TABLE 5 Comparison of relative importance of independent variables predicting variance in loneliness and sense of community.

Variable	Loneliness	Sense of community
Environment satisfaction	**0.08**	**0.09**
Life satisfaction	**0.05**	**0.06**
Number of relatives	**0.05**	**0.05**
Confidence in institutions	**0.03**	**0.05**
Benefit from policy	**0.02**	**0.04**
Neighborhood safety	**0.02**	**0.04**
Mental health	**0.02**	**0.03**
Number of friends	**0.02**	**0.03**
Volunteer status	**0.02**	**0.03**
Time adequacy	0.01	**0.02**
Financial security	0.01	**0.02**
Physical health	0.01	**0.02**
Physical exercise	0.01	**0.02**
Number of relatives	0.01	**0.02**
Age	0.01	0.01
Faith-based group membership	0.01	0.01
Disability status	0.01	0.01
Has kids	0.01	0.01
Has a partner	0.01	0.01
Works for pay	0.01	0.01
Gender	0.01	0.01
Time in Canada	0.01	0.01
R^2	0.32	0.46

Note: Bold values are statistically significant at $p = 0.05$. Variables are presented in order of size of relative importance value for sense of community.

4 | DISCUSSION

The purpose of this paper was to identify which variables are most important when predicting variance in social well-being, building on previous results for individual well-being (Hill et al., 2023). Traditionally, studies on well-being have been limited by sampling strategy (e.g., convenience sampling leading to an unrepresentative sample); we were granted the opportunity to assess well-being in a largely unexplored data set, unique in size and scope, representative of a major Canadian province, and grounded in well-being science framework. Given the large sample size and number of potential predictors in the data set, identifying the relative importance of each predictor is more informative than relying on traditional null hypothesis significance testing metrics.

We analyzed the relative importance of dozens of predictor variables to predict as much variance in social well-being as possible. We accounted for almost half of the variance in SOC. In particular, the top 10 predictors

accounted for most of the variance, suggesting that both community-level (i.e., neighborhood environment satisfaction, connection to neighbors, confidence in institutions, and feelings of safety) and individual-level (i.e., life satisfaction, perceived benefit from government, mental health, volunteering, friendship, and time adequacy) variables are substantial predictors of social well-being. Top predictors of loneliness were also top predictors of SOC, although a number of variables were uniquely important for SOC and were not predictive of loneliness, suggesting there are more factors that contribute to positive social well-being (SOC) rather than negative (loneliness).

In the following section, we discuss the top predictors of variation in social well-being in order of their relative importance for SOC, starting with the top predictor and ending with a summary of findings and discussion of limitations and future directions.

4.1 | Satisfaction with quality of natural environment

As the top predictor of both SOC and lower loneliness, feeling satisfied with the quality of the environment in which you live is an important determinant of quality of life. Previously, neighborhood satisfaction has been linked to mental health and well-being (Leslie & Cerin, 2008), where positive perceptions of the neighborhood promote mental health. Our findings show that the importance of satisfaction with quality of natural environment for SOC is two times greater than the importance of self-rated mental health. Appreciating the neighborhood environment may also lead to increased SOC by providing inspiration to connect with neighbors (e.g., neighborhood walks). Satisfaction with quality of natural environment contributed more to increased SOC relative to decreasing loneliness, suggesting that positive neighborhood characteristics (e.g., green space, low noise level, cleanliness) bolster feelings of connection to neighbors more than reducing feelings of loneliness and loneliness. Neighborhood perceptions, such as connectedness to nature, have been linked to well-being (Mayer & Frantz, 2004). Moreover, SOC has been identified as an underlying mechanism connecting satisfaction with neighborhood characteristics (e.g., green space, parks) and overall well-being (Zhang et al., 2021). These relationships may be particularly important for residents living in resource-rich, mainly rural regions such as Nova Scotia. That is, environment satisfaction may have been especially influential for SOC because Nova Scotia is a largely rural region with easy access to the natural environment.

4.2 | Life satisfaction

Our results show that life satisfaction was the second most important contributor to a feeling a SOC and to lower loneliness, although slightly more important for SOC. Further, life satisfaction was associated with SOC (Hombrados-Mendieta et al., 2013) and not with ill-being (Au et al., 2020), highlighting the way in which general well-being is more important to SOC than to lower loneliness. The importance of life satisfaction for SOC and low loneliness is comparable to Hill et al.'s (2023) report of how important SOC and loneliness are for life satisfaction, which indicates a bidirectional relationship.

4.3 | Mental health

Self-rated mental health was the strongest predictor of variance in both dimensions of social well-being, relative to the entire set of independent variables. Well-being and mental health are separate but related constructs (Cloninger, 2006) in that well-being refers to an overall sense of how life is going which is subject to daily fluctuations (Waterman, 2007) and mental health reflects a spectrum of functioning that shapes one's ability to

handle stress, make decisions, and cope with the ups and downs of daily life (Orpana et al., 2016). Mental health and well-being may bi-directionally influence one another; maintaining positive mental health may lead to a sense of well-being (such as feeling connected to others), and vice versa, enjoying a sense of well-being may be a protective factor against poor mental health. However, previous analysis demonstrated that mental health's contribution to individual well-being is two to three times greater than both dimensions of social well-being (Hill et al., 2023).

4.4 | Neighbor and friend connections

Feeling that a neighbor can be relied upon as an important predictor of both SOC and lower loneliness. Interestingly, neighbor connections were two times as important as friendship connections, which extends with our finding of how important neighborhood satisfaction is for SOC, suggesting it is not just the environmental quality of the neighborhood that is important but the connections that exist within them. Community well-being programs have been designed to increase connections among neighbors and have improved overall well-being (Cruwys et al., 2022). These programs were particularly important during the COVID-19 pandemic, as improving SOC was a key upstream effort for population well-being (Jewett et al., 2021). Interestingly, Hill et al. (2023) found that social connections (friends, neighbors, or relatives) were not an important predictor of individual well-being; they seem only relevant to social well-being. Smale et al. (2020, 2022) found that for older Nova Scotians, community social support is a major driver of lower feelings of loneliness.

4.5 | Confidence in systems

Confidence in systems (i.e., police, justice system and courts, school and health care systems) was a strong predictor for both SOC and loneliness in this pre-pandemic data set. The pandemic highlighted the relationship between SOC and confidence in healthcare services and government. A qualitative study examined the experiences of Nova Scotians related to public health measures during the pandemic and highlighted communication, coming together as a community, navigating public health measures, and vaccine confidence (Steenbeek et al., 2022). Confidence in systems is tied to social capital, which is associated with sense of belonging (Ahn & Davis, 2020). Confidence in systems may boost pride related to membership. For example, Steenbeek et al. (2022) identified that provincial pride was related to uptake of public health measures. Interestingly, lack of confidence in systems was found to be associated with loneliness in the current study.

4.6 | Perceived benefit of government

Perceptions related to the benefit of local government programs/services were a strong predictor for SOC and loneliness. Interestingly, previous analysis has shown this variable is not related to individual well-being (Hill et al., 2023), despite the individualistic nature of the question about individual benefit. This association highlights that perceived individual benefits from services can play a role in enhancing SOC and belonging. Although the mechanism of this relationship is not understood, participating in government programs/services may enhance community participation. Furthermore, people may feel cared for by their local government if they perceive benefit from local government programs/services.

4.7 | Volunteering

Volunteering was particularly important for building a SOC but did not contribute to lower loneliness. Previous analysis on older adults in these data showed that engaging in leisure, recreational, and cultural opportunities in the

community lowers the risk of loneliness (Smale et al., 2020). Encouraging volunteering among the general population may be a particularly promising strategy to improve SOC as well as reduce loneliness in older adults. Volunteering seems to be more important for social well-being than individual well-being; those who volunteered in the previous 12 months were not more likely to have high satisfaction with life or feelings of life worth in Hill et al.'s (2023) previous work.

4.8 | Time adequacy

Feeling one has enough time for daily life activities (e.g., meal preparation, exercise), self-care (e.g., nurturing spiritual side), and spending time with others, was the final top predictor of both dimensions of social well-being. In other words, time adequacy was a major driver of feeling a SOC and low loneliness, but to a lesser extent than neighborhood or general life satisfaction. Having a sense of time adequacy and the autonomy to choose how to spend it has been identified as substantial determinant of well-being (Bhattacharjee & Mogilner, 2014; Mogilner & Norton, 2016; Mogilner et al., 2018). In Nova Scotians, time adequacy has been identified as a top predictor of individual well-being, second to neighborhood satisfaction (Hill et al., 2023).

In sum, our results suggest that both community-level (i.e., satisfaction with quality of natural environment, connection to neighbors, confidence in institutions, feelings of safety) and individual-level (i.e., life satisfaction, perceived benefit from government, mental health, volunteering, friendship, and time adequacy) variables are substantial predictors of social well-being, and particularly SOC. Though they are still the strongest predictors, the overall effect sizes for loneliness were smaller, suggesting there are other experiences, life circumstances, and living conditions that contribute to feelings of being lonely beyond the factors identified here. Loneliness may be more strongly associated with factors not included in this analysis, such as living rurally or low participation in the community (i.e., leisure, recreation, culture, and arts). A key takeaway from this study is that neighborhood attributes (satisfaction with environment, connections to neighbors) seem to be particularly influential in contributing to SOC. Researchers have proposed that neighborhood identification, in which a person feels a sense of subjective self-definition and affiliation from their local place-based community (Fong et al., 2019), is key to the social identity approach to understanding the importance of social relationships in well-being.

There are more factors that contribute to feeling a SOC than there are that contribute to feeling lonely. Knowing these factors allows for targeted efforts to improve social health. Since there are stronger determinants of SOC than loneliness, efforts should be allocated accordingly.

4.9 | Limitations and future directions

While relative importance analysis is a valuable tool for quantification of an individual regressor's contribution to a multiple regression model (Grömping, 2006), it has limitations. In general, relative importance analysis will work better than traditional regression weights in terms of correctly partitioning variance in the presence of large correlations among the independent variables (i.e., collinearity; Tonidandel & LeBreton, 2011). However, like any cross-sectional multiple regression model, in specifying a single outcome variable, the model fails to account for potentially complex interactions, indirect effects, and causal relationships among the predictors. Thus, we can describe which variables predict the most variance in social well-being, but cannot learn much about the mechanisms behind such correlations. If intercorrelations among predictors are due to construct overlap (rather than causal relationships), such intercorrelations may artificially minimize the overall importance of a particular variable because the overall importance of that variable will be partitioned by the redundant predictors (Stadler et al., 2017).

Research rooted in community well-being is emerging, particularly as the global pandemic restricted many within their communities. Periodical surveying and monitoring of social well-being in representative samples will help keep the evidence base accurate and up to date, inform more specific research avenues in social well-being, and build on baseline knowledge of pre-pandemic knowledge. In particular, inclusive surveying that offers participants the opportunity to report their own demographic characteristics (e.g., sexual orientation, gender identity) rather than choose from a pre-defined list of categories would be important to capturing diversity in data. Given the limitations of multiple regression, future research might analyze data using network analysis (Borsboom & Cramer, 2013) which would allow for a more nuanced examination of the interrelationships between predictors. As part of our variable selection process, we chose variables that were theoretically linked to social well-being and noncontingent on any other variable. This means we might have missed out on some variables that are important to social well-being (not to mention policy-amenable or practice-relevant), such as access to leisure and recreation. Finally, building on these findings to uncover which individual and community factors are associated with loneliness more than SOC would paint a more holistic picture of social well-being than what this study currently can.

5 | CONCLUSION

This study utilized a novel method to assess the relative importance of individual and community factors in predicting variance in two dimensions of social well-being. We learned that both community-level (i.e., neighborhood environment satisfaction, connection to neighbors, confidence in institutions, and feelings of safety) and individual-level (i.e., life satisfaction, perceived benefit from government, mental health, volunteering, friendship, and time adequacy) variables are substantial predictors of social well-being, which may inform community-level programming and policy that seeks to promote wellness. Moving beyond just identifying predictors of social well-being, this paper investigates what is most important to social well-being, which provides new insights into the multi-level determinants of social well-being, at the individual and community level in a large, representative sample. We believe this paper makes a valuable contribution toward understanding what matters most for social well-being. In conclusion, focusing on improving quality of neighborhood's natural environment, connection between neighbors, confidence in institutions, feelings of safety walking in the neighborhood after dark, and volunteering opportunities) may help improve social well-being overall.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article which is based on secondary analysis of a local data set available to universities and government organizations in the region.

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PEER REVIEW

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REFERENCES

Ahn, M. Y., & Davis, H. H. (2020). Sense of belonging as an indicator of social capital. *International Journal of Sociology and Social Policy*, *40*(7/8), 627–642.

Baarck, J., Balahur, A., Cassio, L., d'Hombres, B., Pasztor, Z., & Tintori, G. (2021). *Loneliness in the EU. Insights from surveys and online media data. EUR 30765 EN, European Union*. Publications Office of the European Union. https://doi.org/10.2760/46553

Beaumont, J. (2013). *Measuring national well-being–older people and loneliness*. Office for National Statistics.

Bhattacharjee, A., & Mogilner, C. (2014). Happiness from ordinary and extraordinary experiences. *Journal of Consumer Research*, *41*(1), 1–17. https://doi.org/10.1086/674724

Borsboom, D., & Cramer, A. O. J. (2013). Network analysis: An integrative approach to the structure of psychopathology. *Annual Review of Clinical Psychology*, *9*, 91–121.

Canadian Index of Well-being (CIW). (2016). *How are Canadians really doing? The 2016 CIW national report*. Canadian Index of Well-being and University of Waterloo.

Courtin, E., & Knapp, M. (2017). Social isolation, loneliness and health in old age: A scoping review. *Health & Social Care in the Community*, *25*(3), 799–812.

Cruwys, T., Fong, P., Evans, O., & Rathbone, J. A. (2022). A community-led intervention to build neighbourhood identification predicts better wellbeing following prolonged COVID-19 lockdowns. *Frontiers in Psychology*, *13*, 1030637.

Dykstra, P. A. (2009). Older adult loneliness: Myths and realities. *European Journal of Ageing*, *6*, 91–100.

Finlay, J. M., & Kobayashi, L. C. (2018). Social isolation and loneliness in later life: A parallel convergent mixed-methods case study of older adults and their residential contexts in the Minneapolis metropolitan area, USA. *Social Science & Medicine*, *208*, 25–33.

Fong, P., Cruwys, T., Haslam, C., & Haslam, S. A. (2019). Neighbourhood identification and mental health: How social identification moderates the relationship between socioeconomic disadvantage and health. *Journal of Environmental Psychology*, *61*, 101–114.

Grömping, U. (2006). Relative importance for linear regression in R. The package relaimpo. *Journal of Statistical Software*, *17*(1), 1–27. https://doi.org/10.18637/jss.v017.i01

Hagerty, B. M., Williams, R. A., Coyne, J. C., & Early, M. R. (1996). Sense of belonging and indicators of social and psychological functioning. *Archives of Psychiatric Nursing*, *10*(4), 235–244.

Hagerty, B. M. K., & Patusky, K. (1995). Developing a measure of sense of belonging. *Nursing Research*, *44*(1), 9–13.

Hill, T. G., Mackinnon, S. P., & Smale, B. (2023). Relative importance of individual and community predictors of wellbeing. *International Journal of Community Well-Being*, *6*, 279–299.

Hombrados-Mendieta, M. I., Gomez-Jacinto, L., Dominguez-Fuentes, J. M., & Garcia-Leiva, P. (2013). Sense of community and satisfaction with life among immigrants and the native population. *Journal of Community Psychology*, *41*(5), 601–614.

Hughes, M. E., Waite, L. J., Hawkley, L. C., & Cacioppo, J. T. (2004). A short scale for measuring loneliness in large surveys. *Research on Aging*, *26*, 655–672. https://doi.org/10.1177/0164027504268574

Jewett, R. L., Mah, S. M., Howell, N., & Larsen, M. M. (2021). Social cohesion and community resilience during COVID-19 and pandemics: A rapid scoping review to inform the United Nations research roadmap for COVID-19 recovery. *International Journal of Health Services*, *51*(3), 325–336.

Leslie, E., & Cerin, E. (2008). Are perceptions of the local environment related to neighbourhood satisfaction and mental health in adults? *Preventive Medicine*, *47*(3), 273–278. https://doi.org/10.1016/j.ypmed.2008.01.014

Lindeman, R. H., Merenda, P. F., & Gold, R. Z. (1980). *Introduction to bivariate and multivariate analysis*. Scott Foresman.

Maslow, A. H. (1954). *Motivation and personality* (1st ed.). Harper.

Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of environmental psychology*, *24*(4), 503–515.

McMillan, D. W., & Chavis, D. M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, *14*(1), 6–23.

Michalos, A. C., Smale, B., Labonté, R., Muharjarine, N., Scott, K., Moore, K., Swystun, L., Holden, B., Bernardin, H., Dunning, B., Graham, P., Guhn, M., Gadermann, A. M., Zumbo, B. D., Morgan, A., Brooker, A.-S., & Hyman, I. (2011). *The Canadian index of well-being. Technical Report 1.0*. Canadian Index of Well-being and University of Waterloo.

Michalski, C. A., Diemert, L. M., Helliwell, J. F., Goel, V., & Rosella, L. C. (2020). Relationship between sense of community belonging and self-rated health across life stages. *SSM-Population Health*, *12*, 100676. https://doi.org/10.1016/j.ssmph.2020.100676

Moen, P., Kelly, E., & Huang, Q. (2008). Work, family and life-course fit. Does control over work time matter? *Journal of Vocational Behavior*, *73*(3), 414–425. https://doi.org/10.1016/j.jvb.2008.08.002

Mogilner, C., Hershfield, H. E., & Aaker, J. (2018). Rethinking time. Implications for well-being. *Consumer Psychology Review*, *1*(1), 41–53. https://doi.org/10.1002/arcp.1003

Mogilner, C., & Norton, M. I. (2016). Time, money, and happiness. *Current Opinion in Psychology*, *10*, 12–16. https://doi.org/10.1016/J.COPSYC.2015.10.018

Orpana, H., Vachon, J., Dykxhoorn, J., Mcrae, L., & Jayaraman, G. (2016). Monitoring positive mental health and its determinants in Canada. The development of the Positive Mental Health Surveillance Indicator Framework. *Health Promotion and Chronic Disease Prevention in Canada*, *36*(1), 1–10.

Perissinotto, C. M., Stijacic Cenzer, I., & Covinsky, K. E. (2012). Loneliness in older persons: A predictor of functional decline and death. *Archives of Internal Medicine*, *172*(14), 1078–1084.

Perlman, D., Peplau, L. A., & Goldston, S. E. (1984). Loneliness research: A survey of empirical findings. *Preventing the harmful consequences of severe and persistent loneliness*, *13*, 46.

Prezza, M., Pacilli, M. G., Barbaranelli, C., & Zampatti, E. (2009). The MTSOCS. A multidimensional sense of community scale for local communities. *Journal of Community Psychology*, *37*(3), 305–326. https://doi.org/10.1002/jcop.20297

Ross, N. (2002). Community belonging and health. *Health Reports*, *13*(3), 33–39.

Smale, B., & Gao, M. (2020). *A closer look. The Nova Scotia Quality of Life Survey based on the CIW Community Well-being Survey. A report prepared for Engage Nova Scotia*. Canadian Index of Well-being and University of Waterloo.

Smale, B., Gao, M., & Jiang, K. (2020). *An exploration of well-being in Nova Scotia: A summary of results from the Nova Scotia Quality of Life Survey*. Canadian Index of Well-being and University of Waterloo.

Smale, B., Wilson, J., & Akubueze, N. (2022). Exploring the determinants and mitigating factors of loneliness among older adults. *Wellbeing, Space and Society*, *3*, 100089.

Sörensen, S., & Pinquart, M. (2000). Vulnerability and access to resources as predictors of preparation for future care needs in the elderly. *Journal of Aging and Health*, *12*(3), 275–300.

Stadler, M., Cooper-Thomas, H. D., & Greiff, S. (2017). A primer on relative importance analysis. Illustrations of its utility for psychological research. *Psychological Test and Assessment Modeling*, *59*(4), 381–403.

Steenbeek, A., Gallant, A., MacDonald, N. E., Curran, J., & Graham, J. E. (2022). Nova Scotia Strong: Why communities joined to embrace COVID-19 public health measures. *Canadian Journal of Public Health*, *113*(Suppl 1), 4–13. https://doi.org/10.17269/s41997-022-00667-z

Tonidandel, S., & LeBreton, J. M. (2011). Relative importance analysis. A useful supplement to regression analysis. *Journal of Business and Psychology*, *26*(1), 1–9. https://doi.org/10.1007/s10869-010-9204-3

Victor, C., Scambler, S., Bond, J., & Bowling, A. (2000). Being alone in later life: Loneliness, social isolation and living alone. *Reviews in Clinical Gerontology*, *10*(4), 407–417.

Wakefield, J. C. (2022). Klerman's "credo" reconsidered:neo-Kraepelinianism, Spitzer's views, and what we can learn from the past. *World Psychiatry: Official Journal of the World Psychiatric Association (WPA)*, *21*(2), 4–25. https://doi.org/10.1002/wps.20942

Waterman, A. S. (2007). On the importance of distinguishing hedonia and eudaimonia when contemplating the hedonic treadmill. *American Psychologist*, *62*(6), 612–613. https://doi.org/10.1037/0003-066X62.6.612

World Health Organization. (2004). *The World Health Report. 2004. Changing history*. World Health Organization.

World Health Organization. (2022). *UN decade of healthy ageing 2021–2030*. https://www.who.int/initiatives/decade-of-healthy-ageing

Zhang, C., Qing, N., & Zhang, S. (2021). The impact of leisure activities on the mental health of older adults: The mediating effect of social support and perceived stress. *Journal of Healthcare Engineering*, *2021*.

Zhang, L., Zhou, S., & Kwan, M. P. (2019). A comparative analysis of the impacts of objective versus subjective neighborhood environment on physical, mental, and social health. *Health & Place*, *59*, 102170.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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APPENDIX A

Participants, sampling procedure, survey instrument, and data weighting previously described in Hill et al. (2023)

Participants

Participants were those individuals who participated in the 2019 Quality of Life Survey (N = 12,826), administered by the Canadian Index of Well-being (CIW), as part of Engage Nova Scotia's Quality of Life Initiative. Data were acquired from Engage Nova Scotia. The final sample was 53% female, most born in Canada (84.1%), and with a median annual household income of $60,000–$80,000 (see Table 1). Values in Table 1 adapted with permission from Table 1-J10 of the first survey report from Engage (Smale et al., 2020).

Sampling procedure

Based on mailing addresses held by Canada Post, the survey population was created by selecting a stratified random sample of approximately 80,000 residential households in Nova Scotia drawn proportionately from across 10 functional economic regions in the province (Smale et al., 2020). An oversampling of rural regions in the province was conducted to ensure adequate representation from these less densely populated areas. Potential participants were sent a letter inviting a household member 16 years of age or older whose birthday came closest to June 1 to participate in an online survey. Participants were provided with a link to the online survey and accessed it using a unique five-digit code during the 3-month collection period from April to June 2019. In addition to the randomly selected households, there was targeted outreach to specific groups who might not typically participate in traditional survey approaches (e.g., lower-income residents, people living with disabilities, and older adults; Smale et al., 2020).

Slightly more than 14,000 questionnaires were filled out, and 12,826 were determined to be valid and usable, representing an estimated 16% response rate. Most of the surveys omitted from the final sample were incomplete—they were begun online, but never completed or left significant proportions of critical sections of the questionnaire incomplete. Most surveys were completed online (n = 11,363; 87%), with the remainder completed on paper on request or by targeted groups. Given the sample size, the margin of error when reporting the descriptive statistics for Nova Scotia is estimated to be within ±1.0% and is somewhat higher for each of the 10 regions across the province (Smale et al., 2020).

Survey instrument

The questionnaire was comprised of three major sections. The first major section included questions organized around the eight domains of life represented in the CIW's conceptual framework: community vitality, democratic engagement, education, the environment, healthy populations, leisure and culture, living standards, and time use (CIW, 2016). For example, questions within the community vitality subsection focused on aspects such as volunteering and social connectedness, while questions within the living standards subsection focused on aspects related to employment and financial security. The second major section gathered participants' perceptions of their overall well-being, including measures of hedonic and eudaimonic well-being. Finally, the third major section included an array of demographic characteristics including gender, age, income, education, place of birth, and disability status.

Data weighting

To ensure the descriptive statistics from the survey are representative of the residents of Nova Scotia, the data provided by the 12,826 respondents were weighted by sex, age, and region to correspond with the Census profile estimated for 2019 for those residents 16 years of age and older (N = 787,120). Drawing on the 2016 Census of Canada, population estimates for 2019 were calculated using growth rates within each region. These estimates were then used to weight proportionately the distributions of respondents to the survey to better represent the distributions of residents in each region and across the entire province. It should be noted, however, that population weights are incorporated only for the descriptive statistics summarized in Table 1. Inferential statistics were based on unweighted data to avoid biased estimates; rather, age and sex were incorporated as control variables in the models.