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RESEARCH ARTICLE

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Psychological and social wellbeing associated with regional population change in Finland

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Abstract

Regional depopulation is an increasingly common demographic issue in many countries, as population growth becomes concentrated in small number of urban centres. Depopulation has adverse effects on the region's socioeconomic development, and often leads to worse living circumstances, such as poor availability of services. Population growth, by contrast, has many socioeconomic benefits but may also introduce unwanted consequences, such as urban alienation. However, the associations of regional population change with inhabitants' psychological and social wellbeing have not been examined as extensively as the associations with socioeconomic outcomes. With a large survey dataset from Finland (n = 99,034 participants from 299 municipalities), we examined whether regional, municipality-level population decline and growth over the preceding 10 years were associated with psychological and social wellbeing of the inhabitants of the municipalities. We were specifically interested in whether growth and decline were both related to these outcomes, or whether the associations were more pronounced for either decline or growth. Overall negative population change was related to lower social wellbeing (e.g., lower social support) and that these associations were more pronounced for the adverse

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associations of population decline than for the beneficial associations of population growth (e.g., less frequent social contact and higher risk of loneliness). Population change was not associated with inhabitants' depressive symptoms. These findings suggest that regional population decline can be particularly relevant for worsening social wellbeing of the inhabitants.

KEYWORDS
depopulation, regional, wellbeing

1 | INTRODUCTION

Regional population decline is becoming a common demographic trend in many countries. Rural regions are affected the most, but similar trends have been reported in many urban areas. One in five cities in Europe had shrinking populations between 1990 and 2010 (Wolff & Wiechmann, 2018). The population shrinking of regions is caused by higher out-migration than in-migration, decreasing birth rates, and increasing mortality rates. Depopulation is often driven by economic disadvantage, such as unemployment and shrinking tax base. Declining local population can threaten the socioeconomic sustainability of an area, as decreasing population often hinders economic development and leads to poorer availability of services and amenities (Haase, Athanasopoulou, & Rink, 2013). Growing local populations, by contrast, can offer new socioeconomic opportunities for the residents, which helps these regions to thrive (Glaeser, 2012).

Besides socioeconomic trends, local population change may also affect the inhabitants' psychological and social wellbeing, that is, the person's mental health and life satisfaction (psychological wellbeing) and the person's social relationships, such as social engagement and availability of social support (social wellbeing). For example, regional deprivation may deteriorate social networks and increase the risk of loneliness, thereby leading to poorer mental health (Victor & Pikhartova, 2020). This is not inevitable, however, as some declining regions can retain their social viability despite decreasing numbers of inhabitants (Hirt & Beauregard, 2019). It might even be possible for depopulation to tighten social connections between individuals who remain in the region, as smaller communities may help to form closer relationships (Petzold & Ratter, 2015). Depopulating regions may be characterized by active and happy retired inhabitants, especially if the population decline is combined with increasing healthy life expectancy. Increasing population size, by contrast, yields improved opportunities for social interaction, entrepreneurship, and better local amenities, which could improve psychological and social wellbeing. Such improvements are not inevitable either, as rapid population growth might also lead to social alienation (Hanell, 2022) and increased stress, which have long been considered as possible side effects of urbanization (Sundquist, Frank, & Sundquist, 2004).

Many of the previous studies on regional depopulation have focused on sociodemographic outcomes such as economic development, migration patterns, sustainability, and ageing (Christiaans, 2017; Döringer, Uchiyama, Penker, & Kohsaka, 2019; Makkonen & Inkinen, 2023; Makkonen, Inkinen, & Rautiainen, 2023; Runge, Kantor-Pietraga, Runge, Krzysztofik, & Dragan, 2018). Evidence on the inhabitants' psychological and social wellbeing associated with population change, however, is scarce. There is only indirect evidence for such associations. A study of 27 European countries found that people living in declining rural regions were less satisfied with democracy than those who lived in urban areas (Lago, 2021). In the U.S. Health and Retirement Study, living in depopulating counties was associated with faster cognitive decline (Glauber, 2022).

We studied whether regional population change is associated with psychological and social wellbeing in Finland. Finnish regional development during the last decades has been characterized by sizable rural-to-urban migration flows (Makkonen et al., 2023). Between years 2000 and 2020, 75% of the 309 municipalities lost inhabitants (stat.fi).

Population growth is concentrated particularly around large cities and their surrounding metropolitan areas. Municipalities in most other regions have mostly lost inhabitants. Also important for the topic of depopulation, Finland has the lowest population density of all the European Union countries, with an average of 18 inhabitants per square kilometre, compared to the European average of 109 inhabitants per square kilometre (Eurostat, 2023). Most municipalities have small population sizes, the median population size being ~5,000 people.

In a recent study of regional population change in Europe (Newsham & Rowe, 2022), most of Finland's regions—Eastern and Northern parts in particular—showed persistent moderate decline with an annual population change between −0.3% and −0.99%. This was also the most common population-decline pattern across European subregions overall, and especially common in countries such as Austria, Hungary, Poland, and Romania. This ranked Finland in the middle of European countries in the depopulation pattern—not as severe as in countries such as Latvia, Bulgaria, Estonia, or Croatia, that were mostly characterized by persistent or accelerating decline, but not as thriving as in countries such as Denmark, Iceland, Germany, the Netherlands, or Sweden, that were mostly characterized by temporary or diminished declines (Newsham & Rowe, 2022).

Regarding psychological and social wellbeing, Finland has been ranked as the happiest country in the world by the World Happiness Report that measures 'happiness' with one item of life satisfaction (Helliwell et al., 2024). However, European comparisons of depressive symptoms suggest that Finland is not the least depressed European country, but the prevalence of depressive symptoms in Finland (6.7%) is very close to the European average (6.5%) (Arias-de la Torre et al., 2023). In cross-national studies of social wellbeing, in turn, Finland tends to rank very high: measures such as interpersonal and institutional trust (Reeskens & Hooghe, 2007), memberships in associations, and received social support from others (Wallace & Pichler, 2007) are usually high in Finland, as they are in most Nordic countries. However, in terms of frequency of meeting friends and colleagues, Finland ranks close to the European average or below it (Wallace & Pichler, 2007).

We examined how the rate of population change was associated with the residents' psychological and social wellbeing in Finland. In addition to the association between overall population change and wellbeing, we were interested in whether population *decline* versus population *growth* was associated with lower and higher wellbeing, respectively, throughout the distribution of population change. This allowed us to explore non-linear associations in which wellbeing would be more prominently associated with either population decline or population growth. This approach was motivated by the findings discussed above, suggesting that both decline and growth might have positive as well as negative associations with wellbeing. We also examined whether the associations with psychosocial wellbeing were explained by people's residential satisfaction (e.g., satisfaction with services and amenities), which is expected to be lower in depopulating regions and to drive people's mobility decisions (Chen & Rosenthal, 2008). Thus, our research questions were (1) Is the municipality-level population change rate associated with psychological and social wellbeing of the residents? (2) Are the rates of population growth versus population decline differentially related to psychological and social wellbeing? and (3) Are these associations explained by the inhabitants' residential satisfaction?

2 | METHODS AND MATERIALS

2.1 | Participants

For the current study, data for psychological and social wellbeing measures were derived from the Finnish National Regional Health and Wellbeing survey (Alueellinen Terveys ja Hyvinvointi), which was carried out by the Finnish Institute for Health and Welfare annually from 2012 to 2017. Surveys were based on a nationally representative random sample of individuals living in Finland aged 20 and over. The dataset consisted of 99,034 individuals from 299 municipalities. Ten small municipalities with only few respondents were left out from the study sample due to anonymization requirements (located mostly in the southwest archipelago of Åland). Sampling weights were used to adjust for selective response rates by age, sex, marital status, education, geographical area, and native language.

2.2 | Measures

Relative population change of the municipalities was determined with census data as the percentage change in population size of the municipality over a 10-year period between 2002 and 2012. Log-transformed *population size* of the municipality in 2012 was included as a covariate in all regression models to take into account the baseline size of the municipality.

There were nine psychological and social wellbeing outcomes. Each outcome variable was calculated as the mean score of the scale items. One missing response was allowed in each scale for the score to be calculated for the participant; if the participant had left more than one of the items of the scale unanswered, the participant was excluded from that analysis. All the outcome variables were used as continuous variables in the regression analysis.

Psychological wellbeing was assessed with three measures: *Mental health* was assessed with the 5-item Mental Health Index measure (McHorney & Ware, 1995) that asks about the frequency of feelings during the past 4 weeks (nervous, low mood, calm, depressed, happy) rated on a 6-point scale from 0 = not at all to 5 = all the time. *Depressive symptoms* were assessed with two items about feeling depressed/downhearted and lack of interest for at least a 2-week period over the past 12 months (both questions responded with a no/yes scale and were summed together). *Quality of life* was assessed with the Eurohis-8 scale (Schmidt, Muhlan, & Power, 2006) that included questions about the participant's overall life satisfaction (0 = very bad to 4 = very good); about satisfaction with health, self, personal relationships, and ability to perform daily activities (0 = very unsatisfied, 4 = very satisfied); and about having enough energy for daily life and enough money for needs (0 = not at all, 4 = very well). The average score for the aforementioned eight questions varied from 0 to 5, with higher scores indicating higher quality of life. We excluded the question about satisfaction with conditions of living place because this would have overlapped with the measurement of residential satisfaction (see below).

Social wellbeing was assessed with six measures: *Social support* assessed whether the participants could get emotional and practical help when needed from spouse/partner, close kin members, close friends, close colleagues, close neighbours, and other individuals. Each relationship was rated with two separate questions (emotional support: 'Who do you believe truly cares about you, whatever may happen?'; and practical support: 'Who will provide practical help when you need it?') with a response scale of 0 = no, 1 = yes. *Loneliness* was assessed with a question: 'Do you ever feel lonely', with a response scale ranging from 0 = never to 4 = all the time. *Social contact* was measured using three items that asked the participants how often they had contact with others through (1) face-to-face meetings, (2) phone, and (3) internet or by mail (0 = never, 4 = daily or almost daily). Regional depopulation might be differently related to face-to-face meeting frequency than to phone or internet contacts because phone or internet contacts are not constrained by geographic locations in the same way as face-to-face meetings. Therefore, we examined both the mean score of social contacts and additionally examined each type of contact separately. *Social trust* was assessed by asking five questions about how much the respondent felt trust towards healthcare, social welfare, judiciary, police, and municipal decision, and one question about trust towards people in general. All the six items were rated with a scale from 0 = no trust to 4 complete trust, and the mean score of these six items was used in the analysis. *Community participation* was assessed by asking how often the respondent took part in 13 different organizations or communities in the following activities: sport, culture, politics, unemployment, church/religion, elderly, children/youth organizations, public health, mental health, disabled, caretaker, informal hobby groups, or other organizations. Each activity was rated with a 5-point scale from 0 = never, to 4 = three or more times a week. For the analyses we calculated a mean score of all the items. Participation in *cultural activities* was assessed by the frequency of going to eight different categories of leisure-time activities during the last 12 months: theatre, classic music, pop/rock concerts, museums, libraries, cinema, sports, and other cultural events. Each activity was rated with a 4-point scale ranging from 0 = not at all to 3 = once weekly or more, and the mean score was used in the analyses.

In addition to the main outcome variables, we included two measures of *residential satisfaction*. First, the respondents rated their satisfaction with seven different categories of *municipal services* (library, indoor sports, outdoor sports, cultural services, adult education services, youth services, children's playgrounds) with a scale of 0 = not

needed; 1 = would have needed, but was not available; 2 = has used, but service was not sufficient; 3 = had used, service was sufficient. We recoded the response scale to indicate dissatisfaction with services so that response categories 0 and 3 were recoded as 0 = 'satisfied with service' and response categories 1 and 2 were recoded as 1 = 'dissatisfied with service'. The mean score of the seven items thus indicated higher dissatisfaction with the services. Second, the participants rated their satisfaction with five items about *neighbourhood characteristics* that bother the participant (public transport, building conditions, environmental tidiness, availability of services, and neighbourhood safety), each rated on a scale from 0 = does not bother to 3 = bothers a lot. These two variables were included as separate variables in the fully adjusted models.

2.3 | Statistical analysis

The associations were first examined with linear regression models and then with piecewise (Naumova, Musta, & Laird, 2001) linear regression models. The piecewise regressions were set up so that coefficient of population change was allowed to be different for population decline and population growth, as follows: $Y_i = \beta_0 + \beta_1 t_i d_i + \beta_2 t_i(1 - d_i) + e_i$, where Y_i is the outcome for person i; β_0 is the intercept; t_i is the population change indicator; d_{ij} is a dichotomous indicator of population decline (change <0) versus population stability or growth (change ≥0); β_1 and β_2 are regression coefficients; and e_i is the error term. The difference for population decline versus growth was tested as the linear combination of $\beta_1 = \beta_2$, that is, whether the coefficients were equal. The basic Model 1 was adjusted for sex, age, self-reported income, and marital status, to take into account individual-level sociodemographic factors. In Model 2, the associations were additionally adjusted for the measure of residential satisfaction to see whether participants' satisfaction with amenities and services accounted for the associations between municipality-level population change and social wellbeing. Regression coefficients were reported for population change, that is, higher values indicating higher population growth. This reporting style was also kept when reporting the associations for piecewise regression models, in which case positive regression coefficients on the side of population decline (i.e., growth below 0%) indicated that higher population *decline* was associated with *lower* values of the outcome, and positive regression coefficients on the side of population *growth* (i.e., growth above 0%) indicated that higher population growth was associated with *higher* values of the outcome.

3 | RESULTS

Across municipalities, the average population change was −3.3% across ten years, with 61% of municipalities having declining population and 39% increasing population sizes. Table 1 shows the descriptive statistics of the sample. Table 2 shows the correlations between indicators of psychological and social wellbeing.

Table 3 shows the results of the full regression models that examined linear associations between population change and wellbeing measures throughout the total distribution of population change. Higher regional population growth was related to higher social support, trust, social contact, and to lower levels of loneliness and higher cultural activities. Population change was not associated with mental health or depressive symptoms but was associated with higher quality of life. Adjusting for residential satisfaction attenuated the associations with loneliness, social trust, and quality of life by half, but did not substantially change the other associations (Model 2 of Table 3).

The piecewise regressions suggested non-linear associations of population change for four of the 10 wellbeing indicators. These are illustrated in Figure 1. Loneliness increased with population decline but was unrelated to population growth. Similarly, frequency of social contact was lower with population decline but was unrelated to population growth. Social trust was higher in regions characterized by either higher population decline or higher population growth.

TABLE 1 Descriptive statistics of continuous and categorical study variables.

Continuous variables[a]	**Mean (*SD*)**	**Min–Max**
Mental health index	4.8 (0.9)	1–6
Depressive symptoms	0.4 (0.7)	0–2
Quality of life	3.8 (0.7)	1–5
Social support	0.3 (0.2)	0–1
Loneliness	2.2 (1.0)	1–5
Social trust	3.5 (0.8)	1–5
Social contact	3.4 (0.8)	1–5
Community participation	0.3 (0.6)	0–4
Cultural activities	0.5 (0.4)	0–2
Residential satisfaction		
With municipal services	0.1 (0.1)	0–1
With neighbourhood characteristics	0.6 (0.5)	0–3
Categorical variables[b]		***n* (%)**
Age		
20–34		14,676 (14.8)
35–49		17,001 (17.2)
40–64		26,909 (27.2)
65+		40,448 (40.8)
Sex		
Male		39,966 (42.6)
Female		53,776 (57.4)
Marital status		
Married		48,028 (52.7)
Cohabiting		12,856 (14.1)
Divorced/separated		8,328 (9.1)
Widow		10,122 (11.1)
Never married		11,826 (13.0)
Self-rated financial situation		
Very difficult		3,092 (3.3)
Difficult		6,172 (6.6)
Somewhat difficult		17,712 (19.1)
Somewhat easy		39,305 (42.3)
Easy		18,669 (20.1)
Very easy		7,941 (8.6)
Population size (1,000 inhabitants)		10.9 (1.6)
Population change		
Decline		30,007 (29.8)
Growth		70,753 (70.2)

[a]Values are unweighted means and standard deviations.
[b]Values are unweighted numbers and percentages of participants.

TABLE 2 Correlations between the outcome measures of psychological and social wellbeing.

	1	2	3	4	5	6	7	8
1. Mental health index	1.00							
2. Depressive symptoms	−.61	1.00						
3. Quality of life	.59	−.47	1.00					
4. Social support	.08	−.08	.25	1.00				
5. Loneliness	−.50	.40	−.45	−.15	1.00			
6. Social trust	.24	−.16	.24	.02	−.15	1.00		
7. Social contact	.04	−.03	.17	.27	−.05	.05	1.00	
8. Community participation	.06	−.06	.09	.03	−.04	.07	.10	1.00
10. Cultural activities	.04	−.05	.20	.21	−.04	.03	.24	.19

Note: Values are correlation coefficients (n >80,000). All correlations are statistically significant.

Figure 2 and Table 4 show the piecewise regression models for separate items of social contact. Less frequent face-to-face contact was associated with both population decline and growth; less frequent phone contact was associated with population decline but not with growth; and internet contact was less frequent with population decline but more frequent with population growth.

4 | DISCUSSION

The current findings demonstrated that regional population change is related to residents' wellbeing in Finland. Adjusted for current population size and individual sociodemographic factors, people who lived in municipalities with shrinking populations had lower wellbeing than those living in municipalities with stable or growing populations. These were mostly observed with measures of social wellbeing but less to with measures of psychological wellbeing. There was no indication that population decline would have had beneficial associations with psychological or social wellbeing, or that population growth would have detrimental associations with wellbeing. These associations were not substantially explained by differences in the inhabitants' residential satisfaction.

Higher social support and more frequent participation in cultural activities were observed in regions with growing population size throughout the population change distribution, with no differential associations for population decline versus growth. There was some evidence for non-linear associations with respect to decline versus growth. Only population decline, but not population growth, was associated with higher loneliness and less frequent social contact with others. The risk of loneliness increases when friends, relatives, and acquaintances leave the region, which may explain the higher loneliness rates in shrinking regions. But growing population size alone may not ameliorate loneliness, because population numbers do not automatically translate into new meaningful social relationships (Bergefurt et al., 2019; Hammoud et al., 2021). A more detailed analysis of social contact frequency suggested that population decline was associated with lower communication via all contact modes (in-person, phone, internet) but population growth was associated with more frequent contact via internet, which evened out the overall association for population growth. This may have changed since the data collection in 2012–2017.

Social trust showed a non-linear association in which both population growth and decline were associated with higher social trust. This was an unexpected finding, and it should be interpreted cautiously. It is plausible that both growth and decline might increase people's trust towards institutions and other people but in different ways: the dynamism and vitality associated with population growth might induce social trust by offering more optimism about the broadening social circumstances (Glaeser, 2012), whereas population decline might increase social trust by creating tighter social bonds between people who remain in the shrinking regions (McPhedran, 2011). However, the other

TABLE 3 Municipality-level population growth rate associated with individual-level measures of psychological and social wellbeing.

Outcome variable	Full regression	Piecewise regression		
		Below 0% growth	Above 0% growth	*p*(diff)[a]
Model 1				
Mental health	−0.05 (−0.14, 0.04)	−0.05 (−0.24, 0.14)	−0.05 (−0.19, 0.09)	.98
Depressive symptoms	−0.03 (−0.12, 0.06)	0.05 (−0.15, 0.25)	−0.08 (−0.23, 0.07)	.37
Quality of life	0.13 (0.04, 0.21)	−0.02 (−0.20, 0.15)	0.22 (0.08, 0.35)	.07
Social support	0.32 (0.23, 0.41)	0.30 (0.12, 0.48)	0.33 (0.19, 0.47)	.83
Loneliness	−0.16 (−0.24, −0.08)	−0.40 (−0.58, −0.22)	−0.01 (−0.14, 0.13)	<.01
Social trust	0.10 (0.01, 0.18)	−0.42 (−0.61, −0.22)	0.41 (0.28, 0.55)	<.01
Social contact	0.23 (0.15, 0.32)	0.58 (0.39, 0.77)	0.02 (−0.12, 0.16)	<.01
Community participation	0.02 (−0.08, 0.11)	0.14 (−0.06, 0.34)	−0.05 (−0.21, 0.10)	.20
Cultural activities	0.30 (0.21, 0.39)	0.30 (0.11, 0.49)	0.30 (0.15, 0.44)	.99
Model 2				
Mental health	−0.10 (−0.18, −0.01)	−0.23 (−0.43, −0.03)	−0.01 (−0.15, 0.13)	.13
Depressive symptoms	0.01 (−0.09, 0.10)	0.20 (−0.01, 0.41)	−0.11 (−0.26, 0.04)	.05
Quality of life	0.07 (−0.01, 0.15)	−0.26 (−0.44, −0.08)	0.27 (0.14, 0.41)	<.01
Social support	0.30 (0.20, 0.39)	0.27 (0.07, 0.46)	0.31 (0.16, 0.46)	.76
Loneliness	−0.13 (−0.22, −0.04)	−0.23 (−0.42, −0.05)	−0.07 (−0.21, 0.07)	.23
Social trust	0.05 (−0.03, 0.14)	−0.65 (−0.85, −0.46)	0.48 (0.35, 0.62)	<.01
Social contact	0.19 (0.10, 0.28)	0.49 (0.29, 0.69)	0.00 (−0.14, 0.14)	<.01
Community participation	−0.06 (−0.15, 0.04)	0.13 (−0.07, 0.34)	−0.17 (−0.33, −0.01)	.05
Cultural activities	0.23 (0.14, 0.32)	0.31 (0.12, 0.50)	0.18 (0.03, 0.33)	.37

Note: Values are unstandardized regression coefficients (and their 95% confidence intervals) from linear regression models of population growth rate predicting psychological and social wellbeing measures. Model 1 adjusts for sex, age, financial situation, and marital status of the participant, and population density of the municipality in 2002. Model 2 additionally adjusts for residential satisfaction of the participant. All regression models (full regressions and piecewise regressions) were fitted separately for each outcome.

[a]*p*(diff) reports the statistical significance of the difference between below versus above 0% growth in the piecewise regression models.

indicators of social interactions and social support did not show positive associations with population decline, so this hypothesis is currently weak and speculative.

It is worth noting that depressive symptoms and mental health were not associated with population change. Given that population decline and growth are especially relevant for community development (Makkonen & Inkinen, 2023), it seems natural that their associations are observed primarily with measures of social wellbeing instead of psychological wellbeing—though weakening social relationships could be expected to decrease psychological wellbeing as well.

Our study did not have sufficient repeated measurements of wellbeing that could have been used to follow regional development over time; this would require longer time intervals between measurements. Although population change was measured from the 10 years preceding the collection of survey data, the current data cannot establish causality between population change and wellbeing. Some of the associations might be caused by reverse causation, that is, wellbeing might influence selective residential mobility so that individuals with higher social wellbeing would be more likely to move to regions with growing populations (Lawless & Lucas, 2010; Lucas, 2014).

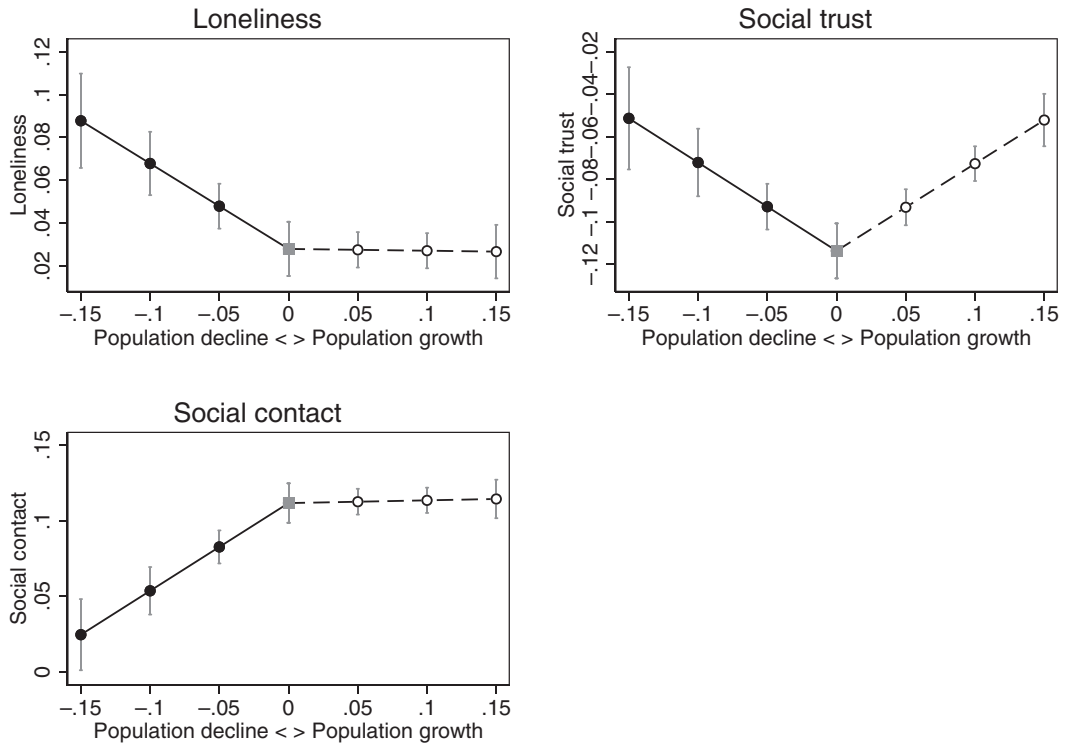

FIGURE 1 Non-linear associations of population decline versus population growth with social wellbeing indicators.

On the other hand, individuals with more social connections to the region might be the *least likely* to move away from depopulating regions (David, Janiak, & Wasmer, 2010; Jokela, 2009; Kan, 2007), which should lead to associations of depopulation and higher social connections, for example, lower loneliness and higher social support. Direct measurements of residential mobility are required to test this hypothesis. We also did not have data on how long the participants had lived in their current municipality, which precluded a more detailed analysis of whether the associations with social wellbeing would have been stronger or weaker for long-term versus short-term residents (David et al., 2010).

Another limitation is that we only examined overall population change but did not examine the sources of this change. Population change is driven by three factors: fertility, migration, and mortality. The associations of depopulation on wellbeing may depend on the relative weights of these three mechanisms in driving the depopulation rate (Lutz, 2014). Some studies have also proposed that the changing socioeconomic structure of the population might be even more important than the numerical population change (Lutz et al., 2019).

In conclusion, our study suggests that (1) depopulation in Finland was related to lower social wellbeing of the residents but was not associated with psychological wellbeing, (2) that the adverse associations of population decline were more prominent than the beneficial associations of population growth, and (3) that these associations were not explained by differences in the inhabitants' levels of residential satisfaction. More research is needed to characterize the underlying mechanisms, especially the question of whether the associations are due to causal effects of changing neighbourhoods or the consequences of selective residential mobility of different individuals across declining and growing regions.

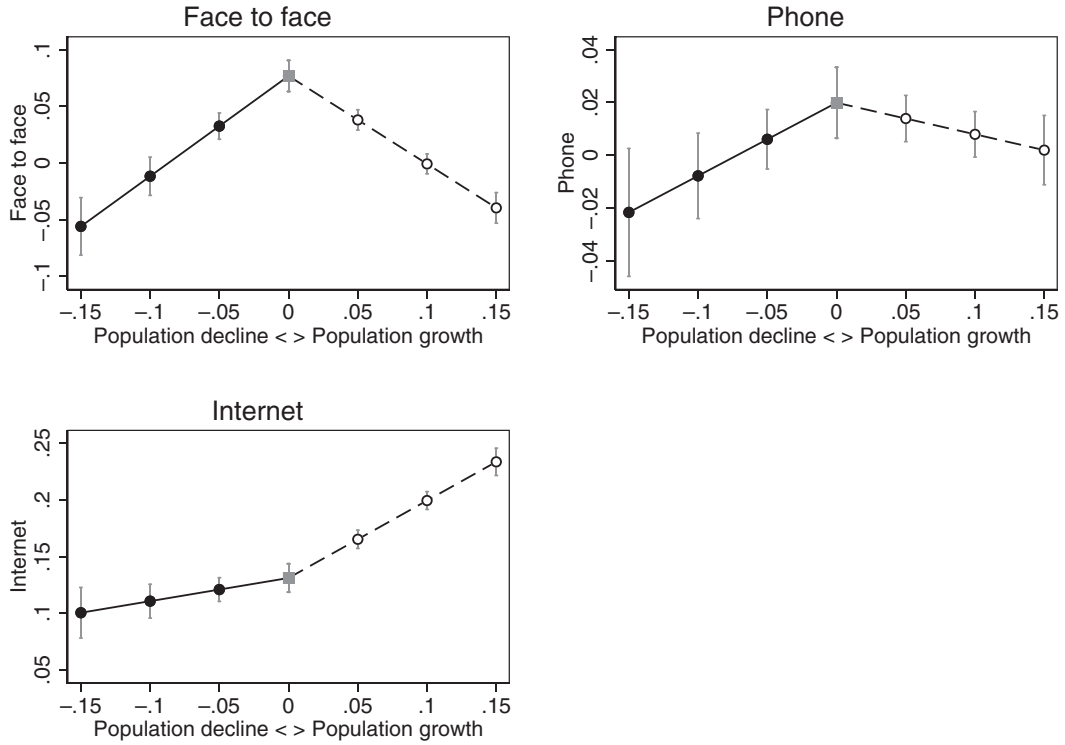

FIGURE 2 Non-linear associations of population decline versus population growth with indicators of social contact.

TABLE 4 Population decline and growth rates associated with different modes of social contact frequency.

	Piecewise regression		
	Below 0% growth	**Above 0% growth**	***p*(diff)[a]**
Face to face	0.89 (0.68, 1.09)	−0.78 (−0.92, −0.63)	<.01
Phone	0.28 (0.08, 0.47)	−0.12 (−0.26, 0.02)	<.01
Internet	0.20 (0.03, 0.38)	0.68 (0.55, 0.82)	<.01

Note: Values are unstandardized regression coefficients (and their 95% confidence intervals) from linear regression models of population growth rate predicting social contact measures. Associations are adjusted for sex, age, financial situation, and marital status of the participant, and population density of the municipality in 2002.

[a]*p*(diff) reports the statistical significance of the difference between below versus above 0% growth in the piecewise regression models.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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