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Residential mobility and strength of social ties: Regional analysis in Finland

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Abstract

Multiple factors can influence the rates of residential mobility flows between different subregions of a country. Studies have often focused on demographic and economic factors, but social conditions may be relevant as well. We examined whether the strength of social ties (i.e., social support, loneliness, social trust, community and cultural activities, and meeting other people) were associated with population migration rates across 299 municipalities of Finland. Data for the social characteristics were derived from the large Regional Health and Wellbeing study (n=100,750 respondents) aggregated to the level of municipalities using multilevel regression with post-stratification. Residential mobility rates were derived from census data. Municipalities with higher levels of social support, higher social trust, more cultural activities, and more frequent social contacts had higher net migration rates, that is, more people moving in than out of the municipality.

Social support and cultural activities were more strongly associated with (higher) in-migration than with out-migration rates. Social trust and frequency of meeting people were more strongly associated with (lower) out-migration than with in-migration. The findings provide empirical support for the hypothesis that regions with stronger social ties are more attractive destinations for within-country residential mobility.

Internal residential mobility, that is, how people move between different regions of the country, has a crucial impact on regional development (Coulter et al., 2016). Economic factors, such as career opportunities, employment, and housing costs, influence decisions regarding residential mobility. However, social and psychological factors also play an important role in shaping individuals' decision regarding moving from one region to another (Caldera Sánchez, 2011). For example, family members tend to live close to each other, and people often move because of changes in their family relationships (e.g., marriage, divorce, parenthood) or because they are dissatisfied with the current neighborhood or apartment (Jokela, 2021). The relative strengths of different "push" factors that make people leave specific places and "pull" factors that make other places more attractive locations may vary over the life course (Findlay et al., 2015). For example, urban regions with better opportunities for pursuing education and careers may attract younger people whereas more rural or suburban areas may attract families with children (Findlay et al., 2015).

Studies of "neighborhood effects" have shown that *social cohesion* is one of the neighborhood features that is associated with better health and wellbeing of the residents (Perkins et al., 2009; Wang & Wai Li, 2020). Stronger social ties and trust within the community promote livable social environments in which people are more likely to experience positive feelings and fewer stressors (Robinette et al., 2013). Extending these psychological findings to population processes, one could hypothesize that stronger social ties in the region could also influence migration rates, both by attracting new movers to the region (in-migration) and by keeping old residents from moving away from the region (out-migration). Stronger social ties might make the region a more attractive migration destination as social cohesion enhances the liveliness and vitality of the region (David et al., 2010; Kan, 2007). Social ties might also decrease people's willingness to move away, so as not to break the social bonds with their community and relatives (Ghosh et al., 2018); Kan, 2007).

Supporting this idea, studies of personality traits and residential mobility have shown that individuals with higher agreeableness—a personality trait characterized by warmhearted and friendly dispositions—tend to move less often than those with low agreeableness (Jokela, 2009, 2021). This is probably because individuals with high agreeableness have stronger attachments to their community and its residents.

Previous studies have suggested that regional social capital can both benefit and suffer from higher migration rates: In the United States, higher rates of in-migration were associated with lower political engagement and community involvement, which were assessed at the level of census tracts (Hotchkiss et al., 2021). In-migration rates were also associated with lower levels of trust and sociability in rural areas, but with higher levels of trust and sociability in urban areas. The authors suggested that higher rates of in-migration might introduce more demographic heterogeneity which, in turn, might influence regional social capital differently in urban and rural areas (cf. (Putnam, 2007). Another US study found that county-level social capital— as measured by presidential voting activity, census response rate, and number of tax-exempt organizations—was associated with higher rates of in-migration and lower levels of out-migration (Lesage & Ha, 2012). This would be in line with the hypotheses cited above suggesting that social cohesion functions as a regional attractor of migration flows. A third study of 14 European countries reported that more social capital (frequency of meeting friends and neighbors, and prevalence of memberships in associations) was associated with lower residential mobility rates away from the region (David et al., 2010). This also supports the hypothesis of social cohesion being a "pull" factor of out-migration rates.

Our current study builds on the previous research exploring the associations between local social capital and residential mobility rates. We examined whether municipality-level indicators of the strength of social ties (i.e., social support, loneliness, social trust, community

and cultural activities, and meeting other people) were associated with residential mobility rates in Finland. Our regional analysis combined survey data on social ties (n=100,750) and registry data on migration rates and municipality covariates. We hypothesized that net migration rates (i.e., more people moving in than out) would be higher in municipalities characterized by stronger social ties. We also examined rates of in-migration and out-migration separately to see whether the same municipality characteristics were relevant for both people moving in and moving out of the municipality.

Methods and materials

Finland has the lowest population density of all the European Union countries, with an average of 18 individuals per square kilometer, compared to the 109 individuals per square kilometer which is the average population density across all European Union countries (Eurostat, 2023). During the last 50 years most of the regions of Finland have witnessed sizable migration from rural regions towards the main urban centres: the Helsinki metropolitan area in Uusimaa region, Turku in Varsinais-Suomi region, and Tampere in Pirkanmaa region. Other regions (especially Satakunta, Pohjois-Pohjanmaa, and Kainuu) have predominantly lost inhabitants. Uusimaa has served as the main attractor of in-migration: when Finns are not moving to Uusimaa, they tend to move across neighboring regions. Most Finns continue to live or return to the same region as their parents and siblings (Ghosh et al., 2018).

For the present analysis, data for social ties were derived from the Finnish national survey data Regional Health and Wellbeing (Alueellinen Terveys ja Hyvinvointi), which was carried out by the Finnish Institute for Health and Welfare between 2012 and 2017 in 6 separate survey waves. Each survey collected data from different respondents aged 20 or more, resulting in a total of 100,750 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).

Social support. Participants were asked to identify from whom they could get support when needed, choosing from the following categories of relationships: spouse/partner, close kin members, close friends, close colleagues, close neighbors, other individuals, or nobody. Regarding each relationship, respondents were asked whether they could receive emotional support ("Who do you believe truly cares about you, whatever may happen?") or practical help ("Who will provide practical help when you need it?") from individuals belonging to that category. A total sum score was calculated across all the relationships (range from 0 to 12).

Loneliness was assessed by question: "Do you ever feel lonely", with a response scale from 1 (never) to 5 (all the time).

Social trust was assessed by asking to what extent the respondent felt trust towards institutions (healthcare, social welfare, judiciary, police, municipal decision) and people in general with scale from 1 (no trust) to 5 (complete trust). General trust in people was also examined as a separate variable because this has often been used as an indicator of social trust in previous studies.

Participation in *community activities* was assessed by asking how often the respondent participated in organizations or communities around the following activities: sport, culture, politics, unemployment, church/religion, older people, or youth organizations, or in informal friend group activities. Each activity was rated with a 5-point scale: 1 = never, 2 = less than once a month, 3 = 1-3 time a month, 4 = 1-2 times a week, and 5 = 3 or more times a week.

Participation in *cultural activities* was assessed by the frequency of going to theater, concerts, museums, libraries, cinema, sports, and other culture happenings. The responses were rated on a scale from 0 to 3 (0= no participation in the last 12 months, 1= a couple times

a year, 2= 1–3 times a month, 3= at least once a week). A sum score was calculated by summing all 8 variables (range= 0–24).

Frequency of meeting others was assessed with a single item asking "How often are you in face-to-face contact with your friends and relatives who do not live in your household?" rated as 1= daily, 2= 1–3 times per week, 3= 1–3 times per month, 4= less than monthly, 5= never.

Data for *residential mobility rates* were obtained from Statistics Finland population registries (https://stat.fi/). We used the 3-year averaged rates from 2017-2019 for within-country in-migration, out-migration, and net-migration, each expressed as moves per 1,000 inhabitants of the municipality.

Covariates included population size (number of inhabitants), population density (number of inhabitants per square kilometer), average age of the inhabitants, and socioeconomic status (sum of standardized values of average taxable monthly income, average years of education beyond mandatory schooling per person, and employment rate of the work force).

Statistical analysis

For the aggregated survey measures, we used multilevel regression with post-stratification (Downes & Carlin, 2020; Hanretty, 2020) to get more representative estimates for the municipalities. We pooled all the survey years together and fitted random-effect multilevel regressions for each of the survey measure described above. Random-effect predictors included age group (20–34, 35–49, 50–65, 65 and older), sex (male/female), and municipality. The municipality-level post-stratified estimates for the aggregated survey measures were then obtained by applying the regression models to census population frequencies. This allowed us to calculate the municipality-level estimates for the correct

proportions of sex-by-age group categories in each municipality, which reduced the bias of selective response rates across different municipalities.

The regression models predicting migration rates were fitted with spatial autoregressive error models that took into account the spatial autocorrelation between neighboring municipalities. To ease the interpretation of the regression coefficients, we recoded all the predictor variables by dividing the original score with the difference score between the 90^{th} and 10^{th} percentile of the variable. This way the regression coefficient of each variable indicated the difference in migration rate (scored as migrations per 1000 inhabitants) associated with high vs. low value (i.e., 90^{th} and 10^{th} percentile) of the predictor variable. This did not influence the statistical significance of the associations but only made the regression coefficients easier to interpret and compare with each other.

Results

Descriptive statistics of the sample are shown in **Table 1**. **Figure 1** shows the clustering of high and low net migration rates in Finland, illustrated with the Getis–Ord hotspot analysis that gives high values for municipalities that have high net migration rates and that have neighboring municipalities with high net migration rates. The Helsinki metropolitan area in the south, and the Tampere and Turku region stand out as high net migration rates, whereas the northwest region of Ostrobothnia has the most marked concentration of low net migration rates. Of the 299 municipalities, 253 were losing people (at the rate of 8.5 persons per 1,000 inhabitants) and 46 were gaining people (at the rate of 5.7 persons per 1,000 inhabitants).

Net migration rate correlated more strongly with rates of in-migration (r=0.63) than out-migration (r=0.07), and the rates of in-migration and out-migration correlated strongly with each other (r=0.82). The spatial autocorrelations were moderately high for net migration (Moran's I=0.51), in-migration (0.66), and out-migration (0.50). **Table 2** shows the

correlations between different indicators of social ties and the covariates. Most of the correlations were low or moderate in magnitude, suggesting that the different aggregated measures were not all measuring the same underlying regional difference.

The associations of net migration rates with indicators of social ties are shown in **Table 3**. Unadjusted for other regional characteristics, higher net migration was associated with higher social support, general trust, cultural activities, and frequency of meeting people **(Table 3, Model 1**). All the four covariates were also associated with higher net migration rates, that is, with lower age (B = -6.8; CI = -9.0, -4.6), higher population size (B = 6.1; CI = 4.5, 7.8), higher population density (B = 7.6; CI = 5.6, 9.6), and higher socioeconomic status (B = 7.8; CI = 5.8, 9.9). Adjusted for these covariates except for socioeconomic status, higher net migration rates were still associated with higher social support, higher social trust, lower loneliness, higher cultural activities, and higher frequency of meeting people (**Table 3**, Model 2). Further adjusted for socioeconomic status, the associations with social support, social trust, cultural activities, and meeting people remained (**Table 3**, Model 3).

Table 4 shows the associations separately for in-migration and out-migration. Social support and cultural activities were associated more strongly with higher in-migration than with out-migration rates. Social trust and meeting people, in turn, were more strongly associated with lower out-migration than with in-migration rates.

Discussion

Social ties and activities appear to be important factors in determining how different regions of Finland attract new residents and retain old ones. Across 299 Finnish municipalities, higher aggregated levels of social support, social trust, cultural activities, and frequency of meeting people were associated with higher net migration rates between the municipalities.

These associations were observed even when adjusted for many covariates related to population structure and socioeconomic status.

The findings need to be interpreted within some methodological limitations. First, the analysis examined migration rates without considering more detailed features of migration flows. Considerable proportion of moves between municipalities take place between adjacent municipalities, and the social factors related to these neighboring moves may be different from the social factors associated with long-distance moves (Nivalainen, 2004; Shuttleworth et al., 2020). Other features of the origin–destination differences (e.g., migration flows to cities vs. rural areas) and the movers (e.g., educational level or age group) should also be examined in more detail. Second, the associations observed with regional measures do not necessarily reflect their individual-level associations (i.e., ecological fallacy; Sedgwick, 2015), so the associations reported here may not be directly comparable to studies that examine the residential mobility of individuals rather than aggregated mobility rates. However, municipality-level mobility trends, rather than individual differences, are more informative on regional development and policies. Third, the present analysis cannot demonstrate that social ties are causally related to higher net migration rates, because evaluating causality would require a study design in which the regional features could be manipulated, which was not the case in our study.

The present study has many strengths. We used large survey data which allowed us to assess regional variation in social characteristics. Such characteristics are usually not available for demographic analysis of residential mobility. Furthermore, we utilized reliable census data on residential mobility and employed multilevel regression with post-stratification. This ensured that the regional estimates for survey measures were more representative in terms of gender and age structures across different municipalities. The

combination of survey and demographic data, analyzed using rigorous methods, provides a more comprehensive perspective on the factors associated with regional mobility flows.

We hypothesized that social ties might be important for both in-migration and out-migration, that is, the pull and push factors of residential mobility. Two previous studies based on data from the United States (Kan, 2007) and 14 European countries (David et al., 2010) showed that higher social capital (e.g., receiving help from neighbors, meeting friends, belonging to social clubs) was associated with lower out-migration. We also found that higher average social trust was related to lower out-migration, while other measures of social relationships were not related to lower rates of out-migration. This is in agreement with a study of Hungarian subregions in which the strength of local social capital was not related to out-migration rates (Lőrincz & Németh, 2022). The Hungarian study did show that *bridging social capital* (measured by online social network connections between friends from different regions) was related to higher migration rates between the subregions. We did not have data on the participants' friendship networks, so we could not directly study the role of friendships in out-migration and in-migration.

Individual-level studies of residential mobility have rarely examined how social factors might be differently related to in-migration and out-migration, because these studies often lack the data on social factors of the *destination* region. In our study, two of the social measures (social support and cultural activities) were more strongly associated with in-migration compared to out-migration, whereas two of the other social measures (social trust and meeting people) were more strongly associated with out-migration than in-migration. Thus, social factors may be relevant both in attracting new residents and in keeping existing residents. Potential movers may view municipalities with stronger ties as more compelling locations, because regions with stronger social ties can provide better living circumstances for the new inhabitants (Wang & Wai Li, 2020). How can new movers know about the social

ties of the region before moving there? First, many movers may have already lived there earlier or visited relatives, as kin relationships influence people's mobility decisions. Second, social ties may also increase moves related to studies and career opportunities, if individuals have friends or colleagues in the municipality. Third, municipalities may have different reputations that people can use as information in deciding whether to move there. Fourth, some of the social ties might have neighborhood correlates that can be observed. Previous studies have shown that some neighborhood characteristics, such as types of cars, can be used to make inferences about the political leanings of the residents (Gebru et al., 2017). Social ties might also be associated with some neighborhood features that people could observe even without having detailed information about the strength of the underlying social ties. Further studies on the associations between social and built environment would be valuable in better understanding the specific factors that people pay attention to when selecting new residential locations.

Net migration rate was associated with social support and cultural activities with a similar magnitude as it was associated with population size, population density, age, and socioeconomic status (coefficients ranging between 6 and 8). The associations of social trust and frequency of meeting people were about half of these. These comparisons imply that social characteristics of the regions may be quite important for residential mobility patterns, as they are on par with important sociodemographic factors.

To conclude, the present results suggest that the strength of regional social ties are relevant for residential mobility flows within Finland. Municipalities in which residents reported higher levels of social support and trust, more active participation in cultural activities, and more frequent meetings with other people, were most likely to receive more new inhabitants than losing old inhabitants (i.e., higher net migration rates). The findings

provide additional evidence on the importance of social characteristics for people's migration decisions and regional development.

Table 1. Descriptive statistics of the 299 Finnish municipalities

Social support	3.99 (0.16)
Loneliness	2.18 (0.03)
Social trust	20.4 (0.4)
General trust	3.52 (0.03)
Community activities	10.4 (0.3)
Cultural activities	11.8 (0.4)
Meeting people	3.45 (0.06)
Net migration rate (persons per 1000 inhabitants)	-6.35 (7.14)
In-migration rate (persons per 1000 inhabitants)	44.2 (12.5)
Out-migration rate (persons per 1000 inhabitants)	50.6 (9.8)
Population size (1000 inhabitants)	18.4 (49.3)
Population density (inhabitants/km2)	2.53 (1.51)
Average age (years)	52.0 (3.3)
Taxed income (100 euros per person)	36.0 (5.5)
Education (years beyond mandatory schooling)	3.1 (0.5)
Employment (%)	90.2 (2.8)

Note: Values are means (and standard deviations).

Table 2. Correlation coefficients between social variables (n=299 municipalities)

	1	2	3	4	5	6
1. Social support						
2. Loneliness	-0.13					
3. Social trust	0.17	-0.12				
4. General trust	0.35	-0.01	0.58			
5. Community activities	-0.04	-0.11	0.32	0.15		
6. Cultural activities	0.68	-0.01	0.09	0.25	-0.03	
7. Meeting people	0.20	0.06	0.09	0.08	0.14	0.15

Table 3. Net migration rates associated with the strength of social ties

	Model 1	Model 2	Model 3
Social support	**7.7 (5.6, 9.9)**	**6.5 (2.7, 10.2)**	**4.7 (0.8, 8.6)**
Loneliness	-0.4 (-2.1, 1.4)	**-2.1 (-3.8, -0.5)**	-1.5 (-3.1, 0.2)
Social trust	1.6 (-0.1, 3.2)	**2.9 (1.4, 4.5)**	**2.4 (0.8, 4.0)**
General trust	**2.6 (0.9, 4.2)**	**1.9 (0.3, 3.5)**	1.4 (-0.1, 3.0)
Community activities	-0.5 (-2.1, 1.1)	1.4 (-0.2, 3.0)	0.6 (-1.0, 2.2)
Cultural activities	**7.1 (5.4, 8.8)**	**4.3 (2.0, 6.5)**	**3.7 (1.5, 6.0)**
Meeting people	**2.3 (0.4, 4.2)**	**5.5 (2.3, 8.6)**	**4.9 (1.7, 8.0)**

Note: Values are regression coefficients from spatial autoregressive error models fitted separately for each predictor variable. Model 1 includes no other covariates. Model 2 adjusts for municipality's average age, population size (log-transformed), and population density (log-transformed). Model 3 additionally adjusts for socioeconomic status (composite score of education, tax income, employment rate). The coefficients express the difference in net migration rate (persons per 1000 inhabitants) associated with the difference between high (90th percentile) and low (10th percentile) values of the predictor. Coefficients printed in bold are statistically significant ($p<0.05$).

Table 4. In-migration and out-migration rates associated with the strength of social ties

	In-migration		Out-migration	
	Model 1	Model 2	Model 1	Model 2
Social support	**9.5 (4.8, 14.3)**	**7.2 (2.3, 12.0)**	4.4 (-0.4, 9.2)	3.2 (-1.8, 8.1)
Loneliness	-0.7 (-2.8, 1.4)	0.2 (-1.9, 2.3)	1.2 (-0.8, 3.3)	1.8 (-0.3, 3.9)
Social trust	0.6 (-1.5, 2.6)	-0.5 (-2.5, 1.5)	**-2.0 (-4.0, 0.0)**	**-2.7 (-4.7, -0.7)**
General trust	1.1 (-0.9, 3.0)	0.2 (-1.7, 2.2)	-0.5 (-2.4, 1.5)	-0.9 (-2.9, 1.1)
Community activities	**2.4 (0.4, 4.4)**	1.6 (-0.4, 3.6)	0.5 (-1.5, 2.5)	0.0 (-2.0, 2.0)
Cultural activities	**5.0 (2.0, 7.9)**	**4.4 (1.5, 7.3)**	1.4 (-1.6, 4.3)	1.0 (-1.9, 3.9)
Meeting people	-1.4 (-3.8, 1.0)	-1.5 (-3.9, 0.8)	**-2.9 (-5.2, -0.6)**	0.0 (-2.6, 2.6)

Note: Values are regression coefficients from spatial autoregressive error models fitted separately for each predictor variable, adjusted for municipality's average age, population size (log-transformed), and population density (log-transformed). The coefficients express the difference in net migration rate (persons per 1000 inhabitants) associated with the difference between high (90th percentile) and low (10th percentile) values of the predictor. Model 2 additionally adjusts for composite score of sociodemographic status (education, tax income, employment rate). Coefficients printed in bold are statistically significant ($p<0.05$).

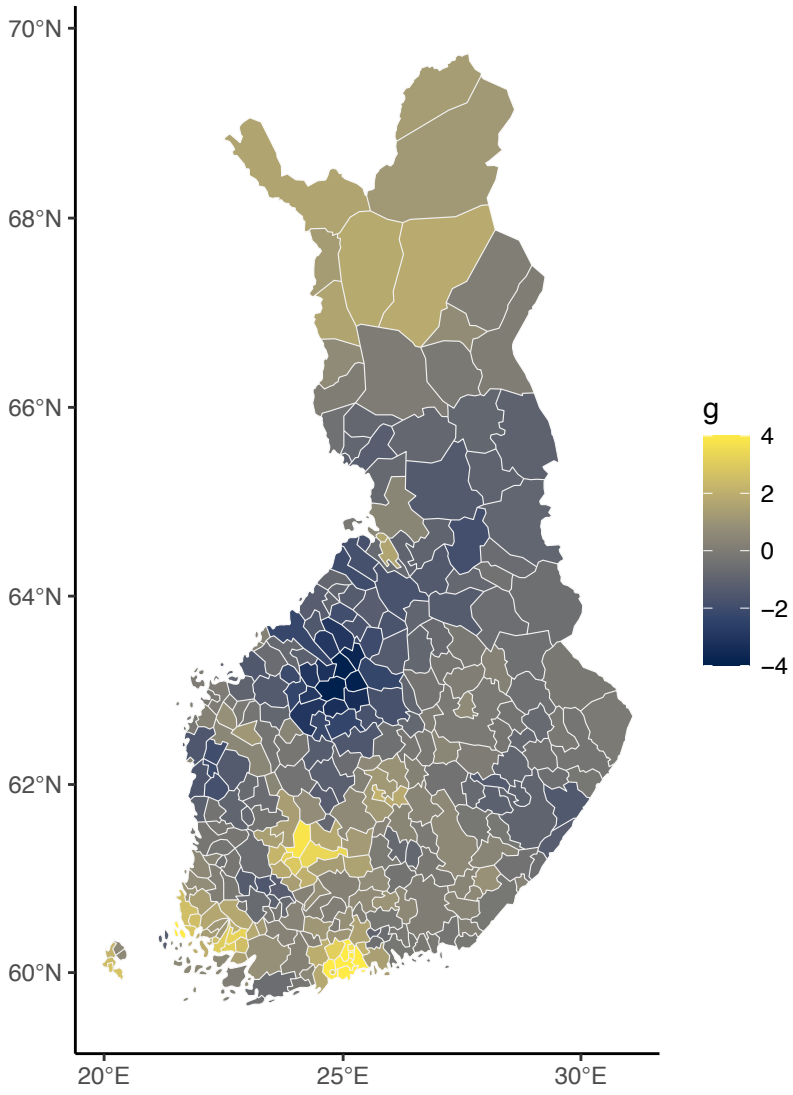

Figure 1. Clustering of high (yellow) and low (dark blue) rates of net migration in Finland 2017-2019. The values are z-scores of a Getis–Ord hotspot analysis that gives higher values to municipalities that have high net migration and that have neighboring municipalities with high net migration rates.

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Data availability: The data are available on request via the Findata portal (findata.fi)