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Try Another Municipality or Leave the Country?

A disaggregated approach to determinants of internal migration and emigration for immigrants and natives in Norway: Trinomial logit models with random effects

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Abstract:	International and internal migration are increasingly analyzed together. We expand existing knowledge by investigating how these migration patterns differ between immigrants and natives in rural and urban parts of Norway, using a trinomial logit model with random effects and a full-population panel data set. Our results show that immigrants are generally more mobile than natives, both within and out of Norway. The propensity to move abroad is lower than the propensity to move to another Norwegian municipality, also for most immigrants – but exceptions exist, for instance for single immigrants aged 35 in the Oslo area without a job. Moreover, while immigrants in less central parts of Norway are often more domestically mobile than those in more central municipalities, the opposite trend is found for native Norwegians, who tend to be more sedentary if they live in less central parts of the country.
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Preface

The research presented in this Working Paper is conducted by Terje Skjerpen (Statistics Norway) and Marianne Tønnessen (NIBR) as part of the project *EXITNORWAY – Emigration from today's Norway*, which is funded by The Research Council of Norway (grant # 313823). The results are published as a NIBR Working Paper while also submitted for consideration and peer review in an international research journal. The final peer reviewed publication may differ from the Working Paper publication – for instance, a Working Paper may be longer and more elaborate than a standard journal article as it may include intermediate calculations, background material etc.

The research presented in the current Working Paper investigate how migration patterns differ between immigrants and natives in rural and urban parts of Norway, simultaneously analyzing internal migration and emigration. It reveals some striking differences between immigrants and natives in different centralities of Norway.

We thank the EXITNORWAY project team for guidance and helpful feedback on earlier versions of this manuscript.

Oslo, February 2024

Berit Irene Nordahl
Research Director

Table of contents

Tables

Figures

Summary

International and internal migration are increasingly analyzed together. We expand existing knowledge by investigating how these migration patterns differ between immigrants and natives in rural and urban parts of Norway, using a trinomial logit model with random effects and a full-population panel data set. Our results show that immigrants are generally more mobile than natives, both within and out of Norway. The propensity to move abroad is lower than the propensity to move to another Norwegian municipality, also for most immigrants – but exceptions exist, for instance for single immigrants aged 35 in the Oslo area without a job. Moreover, while immigrants in less central parts of Norway are often more domestically mobile than those in more central municipalities, the opposite trend is found for native Norwegians, who tend to be more sedentary if they live in less central parts of the country.

1 Introduction

Internal and international migration have traditionally been two separate research fields (Ellis 2012; King and Skeldon 2010). However, the gap has been narrowing lately, thanks to several studies that have demonstrated how internal and international relocations are linked. Notably, Bernard and Perales (2022) demonstrate that for individuals, the two types of migration are, to a great extent, substitutions, a finding which supports the idea that internal and international migration are alternative responses to similar conditions.

Previous research has also demonstrated that the internal relocation patterns of immigrants differ from those of the native population. However, there is little research of how immigrants' and natives' migration patterns differ when analyzing emigration and internal migration simultaneously.

There are reasons to believe that determinants of both internal and international migration differ between natives and immigrants, and that these are interlinked. By definition, immigrants have already migrated at least once in their lives, and hence we can assume that they are a more select group than the natives when it comes to attitudes towards mobility. And again, by definition, immigrants were born abroad, while the natives have their roots somewhere within the country's borders. Hence moving 'home', or back to their place of origin, means an emigration for immigrants and an internal migration for natives. Moreover, the costs of settling abroad can be higher for natives than for immigrants, since immigrants may already have a larger network and be more familiar with the language and culture of the country they are emigrating (back) to.

This paper utilizes high-quality longitudinal register data for the entire population to explore patterns of internal and international migration for different groups of immigrants and native Norwegians. Using a trinomial logit model with random effects at the individual level, we ask how the probabilities of staying, moving internally or emigrating differ between immigrant and native men and women in rural and urban parts of Norway.

This allows us to answer several research questions:

- Are there differences in natives' and immigrants' probabilities of moving internally vs. emigrating?
- Do these patterns differ when we compare people in central and less central municipalities?
- Are these patterns gender-specific?

Our results show that natives and immigrants indeed display different migration patterns, both internally and internationally, and that these patterns do differ when comparing people in different centralities. We also found some gender differences, but employment, family situation and education seem to play a more important role in explaining relocation patterns for natives and immigrants.

The rest of the paper is organized as follows: In Section 2 we review previous research that is of relevance for the current paper. Section 3 is devoted to the Norwegian setting and dwells on migration in Norway in recent decades. In Section 4, we describe the econometric approach we take in the paper and the data underlying the empirical analysis. We report on our empirical results in Section 5. In Section 6, we end the main part of the paper with a discussion and provide some conclusions. Additional background information and empirical results are presented in three appendices.

1.1 Previous research

The interrelation between internal and international migration has been a topic of several studies in the last decades (see for instance Kritz and Gurak 2001; Hugo 2008; Mocetti and

Porello 2010; Brücker et al. 2011; Bernard and Perales 2022). These studies often focus on the link between *immigration* and internal migration, aiming to answer questions such as whether international migration into an area leads to more internal migration out of the same area (or less internal migration into the area).

In this literature, a recent paper by Bernard and Perales (2022) stands out by using survey data on the migration histories of around 6,000 persons in 13 European countries to investigate whether emigration and internal migration are complementarities or substitutions at the individual level – in other words, to what extent they are alternative responses to similar conditions. They demonstrate that substitution processes dominate; internal and international migrants respond to the same employment and family events, but to somewhat different degrees. For instance, emigration is more linked to economic motives, such as the end of an employment period, and to area of residence. Although those living in big cities are most mobile both internally and internationally, this pattern is strongest for international mobility. The findings anyways at any rate lend support to the idea that internal and international migration are derived from similar motivations.

In their study, Bernard and Perales did not include overseas-born respondents. However, there is reason to believe that people born outside the country have different perceptions of the costs and benefits associated with moving internally vs. internationally. Since they have already migrated at least once, they may be more used to – and perhaps selected into – mobility. And since they have their roots outside the country, the trade-off between moving internally and internationally is probably different for immigrants than for natives.

Studies of immigrants' internal migration have been conducted in, for instance, the US (Bartel and Koch 1991; Kritz and Nogle 1994; Perry et al. 2003; Rogers and Henning 1999), Canada (Newbold 1996, 1999; Nogle 1994), Germany (Heider et al. 2020; Schündeln 2014), Spain (Reher & Silvestre 2009; Silvestre & Reher 2014), Sweden (Boman 2011; Vogiazides and Mondani 2021; Åslund 2005), Australia (Laukova et al. 2022; Raymer and Baffour 2018), the Netherlands (de Hoon et al. 2021; Zorlu and Mulder 2008) and for a broader range of European countries (Finney and Catney 2012; González-Leonardo et al. 2022). The results from these studies are often linked to questions about segregation and/or labor market mobility. Although there are exceptions, immigrants often display a higher propensity to move internally than natives. Furthermore, immigrants often move to more populous/central areas with larger immigrant networks. However, patterns vary between immigrants with different characteristics. For instance, González-Leonardo et al. (2022) highlight the importance of education: In most of the European countries they investigated, completing tertiary education increased the likelihood of migrating internally, and this gradient was typically stronger among foreign-born than natives. In Spain, immigrants with university education, and in particular unemployed immigrants, moved more frequently than others, whereas marriage and family seemed to make immigrants more sedentary (Silvestre and Reher 2014).

These studies usually focus on immigrants' internal migration – often compared with that of natives – without taking emigration into account. One exception is a study by Solignac (2018), which uses panel data for 1968-1999 for a sample of the French population to explore immigrants' and natives' outflows from France between two censuses, be it an internal migration or an emigration. They demonstrate that although traditional methods may indicate that immigrants are less mobile than natives, taking immigrants' higher emigration rates into account reverses this conclusion. Immigrants in France are actually more likely than natives to leave their municipality. Their results show – contrary to what is found in many other countries – that the proportion of immigrants who move between French municipalities is lower than for natives, but that this is more than offset by immigrants' higher propensity to leave the country. Another exception is a recent study by Ortensi and Barbiano di Belgiojoso (2023), who analyze short-term intentions of moving internally or internationally among international migrants in the northern Italian region of Lombardy. They found that neither the migrants' number of years since migration, nor the municipalities' concentration of co-nationals, had significant effects on moving intentions. However, municipality location

matters: Migrants living outside cities and densely populated areas were more likely to have an intention of moving internally, and migrants living in rural or sparsely populated areas were more likely to express the intention to emigrate to a third country.

We contribute to the literature on immigrants' and natives' internal and international migration by using high-quality annual register data from Norway to analyze how emigration and internal migration patterns differ between immigrants and natives in five different degrees of urbanity/centrality. Hence, compared with the study by Bernard and Perales (2022), who use retrospective data, we show differences between immigrants and natives. Solignac's (2018) paper deals with measurement issues. He looks at the internal migration and emigration of immigrants and natives from one census to the next. The sample consists of those born on the first four days of October. The number of years between each census varies from seven to nine years. In contrast to our study, Solignac (2018) seems not to focus on regional heterogeneity. Compared with Ortensi and Barbiano di Belgiojoso (2023), we analyze actual moving and not intentions of moving, for both natives and immigrants. We use the same statistical model as Bernard and Perales (2022), but the amount of data is vastly different between the two studies. As already mentioned, they look at around 6,000 individuals, while we use data for the entire Norwegian population. We also present our results in a different way, since we estimate probabilities of internal migration and emigration, whereas they focus on estimation of relative risk ratios.

1.2 The Norwegian setting

Norway is a Northern European country with 5.4 million inhabitants, of whom 16 per cent are immigrants (Statistics Norway 2023a). It is a relatively wealthy country, and as a major exporter of oil, gas, and seafood, the population and jobs are scattered throughout most of the geographically extended country. As of 2023, Norway has 356 municipalities, with a population ranging from around 200 (Utsira) to 700,000 (Oslo).

In Statistics Norway's centrality index (the 2020 version),[1] all municipalities are ranked based on their proximity to workplaces and service functions and are grouped into six categories. A map of all Norwegian municipalities by centrality is shown in Appendix Figure A1. Category 1 is the most central group, consisting of the capital, Oslo, and five neighboring municipalities (Bærum, Lillestrøm, Nordre Follo, Lørenskog and Rælingen). Centrality 2 comprises Bergen, Trondheim, Stavanger, several cities in the larger Oslo area and suburban municipalities around the large cities. Centrality 3 covers many other urban and semi-urban municipalities around the country. As of 2020, 70 per cent of the population (81 per cent of immigrants) lived in Centrality 1, 2, or 3. The degree of remoteness to large labor markets and service functions increases with the centrality number. The two least central categories, Centrality 5 and Centrality 6 (merged into one group in our analyses and labelled 5*), cover relatively large areas of Norway, but accommodate only about 13 per cent of the population (8 per cent of immigrants).

Compared with the US, within-country migration is generally lower in Europe, but the Nordic countries have relatively high moving rates (Machin et al. 2012). In Norway, annually around 4 per cent of the population move between municipalities (Statistics Norway 2023b), and an additional 0.5-0.7 per cent move abroad (Statistics Norway 2023c). Highly educated people and young adults tend to move more than others (Machin et al. 2012).

Before oil was discovered on the continental shelf of Norway around 1970, immigrants comprised less than 2 per cent of the population in Norway. By 2000, the proportion had increased to 6 percent. However, after the EU enlargement in 2004 labor immigration increased markedly, in particular from Poland and Lithuania. Norway is a member of the

[1] https://www.ssb.no/en/klass/klassifikasjoner/128/om

European Economic Area, EEA (but not the EU), and the EU/EEA regulations give all EU/EEA nationals and their family members the right to live, work, and study in Norway. In addition, Norway has received a considerable number of refugees, for instance from former Yugoslavia, Syria, Eritrea, and Somalia, and more recently from Ukraine. Many family migrants have come to unite with labor migrants, refugees, or native Norwegians. Moreover, there has always been immigration from other Northern European countries, most notably from Sweden. In 2020, the largest immigrant groups in Norway were from Poland, Lithuania, Sweden, Syria, Somalia, and Germany (Statistics Norway 2023a). Immigrants are found in all of Norway's 356 municipalities, although their settlement is somewhat more centralized than that of the general population (Tønnessen 2022). In 2020, 30 per cent of immigrants and 17 per cent of native Norwegians (including Norwegian-born with immigrant parents) lived in Centrality 1 – the Oslo area. More information about Norwegian immigration and emigration history and regulations, the regional divisions into centralities, and Norwegian register data on these topics can be found in Tønnessen et al. (2023).

2 Method and data

2.1 Method

We consider a discrete choice model with 3 outcomes estimated on longitudinal data, where unobserved individual heterogeneity is represented by random effects. The response variable, *y*, takes on the values 1, 2, and 3. The row vector of explanatory variables is given by *X.* All the explanatory variables are characteristics for the individual. Thus, no alternative specific variables enter into the model. We let outcome 1 be the base alternative.

Using the trinomial logit specification, we have the following probabilities for individual *i* in year *t*:

$$F(y_{it}=1, X_{it}, \boldsymbol{\beta}, \boldsymbol{\gamma}, u_i) = \frac{1}{1+\exp(X_{it}\boldsymbol{\beta}+u_i)+\exp(X_{it}\boldsymbol{\gamma}+u_i)}, \tag{1}$$

$$F(y_{it}=2, X_{it}, \boldsymbol{\beta}, \boldsymbol{\gamma}, u_i) = \frac{\exp(X_{it}\boldsymbol{\beta}+u_i)}{1+\exp(X_{it}\boldsymbol{\beta}+u_i)+\exp(X_{it}\boldsymbol{\gamma}+u_i)} \tag{2}$$

and

$$F(y_{it}=3, X_{it}, \boldsymbol{\beta}, \boldsymbol{\gamma}, u_i) = \frac{\exp(X_{it}\boldsymbol{\gamma}+u_i)}{1+\exp(X_{it}\boldsymbol{\beta}+u_i)+\exp(X_{it}\boldsymbol{\gamma}+u_i)}. \tag{3}$$

In Eqs. (1)-(3) $\boldsymbol{\beta}$ and $\boldsymbol{\gamma}$ are column vectors attached to the row vector of explanatory variables X_{it} for outcomes 2 and 3, respectively. The corresponding column vector for outcome 1 has been normalized to 0 to achieve identification. The time-invariant random effect is given by the term u_i. Again, because of identification, the random effect for outcome 1 has been set to zero for all individuals. Note that the random effect is common to outcomes 2 and 3 of the response variable. It is assumed to be normally distributed with expectation zero and variance σ_{uu}^2. Under these assumptions we obtain the following likelihood for individual *i*:

$$L_i = \int_{-\infty}^{\infty} \prod_{t\in T_i} \prod_{m=1}^{3} \left[F(y_{it}=m, X_{it}, \beta, \gamma, u_i)\right]^{1\{y_{it}=m\}} \phi(u_i)du_i, \tag{4}$$

where $\phi(u)$ denotes the univariate normal density function with expectation zero and variance σ_{uu}^2, T_i a set with the years individual *i* is in the sample, and where 1{y_{it} =m} equals 1 if what is in the curly bracket is true. The total likelihood is given by:

$$L = \prod_{i=1}^{N} L_i, \tag{5}$$

where *N* denotes the total number of individuals in the employed data set.
Maximizing (5) with respect to the unknown parameters yields the estimates $\tilde{\beta}, \tilde{\gamma}$ and $\tilde{\sigma}_{uu}^2$.
Furthermore, we obtain the estimated covariance matrix of

$$\tilde{\boldsymbol{\theta}} = \left(\tilde{\boldsymbol{\beta}}^{/}, \quad \tilde{\boldsymbol{\gamma}}^{/}, \quad \tilde{\sigma}_{uu}^{2} \right)^{/}. \tag{6}$$

With these estimates we may write up the following equations for prediction of the three probabilities, where the random effect has been set to 0:

$$\tilde{F}(y_{it} = 1, X_{it}, \tilde{\boldsymbol{\beta}}, \tilde{\boldsymbol{\gamma}}, 0) = \frac{1}{1 + \exp(X_{it}\tilde{\boldsymbol{\beta}}) + \exp(X_{it}\tilde{\boldsymbol{\gamma}})}, \tag{7}$$

$$\tilde{F}(y_{it} = 2, X_{it}, \tilde{\boldsymbol{\beta}}, \tilde{\boldsymbol{\gamma}}, 0) = \frac{\exp(X_{it}\tilde{\boldsymbol{\beta}})}{1 + \exp(X_{it}\tilde{\boldsymbol{\beta}}) + \exp(X_{it}\tilde{\boldsymbol{\gamma}})} \tag{8}$$

and

$$\tilde{F}(y_{it} = 3, X_{it}, \tilde{\boldsymbol{\beta}}, \tilde{\boldsymbol{\gamma}}, 0) = \frac{\exp(X_{it}\tilde{\boldsymbol{\gamma}})}{1 + \exp(X_{it}\tilde{\boldsymbol{\beta}}) + \exp(X_{it}\tilde{\boldsymbol{\gamma}})}. \tag{9}$$

The models are estimated using the xtmlogit procedure in Stata.[2] Our model corresponds to the one used by Wangen and Biørn (2006) in another area, which is smoking behavior.[3] The only difference seems to be that they have one more outcome than the current paper. From the outset we included separate random variables for outcomes 2 and 3. Such a modification yields a more complicated estimation problem, since the likelihood function now involves a double integral. For some of our subsamples we succeeded in estimating this extended model, but not for all. Besides, it took a very long time to estimate models with this extended specification. Given this experience, below we only report results based on a single random variable. Also, Wangen and Biørn (2006) only incorporated one random effect in their model.

2.2 Data[4]

To carry out our empirical analysis we combined data from the following data sources: Population data, Educational data and Employment data. They are merged using a unique anonymized identifier at the individual level. From the Population data we obtain the birth year, the gender, information on where the individual was born, and whether the person is an immigrant. Knowing the actual year and the birth year of the individual, the person's age can be deduced. Our sample is limited to persons aged 15-74 years. Furthermore, the Population data provide information about what sort of family the person belongs to. With respect to educational attainment, we operate with different categories according to the length of the education. We make distinct estimations at the regional level, and we distinguish between five centrality areas. In the official Norwegian classification, there are six different centrality levels. The most urban area belongs to Centrality 1 and the most rural area belongs to Centrality 6. Thus, the degree of urbanity decreases as the centrality level increases. As already mentioned, we have aggregated Centrality 5 and Centrality 6 into one centrality group and dubbed it Centrality 5*. Our estimation period covers the years 2014-2019. Thus,

[2] This procedure first appeared in version 16 of Stata. The models are estimated by using adaptive Gauss-Hermite quadrature methods to approximate the likelihood.

[3] Wangen and Biørn utilized the E04UCF procedure in NAG's library (cf. NAG 1993) to estimate the model. For more information on estimation of longitudinal logit models with random effects see, for instance, Hsiao (1996).

[4] For a comprehensive description of the data, different classifications and backdrop, see Tønnessen et al. (2023).

for 2019 we have the transitions from 2019 to 2020. Figure 1 shows a map of Norway and where municipalities at the different centrality levels are to be found.

Our response variable is termed *MIG.*[5] It is a categorical variable taking on three distinct values. It takes on the value 1 if the individual stays in the same municipality in year *t+1* as in year *t*, the value 2 if the individual lives in another municipality in Norway in year *t+1* as in year *t* and, finally, it takes on the value 3 if the individual lives in a municipality in Norway in year *t* but abroad in year *t+1*. Thus, the digit '1' is related to immobility, the digit '2' to internal migration and the digit '3' to emigration. It is important to note that mobility is defined based on municipalities, but estimations are carried out at a more aggregate level, i.e. at the centrality levels. Hence, internal migration may occur both from a municipality at a given centrality level to another municipality at the same centrality level, and from a municipality at a given centrality level to a municipality at another centrality level.

We distinguish between individuals belonging to the native population and individuals who are immigrants. Individuals who are children of two immigrants have been removed from the data set. By its definition this is a time-invariant observed attribute.

Based on the educational data we have constructed five binary variables. They are labelled, respectively, *DEDU_PSC*, *DEDU_HSD*, *DEDU_PSE*, *DEDU_SHE* and *DEDU_LUE*. *DEDU_PSC* is 1 if the individual has primary school as the highest educational attainment and otherwise takes the value 0. *DEDU_HSD* is 1 if the individual possesses a high school diploma, but has no further education beyond that, and otherwise takes the value 0. *DEDU_PSE* takes the value 1 if the individual has post-secondary education, but not education at the university level, and otherwise takes the value 0. *DEDU_SHE* takes the value 1 if the individual has short university education and otherwise takes the value 0. Finally, *DEDU_LUE* takes the value 1 if the individual has long university education and otherwise takes the value 0. If all these five variables are 0 for a given individual in a specific year, the individual is in the reference group.

Our data set also contains information about the individual's family situation. Again, there are five binary variables. They are labelled, respectively, *DFAM_SIN*, *DFAM_MNC*, *DFAM_MWC*, *DFAM_MOWC* and *DFAM_CWJC*. *DFAM_SIN* is 1 if the person lives alone (one-person family) and is otherwise 0. *DFAM_MNC* is 1 if the individual is married with no children and is otherwise 0. *DFAM_MWC* is 1 if the individual is married and has at least one child and is otherwise 0. *DFAM_MOWC* is 1 if the individual is a single mother with at least one child and is otherwise 0. Finally, *DFAM_CWJC* is 1 if the individual is a cohabitator and has at least one common child with the partner and is otherwise 0. If all these five variables are 0 for a given individual in a specific year, the individual is in the reference group.

In the first two tables in Appendix A, we provide summary statistics related to the *MIG*-variable. In Table A1 we report on the number of observations in the different categories. This is done for 20 different groups after disaggregating along three dimensions, i.e. centrality level, immigration status and labor market status. There are five centrality levels, two immigration statuses and two labor market statuses. In Table A2 we present the same information on share form. Around 11.8 million observations (person-years) are native employees, who are relatively evenly spread across centralities, but where the numbers of movers (internally and internationally) are highest in Centrality 1-3. Less than half of these, about 4.8 million observations, are native Norwegians who are unemployed or out of the workforce. Immigrants in both of these labor market categories are fewer, with 1.8 million observations in the employee group and 1 million observations in the group of unemployed or outside the workforce. Immigrants live considerably more centralized than native Norwegians. However, as Table A2 shows, the share who move internally is particularly high

[5] Thus, *MIG* corresponds to *y* in the methodological section.

among immigrants in the least central parts of Norway – especially if they are unemployed or out of the workforce.

AGE is the only explanatory variable which is not a binary variable. It is a counting variable. Summary statistics for this variable are provided in Appendix Table A3. Natives are generally slightly older than immigrants, especially in the more remote municipalities. For both groups, the employees are on average younger than those who are unemployed or out of the workforce. For the estimations we in addition employ a transformation of this variable, which is labelled *AGESSQ*. It is defined as

$$AGESSQ = (AGE/10)^2.$$

We also utilize information about gender. The variable *DMALE* is 1 if the individual is male and 0 if the individual is female. Summary statistics for this variable for the 20 groups are reported in Table A4. The proportion of women is highest in Centrality 1 for native employees, as well as for immigrants who are unemployed or out of the workforce, whereas for immigrants who are employees the proportion of women is highest in the least central municipalities. The variation ranges from 47 to 54 per cent men.

Table A5 provides summary statistics related to the educational variables for the 20 groups over the estimation period. It shows the number of observations related to the different types of education for the 20 groups considered for estimation. Note that for most individuals, education is a time-invariant variable, whereas for young individuals the highest education status during the sample period may change. The largest educational groups for native Norwegians are those with a high school diploma and those with short university education. This is also the case for immigrants who are employees, whereas for immigrants who are unemployed or out of the workforce, those with primary school as their highest education level constitute the largest group.

Finally, Table A6 presents summary statistics by family groups. This variable indicates which family members live together. People not living with family (or not married/cohabiting/ registered partner) are considered one-person families. People married with children are the largest group among employees, while the one-person family group is the largest for those who are unemployed or outside the workforce, among both native Norwegians and immigrants.

With the above information we will now specify the vector X_{it} which occurred in the methodological section. Let

$$x_{it}^{edu} = (DEDU\_PSC_{it}, DEDU\_HSD_{it}, DEDU\_PSE_{it}, DEDU\_SHE_{it}, DEDU\_LUE_{it}), \quad (10)$$

$$x_{it}^{fam} = (DFAM\_SIN_{it}, DFAM\_MNC_{it}, DFAM\_MWC_{it}, DFAM\_MOWC_{it}, DFAM\_CWJC_{it}) \quad (11)$$

and

$$x_{it}^{yr} = (DYEAR2014_{it}, DYEAR2015_{it}, DYEAR2016_{it}, DYEAR2017_{it}, DYEAR2018_{it}). \quad (12)$$

Thus, we may write the vector X_{it} as

$$X_{it} = \left(DMALE_i, \quad AGE_{it}, \quad AGESSQ_{it}, \quad x_{it}^{edu}, \quad x_{it}^{fam}, \quad x_{it}^{yr}, \quad 1 \right).$$

Note that X_{it} contains 19 elements in total and that the last element is the constant term.

Table 1 below displays the names of all explanatory variables and their interpretations and operationalizations.

Table 1: List of explanatory variablesa

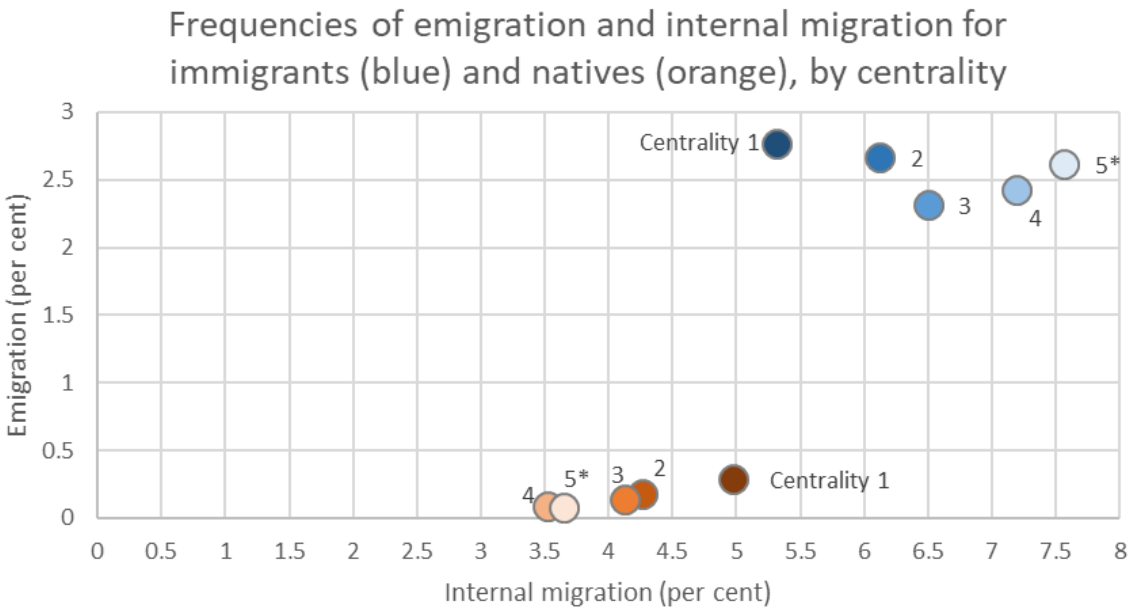
Vari-able	More descriptive intuitive variable name	Interpretation	Operationalization
x_1	*DMALE*	gender	x_1 is 1 if the individual is a male, and 0 if the individual is a female. The variable is time-invariant
x_2	*AGE*	age	x_2 is an integer variable
x_3	*AGESSQ*	$(age/10)^2$	
x_4	*DEDU_PSC*	education	x_4 is 1 if the individual has education from primary school, otherwise 0
x_5	*DEDU_HSD*	education	x_5 is 1 if the individual possesses a high school diploma, otherwise 0
x_6	*DEDU_PSE*	education	x_6 is 1 if the individual possesses a post-secondary school education certificate, otherwise 0
x_7	*DEDU_SHE*	education	x_7 is 1 if the individual possesses a short university education, otherwise 0
x_8	*DEDU_LUE*	education	x_8 is 1 if the individual possesses a long university education, otherwise 0
x_9	*DFAM_SIN*	family type	x_9 is 1 if the individual is a single person (one-person family), otherwise 0
x_{10}	*DFAM_MNC*	family type	x_{10} is 1 if the individual is a married person without children, otherwise 0
x_{11}	*DFAM_MWC*	family type	x_{11} is 1 if the individual is a married person with at least one child, otherwise 0
x_{12}	*DFAM_MWOC*	family type	x_{12} is 1 if the individual is a (single) mother with at least one child, otherwise 0
x_{13}	*DFAM_CWJC*	family type	x_{13} is 1 if the individual is a cohabitating individual with at least one joint child, otherwise 0
x_{14}	*DYEAR2014*	time dummy	x_{14} is 1 if t=2014, otherwise 0
x_{15}	*DYEAR2015*	time dummy	x_{15} is 1 if t=2015, otherwise 0
x_{16}	*DYEAR2016*	time dummy	x_{16} is 1 if t=2016, otherwise 0
x_{17}	*DYEAR2017*	time dummy	x_{17} is 1 if t=2017, otherwise 0
x_{18}	*DYEAR2018*	time dummy	x_{18} is 1 if t=2018, otherwise 0
x_{19}	*Constant*	constant term	x_{19} is always 1

[a]The reference group consists of females observed in 2019 with unknown education and unknown family constellation.

In Figure 1 we display data frequencies as percentages of emigration and internal migration for immigrants and natives by centrality across the years 2014-2019. This clearly shows that the emigration and internal migration frequencies for immigrants are higher than for natives. For both immigrants and natives Centrality 1 is the centrality with the highest emigration frequency. When it comes to internal migration, Centrality 1 has the highest frequency for native Norwegians, whereas Centrality 5* has the highest frequency for immigrants.

Figure A2 in Appendix A provides information on differences in frequencies in the gender dimension. For both genders, the emigration and internal migration frequencies are higher for migrants than for natives. Among migrants, males have both higher emigration and internal migration frequencies than females. For natives the pattern is different. Males and females have approximately the same emigration frequencies, whereas females have somewhat higher internal migration frequencies than males.

Figure 1: Frequencies of emigration and internal migration for immigrants and natives in Norway by centrality, annual per cent 2014-2019



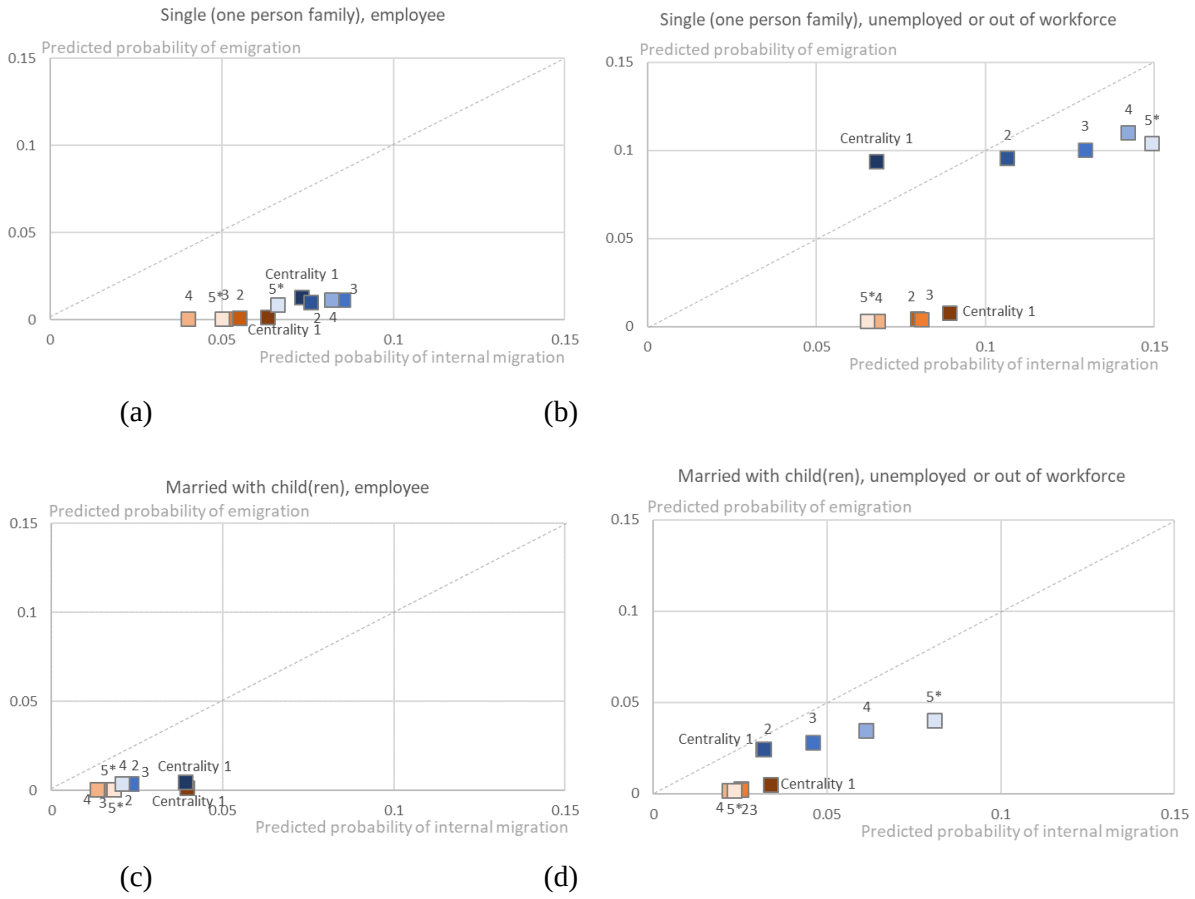
3 Empirical results

Tables B1-B4 in Appendix B report the parameter estimates of 20 different estimations. Most of the parameter estimates are significant, which is not surprising, in view of the large number of observations. A positive sign for a parameter estimate means that the estimated probability of an outcome increases when there is a positive change in the attached explanatory variable. In Tables B5 and B6 we report, respectively, the estimates of the variances of the random effects and the number of observations in each of the 20 estimations.

The probabilities of the different outcomes are non-linear functions of the parameters in the logit specification. We derive the estimated probabilities of the different outcomes under different constellations, i.e. the values of the explanatory variables. Using the delta method (see for instance Kmenta 1997, p 486), we also produce *t*-values for the estimated probabilities. Throughout the calculations, we assume the age of the person to be 35 years and the calendar year refers to 2017. Both for the level of education and family situation we operate with two alternatives so that there are four combinations. They are shown in Table C7. The predicted probabilities, together with their attached *t*-values, are reported in Tables C1-C4 in Appendix C.

We provide some tables containing *t*-statistics. In Table C5 and Table C6 we report, in conjunction with different estimations, the difference in estimated probabilities for natives and immigrants, and divide the result by the square of the sum of the two variances of the probabilities. One may now test the null hypothesis of equal probabilities against the alternative hypothesis of different probabilities. Using a significance level of 5 percent, rejection occurs when the absolute value of the test-statistic exceeds 1.96. Alternatively, one may consider one-sided testing. The null hypothesis is now that the probabilities of immigration and domestic migration for immigrants are either equal to or greater than those for natives, whereas the alternative hypothesis is that the probabilities are greater for natives than for immigrants. In this case, rejection is obtained if the test statistic exceeds 1.645 using a significance level of 5 percent. Table C5 contains results for males, whereas Table C6 contains results for females. We will utilize these tables when commenting on the results visualized in the graphs below.

Figure 2: Predicted probabilities of emigration and internal migration for 35-year-old men with a high school diploma, by family and employment status, immigrant status (blue = immigrants, orange/brown = natives) and centrality (darker = more central)



Our analysis has many dimensions, and such graphs should hopefully make the results more easily accessible. Note that *t*-values are not added to any of these graphs but can be found in the tables mentioned above. Our main figure is Figure 2, which focuses on the difference between immigrants and natives in different centralities. In all four parts of the figure the individual is assumed to be male and to possess a high school diploma, but to have no additional education beyond that. The blue boxes represent immigrants, whereas the brown boxes represent natives. The centrality dimension is illustrated by the darkness of the colors. Along the horizontal and vertical axes, we measure, respectively, the predicted probability of moving internally and of emigrating. The upper two parts of the figure are devoted to an individual living alone, while the two lower parts are for a married individual with at least one child. In the two parts to the left, the individual is an employee, whiles in the two parts to the right, the individual in question is either unemployed or out of the workforce.

Note that the scales are the same in all four parts of the figure. The most striking results are those in part (b) of the figure. In all centralities, for a single (one-person family) immigrant male with a high school diploma who is unemployed or out of the workforce, the predicted probabilities of emigration and domestic migration are significantly higher than for a corresponding native Norwegian person, cf. the five *t*-statistics for group 1 in the last column of Table C5. The immigrant's predicted probability of emigrating varies only moderately across the centralities. Native individuals in all centralities all have a low predicted probability of emigrating. However, individuals from different centralities differ more when it comes to the predicted probability of internal migration. Among immigrants, single males with a high school diploma in remote areas have the highest predicted probability of moving internally.

Among corresponding native men, the differences between the centrality levels are modest, but individuals in Centrality 1 have somewhat higher predicted probabilities of internal migration than individuals in the other centrality areas. In all centralities except Centrality 1, immigrants have a significantly higher predicted probability of internal migration than native Norwegians, as evidenced by the first five t-statistics in the column next to the last.

Part (a) of Figure 2 shows that single (one-person family) men with a high school diploma who are employees have a relatively low predicted probability of emigrating. This is the case for both immigrants and native Norwegians, and in all centrality areas. When it comes to predicted probabilities of internal migration, immigrants have a significantly larger predicted value than native Norwegians in all centralities, as shown by the 5 *t*-statistics at the top of column 1 in Table C5. Part (c) shows that, also for married men with a high school diploma who are employees, the predicted probability of emigration is low, and as for the single men, the predicted probability of internal migration is, generally, somewhat higher for immigrants than for natives. However, for men living in Centrality 1, there is an insignificant difference between immigrants and natives, cf. the first line and first column for Group 2 in Table C5. The last part of the figure, part (d), covers the results for married men with at least one child who are unemployed or out of the workforce. One can note that immigrants, generally, have both higher predicted probabilities of moving internally and of emigrating. However, in Centrality 1 native Norwegians have about the same predicted probability of internal migration as immigrants, as shown by the first number for Group 2 in the second-last column of Table C5, where the difference is insignificant. Note also that the ranking of the centrality areas differs between immigrants and natives. For immigrants, internal migration propensities seem to increase with the level of rurality, and the most rural centrality, labelled 5^*, is the one with both the highest predicted probability of internal migration and emigration, when one looks at the immigrants. Among the natives, it is Centrality 1 that has this property. Native men from the two most rural centrality areas have the lowest predicted probabilities when it comes to both internal migration and emigration.

Graphs of a similar type to Figure 2 are reported in Appendix C. In contrast to Figure 2, these have a clear focus on gender and educational differences. Consider first Figure C1, which covers single men (upper parts) and single women (lower parts). Whereas parts (a) and (c) are for those who possess a high school diploma, parts (b) and (d) are for those with a short university education. Note that part (a) of Figure C1 is the same as part (a) of Figure 2. However, the three remaining parts are new. The scale in Figure C1 differs from that in Figure 2. Much of the pattern related to the difference between immigrants and native Norwegians is rather equal to the one found in Figure 2. Also, for single male employees with short university education, we mainly find that predicted probabilities of both internal migration and emigration are significantly higher for immigrants than for native Norwegians, cf. the ten *t*-statistics in the first two columns for group 3 in Table C5. The only exception is constituted by those living in Centrality 5*, where natives have a higher predicted probability of internal migration than immigrants. However, the difference is not significant, as revealed by the *t*-statistic reported at the end of the first column for group 3 in Table C5.

The results for single female employees deviate slightly from those for single males. No matter whether the individual possesses a high school diploma or has a short university education, female immigrants have a significantly higher predicted probability of emigrating, conditional on the centrality, cf. the five *t*-statistics in the second column for Group 1 and the five *t*-statistics in the second column for Group 3 in Table C6. The same is true for Centralities 2-4 in conjunction with internal migration. For Centrality 1, we do not find any significant difference between immigrants and natives, cf. line 1 and line 11 in the first column of Table C6. For Centrality 5^*, we find that the predicted probabilities are higher for native Norwegians than for immigrants, but the result is only significant for those with short university education, cf. lines 6 and 15 in the first column of Table C6. Immigrant females in Centrality 1 who possess a high school diploma have a higher predicted probability of

emigration than corresponding females in the other centrality areas. Among the natives the predicted probability of emigration is rather equal among the centrality areas.

Part (d) of Figure C1 covers single women who are employees and have a short university education. In all centralities, immigrant females have a significantly higher predicted probability of emigration than native females, see the five *t*-statistics in the second column for group 3 in Table C6. For the three most remote areas, the results differ significantly for immigrants and native Norwegians when it comes to internal migration. The predicted probability of internal migration is higher for a native female than for an immigrant female in centrality 5*. In contrast, it is the other way around for females in Centralities 3 and 4. All these three results are significant, as shown by the *t*-statistics in lines 13 to 15 in the first column of Table C6.

Figure C2 is as Figure C1, except that the (single) individual is unemployed or out of the working force in the former, while an employee in the latter. Part (a) in Figure C2 is the same as part (b) in Figure 2. The difference between part (b) and part (a) in Figure C2 is that the male has short university education in the former, but a high school diploma in the latter. The predicted probabilities of emigration of immigrants do not differ markedly across the centralities. They vary roughly from 0.11 to 0.12, as shown by the five last numbers in the third column of Table C3. For all centrality areas the predicted probabilities of emigration are significantly higher for immigrants than for natives for this type of person, cf. lines 11 to 15 in the last column of Table C5. The variation in predicted probabilities of emigration is also modest for natives. However, the internal migration pattern is not the same. For immigrants, the predicted probability of internal migration decreases with the level of centrality. Immigrants in the most remote areas have the highest predicted probability of internal migration. For natives, the dispersion across the centrality areas is far lower and here an individual from Centrality 3 has the highest predicted probability of internal migration.

In the lower part of Figure C2 we consider single (one-person family) females who are unemployed or out of the workforce. The pattern resembles that for the males. For females with a high school diploma or a short university education the predicted probabilities of emigration are markedly higher for immigrants than for natives, cf. lines 1-5 and 11-15 in the last column of Table C6. For immigrant females who possess a high school diploma the highest predicted probabilities are found for females living in centrality areas 5* and 4, whereas for females with short university education the highest predicted emigration probability is found in centrality level 2. While the dispersion of predicted probabilities of emigration is modest across the centralities for both education types, it is clearly larger when it comes to predicted probabilities of internal migration. How high the predicted probability of internal migration is, depends on the centrality area. The more rural a centrality is, the greater the predicted probability of internal migration for immigrant women. As for males, the dispersion of predicted probabilities for either emigration or internal migration is markedly less for natives than for immigrants. Among native women who possess a high school diploma, females from Centrality 1 have the highest predicted probability of internal migration, whereas females from Centrality 5 have this position if they are females with a short university education.

Whereas Figures C1 and C2 are for single individuals, Figures C3 and C4 are for married individuals with at least one child. In other respects, the assumptions coincide. Note that part (a) in Figure C3 is the same graph as part (c) in Figure 2. In part (b) of Figure C3 we consider male persons who are employees with short university education. For both immigrants and natives, the predicted probabilities of emigration are rather low, but the predicted probabilities for native Norwegians are somewhat lower than for immigrants, and according to the second column for group 4 in Table C5 the differences are significant. The highest predicted probabilities are found for Centrality 2 among immigrants and for Centrality 1 among natives. The predicted probabilities of internal migration are substantially greater than for the probabilities of emigration, and according to the five *t*-statistics reported at the bottom of column 2 in Table C5, the predicted probabilities for immigrants are significantly

lower for natives than for immigrants for Centralities 2-5*. For Centrality 1 there are no significant differences. Centrality 1 has the second highest predicted probability of internal migration for both immigrants and native Norwegians.

Parts (c) and (d) of Figure C3 are for married women with at least one child who are employees. The predicted probabilities to a large degree resemble those obtained for men. All the predicted probabilities of emigration are low, irrespective of whether the female has a high school diploma or short university education or is an immigrant or a native Norwegian. The predicted probabilities of internal migration are at a higher level, but also show greater dispersion. Females living in Centrality 1 have the highest predicted probabilities of both internal migration and emigration. Looking at females with a high school diploma, immigrants have higher predicted probabilities of internal migration than native Norwegians in Centrality 1 and 5*, whereas it is the other way around for Centrality 2, 3, and 4. However, according to *t*-statistics for group 2 in Table C6, the predictions are only significantly different for Centrality 1 and 5*, cf. lines 6-10 in the first column of Table C6. For females with short university education, natives have significantly higher predicted probabilities of internal migration than immigrants in all centralities, as shown by the five last *t*-statistics in the first column of Table C6.

Figure C4 is as Figure C3, except that the individuals are unemployed or out of the workforce, instead of being employees. Note that part (a) in Figure C4 corresponds to part (d) in Figure 2. In part (b) we consider males with short university education. Immigrants have both significantly higher predicted probabilities of emigration and internal migration than native Norwegians in all centrality areas, cf. the two last columns for group 4 in Table C5. For immigrants, the predicted probabilities of emigration are between 0.032 and 0.045, depending on the centrality, whereas the corresponding figures for natives are all below 0.01. The predicted probabilities of internal migration are between about 0.03 and 0.08 for migrants and between 0.02 and 0.03 for native Norwegians. For natives, the spread in predicted probabilities across centralities is rather limited for both internal migration and emigration.

Parts (c) and (d) are for married females with at least one child who are unemployed or out of the workforce. In part (c) the females possess a high school diploma, whereas they have short university education in part (d). For both types of education, the predicted probabilities of emigration are higher for the immigrants than for the native Norwegians, see the reported test statistics for groups 2 and 4 in lines 6-10 and 16-20 in the last column of Table C6. Generally, the more rural the centrality, the higher the predicted probabilities of emigration for immigrants, whereas the pattern for native Norwegians tends to go in the opposite direction. For natives, the predicted probabilities of emigration are all below 0.01 for both education types. Looking at internal migration, the predicted probabilities range from about 0.03 to about 0.08 for immigrants and from about 0.025 to 0.035 for natives. This is the case for both education types. As in conjunction with emigration, the more rural the centrality, the higher the predicted probabilities of emigration for immigrants. The picture is more mixed for native Norwegians. The highest predicted probability of internal migration among females with a high school diploma is found in Centrality 1. In contrast, for native females with short university education, females living in Centrality 5* have the highest predicted probability of internal migration.

4 Discussion and conclusions

Understanding the heterogeneities in migration patterns – internal and international – is essential for several reasons. For individuals, migration is usually closely linked to personal and family welfare. For society, the mobilities of different groups are important for efficient utilization of the economy's resources. Moreover, maintaining population size in remote regions is high on many countries' political agendas, as are measures to prevent unwanted segregation of population groups. As immigrants constitute a growing share of the population, it is increasingly important to understand their mobility patterns.

To sum up, our results show that immigrants move more frequently than comparable natives, both within and out of Norway. For all groups of natives and most groups of immigrants, the propensity to move abroad is lower than the propensity to move to another Norwegian municipality – but exceptions do exist, such as for single immigrants aged 35 without a job who live in the most central parts of Norway.

While immigrants in less central parts of Norway are often more mobile internally than those in more central municipalities – especially if they do not have a job – the opposite trend is observed for most native Norwegians, who tend to be more sedentary if they live in less central parts of the country. People who do not have a job – immigrants as well as natives – move more frequently than those who are employed. Moreover, one-person families are more mobile than people who are married and have children.

Finally, gender differences are small, but interesting: For internal migration, we find gender differences by employment status – employed men are more mobile than employed women, regardless of whether they are natives or immigrants, while unemployed women are more mobile than unemployed men. For emigration, the patterns are different: Immigrant men have higher probabilities of emigration than immigrant women, whereas native women emigrate somewhat more frequently than native men.

In Table 2, we summarize how our results can answer the research questions presented in the introductory section.

Table 2: Research questions and main findings

	Yes	**No**	**Comments**
A. Are there differences in natives' and immigrants' probabilities of moving internally vs emigrating?	√		i) Immigrants tend to be more mobile than natives, both internally and internationally. ii) Natives and most immigrants tend to move more within than out of Norway. iii) Employment situation is crucial for explaining moving patterns, for immigrants and natives alike.
B. Do these patterns differ when we compare people in central and less central municipalities?	√		While rural immigrants are often more mobile than urban immigrants, the opposite tends to be the case for natives. This is particularly the case for those (immigrants and natives) without a job.
C. Are these patterns gender-specific?	(√)		Small gender differences are found: Employed men are more mobile internally than employed women, and immigrant men emigrate more frequently than immigrant woman, whereas native women emigrate more frequently than native men. However, employment and family situation seem to matter more for mobility patterns.

The higher mobility among immigrants than natives can have many explanations. All immigrants have already moved at least once – when they moved to Norway – and they may be a select group when it comes to attitudes to breaking up and starting anew somewhere else. Moreover, we may assume that they generally have less deeper roots in the Norwegian municipality where they live. Many migrants have come to Norway to seek work, and they may be more willing to move again if their job situation makes that necessary. Immigrants' higher propensity to emigrate compared with natives may be linked to the fact that they are born abroad. Hence, moving 'home' implies emigration for immigrants, while it implies internal migration for native Norwegians (often out of the big cities). The costs of settling abroad are probably also lower for immigrants moving 'home' than for native Norwegians, for whom emigrating may mean navigating a foreign system they are not so familiar with. However, for most immigrants – even those without job – the propensity to move internally is greater than the propensity to emigrate, which may be an indication of many immigrants' plans to stay in Norway.

Only a few groups have higher propensities to emigrate than to move to another municipality, most notably some immigrants without jobs who do not live with family, and who live in the most central parts of Norway. One possible explanation for this may be that immigrants in central parts of Norway to a larger extent compare the labor market where they live with the labor market in their country of origin, and do not consider other parts of Norway as potential places to live and work – whereas comparable immigrants in more rural parts to a larger extent consider more central parts of Norway as potential labor markets and places to live.

The small gender differences we found may be linked to a somewhat lower labor participation rate for women than men in Norway. Hence, employed men may more often have partner without a job, which makes it easier to move. The higher emigration rate for immigrant men may, in addition, be linked to a relatively high proportion of males among immigrants in Norway, some of whom have their family abroad. The somewhat higher emigration propensity among native women than native men, however, warrants further research.

Our results concerning the role of centrality are in line with the results from the study from Lombardy by Ortensi & Barbiano di Belgiojoso (2023), who found that immigrants in less central areas were more likely to have an intention of moving internally, and the finding by Silvestre & Reher (2014) about the important role of (un)employment – as well as family situation and education – in explaining immigrants' moving patterns. Our results are not completely in line with Solignac (2018), who concluded from France that immigrants are more mobile because they emigrate more often, not because they move more internally than natives. A possible reason for this discrepancy is that we use annual mobility data, whereas the French study examined changes between censuses.

Further work in this field could consider examining differences between different groups of immigrants. Our analyses have compared immigrants and natives for characteristics that apply to both groups, such as gender, employment, family situation, and education, but the mobility patterns might also differ between, say, refugees and labor migrants, and between newly arrived immigrants and those who have been in the country for a long time. Moreover, the effects of a person's migration history could be further explored, for both immigrants and natives; natives who are not originally from the municipality in which they live may display different moving behavior than natives who were born and raised in the municipality. Economic incentive variables are not included as explanatory factors in our analysis – for instance, we have no information on the wages people may earn in other municipalities or abroad in case they choose to emigrate – but this may be crucial information for the individual choosing to stay or leave. The role of contextual variables such as unemployment rates or immigrant population share at the municipality level (or economic zone/county level) could also be further explored, both for origin and destination.

In this paper we have only reported estimation results for model specifications with a single random effect. Some preliminary unreported results show that the estimates of the parameters are not very different when the number of random effects is two, instead of one, but it is hard to have a general view, since estimation broke down in several cases.

In our empirical analysis we have employed data for the years 2014-2019. Data for earlier years, and in particular data from 2020 onwards, would show possible changes over time and whether the mobility patterns changed during and after the Covid-19 pandemic. And finally, further work in other countries could show whether our main findings – and particularly the finding about immigrants in remote areas often being more internally mobile than those more centrally located, whereas the opposite is found for natives – can be considered a general pattern also outside Norway.

Declarations

This study is financed by the Research Council of Norway (grant 313823). The ethical aspects of this research have been approved by Sikt, Norway's Agency for Shared Services in Education and Research. No potential conflict of interest was reported by the authors.

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Appendices

Appendix A. Additional data information

Figure A 1: Norwegian municipalities (2020) by centrality. Source: Statistics Norway

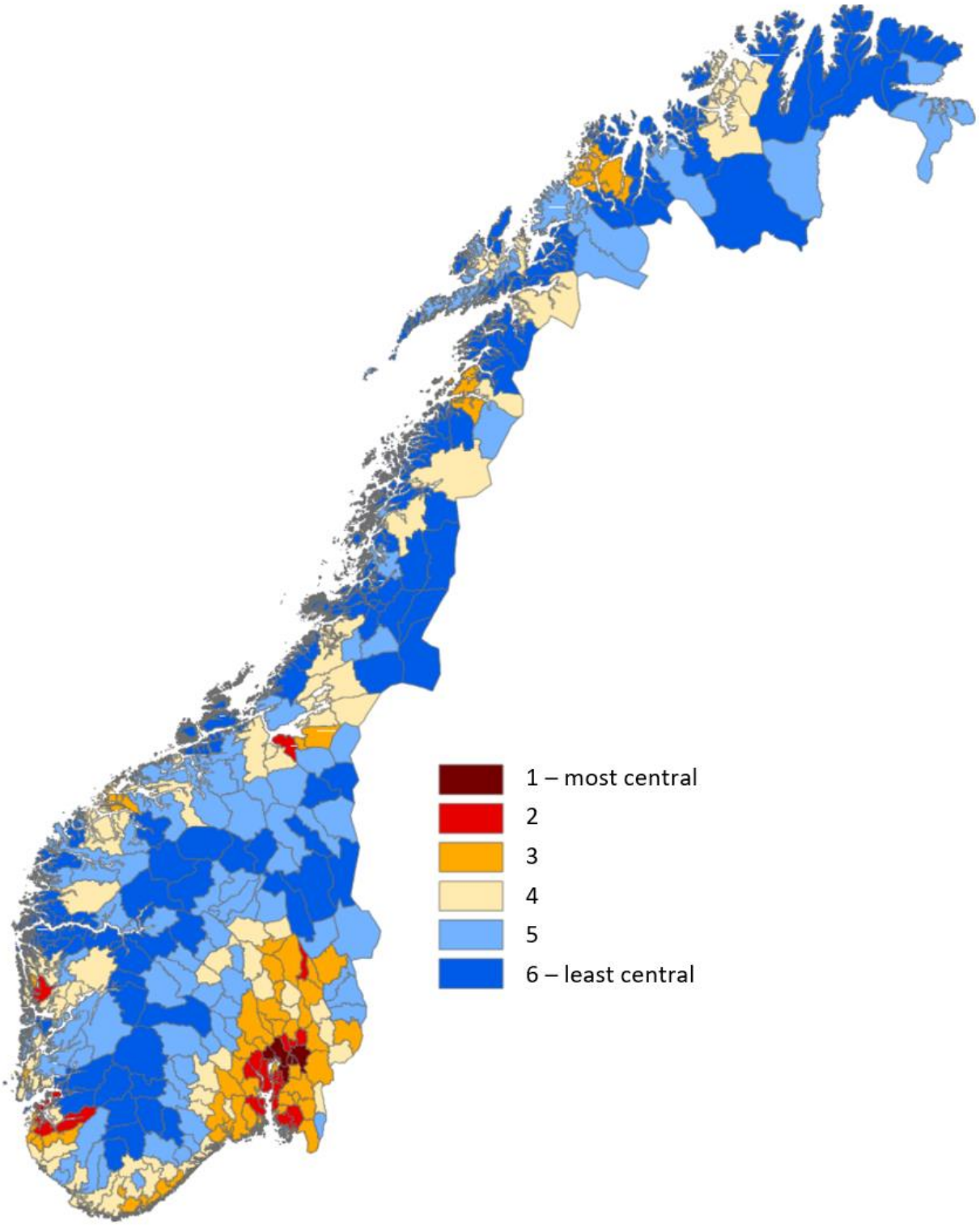


Figure A 2: Frequencies of emigration and internal migration for immigrants and natives in Norway by gender, annual per cent 2014-2019

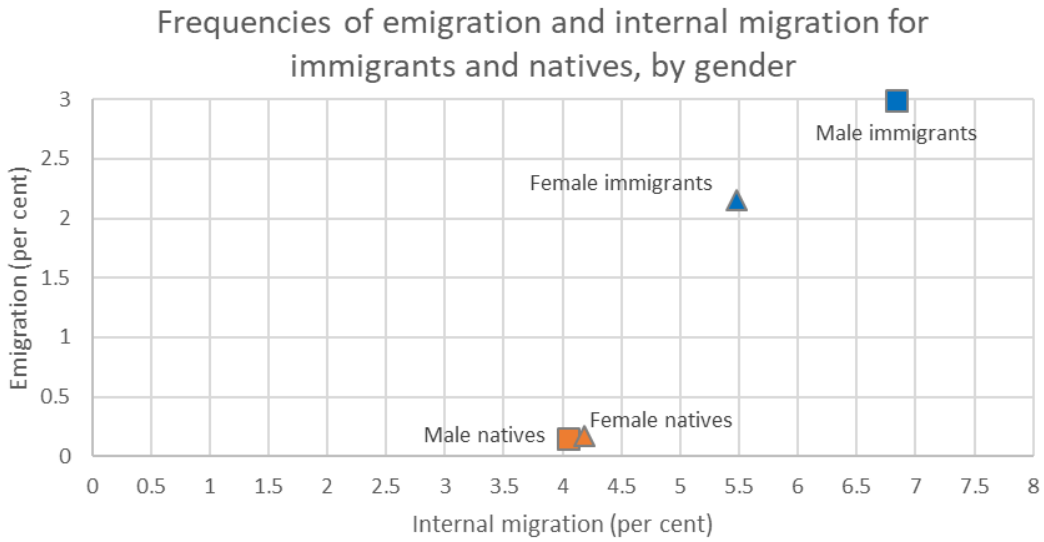


Table A 1: The number of observations according to immigration status, labor market status and centrality

Group	Centrality	Number of stayers	Number of internal movers	Number of emigrants	Sum
Natives, employees	1	1,984,691	106,887	4,352	2,095,930
	2	2,978,802	136,120	3,682	3,118,604
	3	3,072,125	133,924	2,637	3,208,686
	4	2,089,359	75,772	1,128	2,166,259
	5*	1,703,412	66,537	776	1,770,725
Natives, unemployed or out of workforce	1	772,984	39,166	3,863	816,013
	2	1,378,781	60,213	4,176	1,443,170
	3	1,519,734	67,378	3,568	1,590,680
	4	1,008,820	40,009	1,710	1,050,539
	5*	851,556	34,635	1,298	887,489
Immigrants, employees	1	556,826	33,332	7,198	597,356
	2	495,548	30,569	6,056	532,173
	3	378,737	24,348	3,752	406,837
	4	191,695	12,407	1,916	206,018
	5*	163,166	10,146	1,591	174,903
Immigrants, un-employed or out of workforce	1	322,897	16,081	13,937	352,915
	2	271,264	19,158	12,198	302,620
	3	211,793	16,795	7,999	236,587
	4	100,240	10,582	4,142	114,964
	5*	77,068	10,313	3,569	90,950

Note: Centrality 5* is an aggregate of Centralities 5 and 6.

Table A 2: Observations according to immigration status, labor market status and centrality. Shares in per cent

Group	Centrality	Stayers	Internal movers	Emigrants
Natives, employees	1	94.69	5.10	0.21
	2	95.52	4.36	0.12
	3	95.74	4.17	0.08
	4	96.45	3.50	0.05
	5*	96.20	3.76	0.04
Natives, unemployed or out of workforce	1	94.73	4.80	0.47
	2	95.54	4.17	0.29
	3	95.54	4.24	0.22
	4	96.03	3.81	0.16
	5*	95.95	3.90	0.15
Immigrants, employees	1	93.22	5.58	1.20
	2	93.12	5.74	1.14
	3	93.09	5.98	0.92
	4	93.05	6.02	0.93
	5*	93.29	5.80	0.91
Immigrants, unemployed or out of workforce	1	91.49	4.56	3.95
	2	89.64	6.33	4.03
	3	89.52	7.10	3.38
	4	87.19	9.20	3.60
	5*	84.74	11.34	3.92

Note: Centrality 5* is an aggregate of Centralities 5 and 6.

Table A 3: Mean age for different groups according to immigration status, labor market status and centrality[a]

	Centrality 1	Centrality 2	Centrality 3	Centrality 4	Centrality 5*[b]
Natives, employees	41.42	41.92	42.25	42.04	42.75
	(13.27)	(13.75)	(13.92)	(14.21)	(14.61)
Natives, unemployed or out of the workforce	47.64	47.84	48.86	49.28	50.73
	(20.86)	(20.87)	(20.50)	(20.63)	(20.58)
Immigrants, employees	40.07	39.86	39.97	39.94	40.39
	(10.87)	(11.00)	(11.22)	(11.14)	(11.41)
Immigrants, unemployed or out of the workforce	43.95	41.68	41.32	39.56	39.17
	(15.38)	(15.73)	(16.23)	(16.09)	(16.33)

[a] Standard deviation in parentheses. Note that our sample is limited to persons aged 15-74 years.

[b] Centrality 5* is an aggregate of Centralities 5 and 6.

Table A 4: Share of males according to immigration status, labor market status and centrality. In per cent

	Centrality 1	Centrality 2	Centrality 3	Centrality 4	Centrality 5*
Natives, employees	49.77	51.03	51.37	51.78	51.30
Natives, unemployed or Out of the workforce	47.24	47.01	48.86	46.82	47.67
Immigrants, employees	53.01	54.21	52.60	52.20	49.70
Immigrants, unemployed or out of the workforce	46.52	48.06	47.74	49.24	49.22

Note: Centrality 5* is an aggregate of Centralities 5 and 6.

Table A 5: The number of observations allocated to different educational groups according to immigration status, labor market status and centrality

Group	Centr.	Number with primary school	Number with high school diploma	Number with post school education	Number with short university education	Number with long university education
Natives, employees	1	233,410	547,222	62,278	762,183	488,709
	2	485,022	1,101,519	116,084	987,463	425,192
	3	595,747	1,307,031	129,143	907,863	264,972
	4	411,009	973,569	92,538	568,806	118,018
	5*	369,474	821,973	77,545	423,883	75,451
Natives, unemployed or out of the workforce	1	491,303	863,285	86,022	984,751	580,339
	2	1,026,161	1,689,397	151,601	1,270,657	505,855
	3	1,260,691	1,996,092	171,128	1,172,138	323,420
	4	853,939	1,456,362	119,790	729,287	147,275
	5*	777,852	1,275,058	102,248	554,028	96,863
Immigrants, employees	1	134,748	167,068	8,888	154,054	116,804
	2	115,981	161,836	7,520	128,143	106,326
	3	100,220	134,149	5,499	96,109	61,647
	4	54,618	71,897	2,251	45,836	26,102
	5*	45,935	62,261	1,962	39,462	20,306
Immigrants, unemployed or out of the workforce	1	148,971	81,296	3,671	61,998	34,568
	2	123,526	74,613	3,270	52,393	31,838
	3	101,656	60,633	2,503	38,979	18,776
	4	50,365	29,072	1,003	17,682	8,462
	5*	39,561	23,290	913	13,506	6,505

Note: Centrality 5* is the aggregate of Centralities 5 and 6.

Table A 6: The number of observations allocated to different family groups according to immigration status, labor market status and centrality

Group	Centr.	Number of persons in one-person families	Number married with no children	Number married with children	Number of single mothers with children	Number of persons cohabitated with joint children
Natives, employees	1	840,925	230,110	601,087	132,771	239,455
	2	940,622	398,686	1,065,832	236,628	387,020
	3	870,469	452,980	1,110,527	255,831	421,035
	4	521,007	311,519	782,676	166,511	319,330
	5*	429,634	253,165	601,745	142,887	288,034
Natives, unemployed or out of the work-force	1	1,228,651	447,525	774,790	201,040	286,449
	2	1,492,354	829,214	1,378,502	360,610	465,912
	3	1,454,295	973,015	1,453,228	396,941	516,345
	4	881,563	675,663	1,017,992	253,453	391,091
	5*	767,582	573,695	811,319	216,018	361,998
Immigrants, employees	1	220,941	62,773	229,484	36,935	38,420
	2	178,001	60,136	218,992	31,949	35,560
	3	125,073	48,002	173,395	25,953	28,690
	4	64,914	25,747	86,508	12,545	13,963
	5*	59,005	23,222	66,888	10,648	13,198
Immigrants, un-employed or out of the workforce	1	133,441	48,663	116,457	37,146	11,287
	2	107,276	42,655	108,799	28,238	11,247
	3	81,048	34,152	84,894	23,482	9,551
	4	41,595	15,744	40,479	11,023	4,721
	5*	35,678	12,827	28,906	8,167	4,166

Note: Centrality 5* is the aggregate of Centralities 5 and 6.

Appendix B: Parameter estimates

Table B 1: Parameter estimates of trinomial model with random effects. Immigrant employees

Internal migration	Centrality 1	Centrality 2	Centrality 3	Centrality 4	Centrality 5*
DMALE	0.218	0.276	0.266	0.374	0.469
	(14.51)	(16.03)	(13.66)	(12.52)	(13.89)
Age	-0.004	-0.039	-0.064	-0.069	-0.069
	(-0.78)	(-8.00)	(-12.44)	(-9.11)	(-8.36)
Age scaled sq.	-0.056	-0.019	0.007	0.013	0.010
	(-9.57)	(-3.14)	(1.08)	(1.41)	(0.97)
DEDU_PSC	0.081	-0.109	0.069	0.152	0.086
	(1.79)	(-2.15)	(1.15)	(1.79)	(1.00)
DEDU_HSD	0.336	0.198	0.340	0.365	0.248
	(7.53)	(3.96)	(5.73)	(4.29)	(2.84)
DEDU_PSE	0.448	0.212	0.641	0.459	0.703
	(6.37)	(2.55)	(6.81)	(3.06)	(4.44)
DEDU_SHE	0.307	0.298	0.501	0.582	0.526
	(6.83)	(5.89)	(8.30)	(6.67)	(5.83)
DEDU_LUE	0.410	0.555	0.799	1.085	0.988
	(8.99)	(10.89)	(12.93)	(12.05)	(10.41)
DFAM_SIN	0.440	0.596	0.654	0.685	0.383
	(7.31)	(9.07)	(8.96)	(5.91)	(3.05)
DFAM_MNC	0.169	0.011	-0.127	-0.360	-0.550
	(2.66)	(0.15)	(-1.63)	(2.92)	(-4.11)
DFAM_MWC	-0.233	-0.647	-0.722	-0.763	-0.829
	(-3.83)	(-9.70)	(-9.76)	(-6.51)	(-6.51)
DFAM_MOWC	-0.138	-0.118	-0.012	0.077	-0.153
	(-2.04)	(-1.61)	(-0.15)	(0.61)	(-1.11)
DFAM_CWJC	0.036	-0.503	-0.657	-0.716	-0.910
	(0.55)	(-6.88)	(-8.05)	(-5.59)	(-6.57)
DYEAR2014	-0.185	-0.181	-0.230	-0.400	-0.533
	(-8.45)	(-7.58)	(-8.37)	(-9.41)	(-11.28)
DYEAR2015	-0.106	-0.154	-0.143	-0.285	-0.422
	(-4.94)	(-6.52)	(-5.38)	(-7.16)	(-9.56)
DYEAR2016	-0.068	-0.120	-0.112	-0.219	-0.520
	(-3.21)	(-5.19)	(-4.31)	(-5.71)	(-11.92)
DYEAR2017	0.046	-0.057	-0.053	-0.108	-0.255
	(2.25)	(-2.56)	(-2.12)	(-2.94)	(-6.32)
DYEAR2018	0.015	-0.009	-0.028	-0.008	-0.106
	(0.75)	(-0.39)	(-1.16)	(-0.22)	(-2.75)
Constant	-2.753	-1.891	-1.407	-1.482	-1.182
	(-23.78)	(-15.35)	(-10.52)	(-7.42)	(-5.52)

Table B 1: (continued)

Emigration	Centrality 1	Centrality 2	Centrality 3	Centrality 4	Centrality 5*
DMALE	0.145	0.363	0.290	0.386	0.325
	(5.46)	(12.03)	(7.70)	(7.00)	(5.47)
Age	-0.046	-0.042	-0.044	-0.045	-0.074
	(-5.27)	(-4.59)	(-4.28)	(-3.14)	(-5.01)
Age scaled sq.	0.001	0.010	0.017	0.025	0.064
	(0.09)	(0.88)	(1.34)	(1.45)	(3.67)
DEDU_PSC	-0.848	-0.933	-0.349	0.364	0.405
	(-11.54)	(-10.90)	(-2.90)	(1.75)	(1.90)
DEDU_HSD	-0.263	-0.512	0.094	0.874	0.844
	(-3.79)	(-6.26)	(0.81)	(4.25)	(4.00)
DEDU_PSE	-0.146	-0.504	0.357	1.136	1.098
	(-1.14)	(-3.10)	(1.89)	(3.84)	(3.42)
DEDU_SHE	-0.050	0.017	0.376	1.066	1.000
	(-0.72)	(0.21)	(3.18)	(5.12)	(4.67)
DEDU_LUE	0.536	0.723	1.058	1.628	1.438
	(7.80)	(9.00)	(8.93)	(7.75)	(6.57)
DFAM_SIN	0.991	1.008	0.998	0.778	0.519
	(7.34)	(6.86)	(5.70)	(3.24)	(1.98)
DFAM_MNC	0.173	0.217	0.058	-0.236	-0.270
	(1.23)	(1.42)	(0.32)	(-0.94)	(-0.99)
DFAM_MWC	-0.168	-0.091	-0.260	-0.448	-0.369
	(-1.23)	(-0.61)	(-1.47)	(-1.84)	(-1.39)
DFAM_MOWC	-0.327	-0.077	0.057	-0.277	-0.245
	(-2.11)	(-0.46)	(0.30)	(-1.01)	(-0.83)
DFAM_CWJC	0.311	0.243	0.131	-0.214	-0.119
	(2.16)	(1.55)	(0.70)	(-0.82)	(-0.40)
DYEAR2014	0.497	0.481	0.317	0.445	-0.099
	(11.31)	(9.65)	(5.13)	(4.85)	(-1.06)
DYEAR2015	0.477	0.589	0.475	0.537	-0.020
	(10.75)	(11.92)	(7.83)	(5.89)	(0.833)
DYEAR2016	0.400	0.483	0.439	0.522	0.087
	(8.91)	(9.58)	(7.22)	(5.72)	(0.96)
DYEAR2017	0.274	0.383	0.344	0.373	0.035
	(5.95)	(7.48)	(5.58)	(3.96)	(0.38)
DYEAR2018	0.100	0.212	0.095	0.405	-0.025
	(2.09)	(4.02)	(1.47)	(4.33)	(-0.27)
Constant	-3.834	-4.431	-4.766	-5.564	-4.635
	(-17.11)	(-18.24)	(-16.43)	(-13.18)	(-10.52)

Note: Centrality 5* is the aggregate of Centralities 5 and 6. *t*-values in parentheses.

Table B 2: Parameter estimates of trinomial model with random effects. Native employees

Internal migration	Centrality 1	Centrality 2	Centrality 3	Centrality 4	Centrality 5*
DMALE	0.031	0.045	0.015	0.022	0.072
	(4.17)	(6.41)	(2.12)	(2.23)	(7.11)
Age	-0.008	-0.061	-0.083	-0.079	-0.049
	(-3.84)	(-32.08)	(-45.12)	(-31.74)	(-18.71)
Age scaled sq.	-0.064	-0.016	0.010	0.002	-0.039
	(-23.62)	(-6.36)	(4.05)	(0.47)	(-11.11)
DEDU_PSC	0.434	0.618	0.941	0.857	0.927
	(3.96)	(5.85)	(8.72)	(5.91)	(6.30)
DEDU_HSD	0.606	0.898	1.231	1.213	1.316
	(5.54)	(8.49)	(11.40)	(8.36)	(8.94)
DEDU_PSE	0.706	1.169	1.512	1.485	1.729
	(6.35)	(10.91)	(13.81)	(10.09)	(11.60)
DEDU_SHE	0.554	1.094	1.578	1.714	1.970
	(5.07)	(10.34)	(14.59)	(11.79)	(13.35)
DEDU_LUE	0.481	1.446	2.096	2.588	2.943
	(4.40)	(13.63)	(19.31)	(17.71)	(19.82)
DFAM_SIN	0.135	0.508	0.454	0.441	0.466
	(5.85)	(26.38)	(25.28)	(18.59)	(18.97)
DFAM_MNC	0.196	0.121	-0.162	-0.265	-0.175
	(7.35)	(5.15)	(-7.05)	(-8.45)	(-5.16)
DFAM_MWC	-0.365	-0.630	-0.683	-0.697	-0.573
	(-15.32)	(-31.63)	(-36.91)	(-28.71)	(-22.83)
DFAM_MOWC	-0.048	-0.013	0.001	0.031	0.072
	(-1.82)	(-0.60)	(0.04)	(1.15)	(2.64)
DFAM_CWJC	-0.061	-0.632	-0.901	-1.047	-1.052
	(-2.44)	(-28.98)	(-43.44)	(-38.62)	(-37.65)
DYEAR2014	-0.078	-0.189	-0.162	-0.190	-0.142
	(-6.75)	(-17.47)	(-15.04)	(-12.92)	(-9.22)
DYEAR2015	-0.047	-0.112	-0.101	-0.121	-0.085
	(-4.07)	(-10.55)	(-9.53)	(-8.45)	(-5.62)
DYEAR2016	-0.060	-0.128	-0.136	-0.133	-0.119
	(-5.19)	(-12.14)	(-12.71)	(-9.33)	(-7.91)
DYEAR2017	0.012	-0.036	-0.046	-0.049	-0.040
	(1.06)	(-3.49)	(-4.46)	(-3.50)	(-2.69)
DYEAR2018	0.016	-0.019	-0.013	-0.027	-0.038
	(1.44)	(-1.90)	(-1.27)	(-1.95)	(-2.61)
Constant	-2.404	-1.909	-1.780	-2.043	-2.556
	(-20.70)	(-17.22)	(-15.88)	(-13.58)	(-16.72)

Table B 2: (continued)

Emigration	Centrality 1	Centrality 2	Centrality 3	Centrality 4	Centrality 5*
DMALE	-0.042	-0.089	-0.085	-0.126	-0.199
	(-1.33)	(-2.62)	(-2.11)	(-2.02)	(-2.60)
Age	-0.195	-0.218	-0.199	-0.195	-0.073
	(-20.59)	(-22.89)	(-18.45)	(-11.84)	(-3.65)
Age scaled sq.	0.143	0.175	0.152	0.151	0.005
	(11.78)	(14.28)	(10.94)	(7.09)	(0.21)
DEDU_PSC	-0.606	-0.357	1.129	0.219	-0.196
	(-1.95)	(-1.11)	(1.59)	(0.31)	(-0.27)
DEDU_HSD	0.204	0.235	1.697	0.814	0.089
	(0.66)	(0.73)	(2.39)	(1.14)	(0.12)
DEDU_PSE	-0.091	0.417	1.666	0.601	0.116
	(-0.28)	(1.22)	(2.30)	(0.80)	(0.16)
DEDU_SHE	0.399	0.724	2.336	1.529	0.772
	(1.29)	(2.23)	(3.28)	(2.13)	(1.07)
DEDU_LUE	0.721	1.220	2.876	2.282	1.765
	(2.32)	(3.74)	(4.03)	(3.16)	(2.44)
DFAM_SIN	0.330	0.428	0.465	0.516	0.472
	(2.89)	(4.07)	(3.98)	(2.87)	(2.42)
DFAM_MNC	0.080	-0.069	-0.119	-0.385	-0.495
	(0.59)	(-0.52)	(-0.79)	(-1.58)	(-1.75)
DFAM_MWC	0.181	-0.069	-0.164	-0.200	-0.487
	(1.56)	(-0.65)	(-1.39)	(-1.11)	(-2.45)
DFAM_MOWC	0.200	-0.017	0.090	-0.070	-0.233
	(1.58)	(-0.14)	(0.70)	(-0.35)	(-1.04)
DFAM_CWJC	-0.389	-0.830	-1.216	-0.846	-1.434
	(-2.98)	(-6.58)	(-8.21)	(-4.11)	(-5.96)
DYEAR2014	0.534	0.397	0.444	0.170	0.388
	(9.83)	(6.67)	(6.16)	(1.60)	(2.95)
DYEAR2015	0.416	0.335	0.353	0.226	0.310
	(7.41)	(5.47)	(4.74)	(2.10)	(2.28)
DYEAR2016	0.319	0.345	0.521	0.135	0.391
	(5.60)	(5.63)	(7.20)	(1.23)	(2.91)
DYEAR2017	0.259	0.277	0.239	0.101	0.264
	(4.48)	(4.44)	(3.12)	(0.90)	(1.91)
DYEAR2018	0.230	0.187	0.353	0.275	0.363
	(3.97)	(2.93)	(4.71)	(2.56)	(2.67)
Constant	-2.280	-2.551	-4.732	-4.275	-5.743
	(-6.49)	(-7.08)	(-6.46)	(-5.61)	(-7.34)

Note: Centrality 5* is the aggregate of Centralities 5 and 6. *t*-values in parentheses.

Table B 3: Parameter estimates of trinomial model with random effects of unemployed immigrants and immigrants outside the labour force

Internal migration	Centrality 1	Centrality 2	Centrality 3	Centrality 4	Centrality 5*
DMALE	-0.032	-0.027	-0.003	-0.003	0.006
	(-1.44)	(-1.18)	(-0.13)	(-0.11)	(0.21)
Age	-0.012	0.021	0.025	0.066	0.071
	(-2.80)	(4.87)	(5.82)	(11.98)	(13.30)
Age scaled sq.	-0.040	-0.080	-0.078	-0.124	-0.126
	(-8.14)	(-15.54)	(-15.41)	(-18.14)	(-19.14)
DEDU_PSC	0.087	-0.059	0.379	0.268	0.172
	(1.80)	(-1.23)	(7.55)	(4.95)	(3.59)
DEDU_HSD	0.662	0.572	0.945	0.562	0.195
	(13.17)	(11.45)	(17.93)	(9.58)	(3.68)
DEDU_PSE	0.766	0.601	0.929	0.521	0.360
	(7.58)	(5.59)	(8.27)	(3.45)	(2.57)
DEDU_SHE	0.710	0.612	0.879	0.500	0.214
	(13.82)	(11.86)	(15.96)	(7.96)	(3.70)
DEDU_LUE	1.027	1.140	1.287	0.789	0.376
	(18.87)	(21.14)	(21.37)	(10.98)	(5.49)
DFAM_SIN	0.413	0.586	0.490	0.537	0.348
	(5.32)	(7.11)	(5.87)	(4.35)	(3.14)
DFAM_MNC	-0.040	-0.241	-0.381	-0.304	-0.506
	(-0.48)	(-2.71)	(-4.20)	(-2.30)	(4.16)
DFAM_MWC	-0.467	-0.792	-0.731	-0.492	-0.427
	(-5.90)	(-9.43)	(-8.62)	(-3.94)	(-3.81)
DFAM_MOWC	-0.542	-0.320	-0.120	0.171	0.126
	(-6.40)	(-3.60)	(-1.35)	(1.32)	(1.07)
DFAM_CWJC	-0.070	-0.471	-0.614	-0.355	-0.625
	(-0.76)	(-4.86)	(-6.23)	(-2.54)	(-4.89)
DYEAR2014	-0.413	-0.291	-0.216	-0.221	-0.282
	(-11.82)	(-8.21)	(-5.95)	(-4.60)	(-5.99)
DYEAR2015	-0.108	-0.025	-0.043	-0.012	-0.008
	(-3.37)	(-0.79)	(-1.30)	(-0.27)	(-0.19)
DYEAR2016	-0.077	0.039	0.007	-0.040	-0.192
	(-2.44)	(1.27)	(0.23)	(-0.97)	(-4.61)
DYEAR2017	0.054	0.187	0.123	-0.005	-0.173
	(1.75)	(6.19)	(3.90)	(-0.13)	(-4.27)
DYEAR2018	0.040	0.204	0.128	0.087	-0.008
	(1.30)	(6.86)	(4.12)	(2.21)	(-0.21)
Constant	-2.711	-3.086	-3.240	-3.555	-2.909
	(-22.19)	(-24.64)	(-25.79)	(-21.05)	(-18.89)

Table B 3: (Continued)

Emigration	Centrality 1	Centrality 2	Centrality 3	Centrality 4	Centrality 5*
DMALE	0.136	0.146	0.196	0.163	0.087
	(5.72)	(5.58)	(6.53)	(3.91)	(2.07)
Age	0.111	0.127	0.151	0.147	0.151
	(20.91)	(22.47)	(24.03)	(17.56)	(17.67)
Age scaled sq.	-0.184	-0.196	-0.219	-0.201	-0.200
	(-29.40)	(-29.11)	(-28.99)	(-20.19)	(-19.76)
DEDU_PSC	-0.246	-0.397	0.272	0.465	0.910
	(-4.69)	(-7.01)	(3.76)	(4.89)	(8.34)
DEDU_HSD	0.398	0.340	1.060	1.227	1.473
	(7.39)	(5.89)	(14.43)	(12.68)	(13.32)
DEDU_PSE	0.621	0.561	1.185	1.316	1.766
	(5.82)	(4.66)	(8.60)	(6.88)	(9.24)
DEDU_SHE	0.711	0.698	1.146	1.317	1.596
	(13.09)	(11.90)	(15.20)	(13.18)	(14.02)
DEDU_LUE	1.460	1.555	1.912	1.800	1.971
	(26.28)	(26.04)	(24.46)	(16.98)	(16.46)
DFAM_SIN	0.877	0.902	0.951	0.537	0.652
	(9.68)	(8.49)	(7.70)	(3.23)	(3.60)
DFAM_MNC	-0.187	-0.285	-0.156	-0.714	-0.462
	(-1.89)	(-2.50)	(-1.18)	(-3.98)	(-2.39)
DFAM_MWC	-0.590	-0.634	-0.506	-0.811	-0.463
	(-6.35)	(-5.85)	(-4.02)	(-4.78)	(-2.51)
DFAM_MOWC	-0.439	-0.358	-0.152	-0.651	-0.279
	(-4.40)	(-3.08)	(-1.13)	(-3.52)	(-1.40)
DFAM_CWJC	-0.243	-0.230	-0.025	-0.345	-0.226
	(-2.24)	(-1.89)	(-0.18)	(-1.84)	(-1.13)
DUM2014	-0.596	-0.192	-0.237	-0.040	0.147
	(-16.30)	(-4.55)	(-4.77)	(-0.57)	(1.93)
DUM2015	-0.487	0.230	0.282	0.462	0.688
	(-14.18)	(6.12)	(6.49)	(7.39)	(10.30)
DUM2016	-0.127	0.231	0.243	0.431	0.580
	(-3.98)	(6.24)	(5.59)	(6.95)	(8.63)
DUM2017	-0.002	0.460	0.315	0.472	0.489
	(-0.05)	(12.83)	(7.36)	(7.69)	(7.24)
DUM2018	-0.616	-0.347	-0.313	-0.109	0.137
	(-17.41)	(-8.39)	(-6.44)	(-1.60)	(1.90)
Constant	-5.233	-6.009	-7.166	-6.989	-7.501
	(-35.60)	(-37.20)	(-38.26)	(-28.05)	(-27.91)

Note: Centrality 5* is the aggregate of Centralities 5 and 6. *t*-values in parentheses.

Table B 4: Parameter estimates of trinomial model with random effects of unemployed natives and natives out of the workforce

Internal migration	Centrality 1	Centrality 2	Centrality 3	Centrality 4	Centrality 5*
DMALE	-0.066	-0.066	-0.067	-0.088	-0.181
	(-4.57)	(-5.75)	(-6.10)	(-6.09)	(-11.66)
Age	0.092	0.074	0.060	0.071	0.088
	(33.90)	(34.82)	(30.84)	(27.66)	(31.94)
Age scaled sq.	-0.154	-0.144	-0.131	-0.143	-0.160
	(-48.68)	(-56.96)	(-56.29)	(46.22)	(-48.72)
DEDU_PSC	0.296	0.418	0.403	0.526	0.562
	(2.97)	(4.85)	(5.15)	(4.39)	(4.46)
DEDU_HSD	0.926	0.976	0.871	0.877	0.750
	(9.29)	(11.32)	(11.12)	(7.29)	(5.94)
DEDU_PSE	1.028	1.019	0.952	0.872	1.070
	(9.54)	(10.94)	(11.11)	(6.76)	(7.94)
DEDU_SHE	0.709	0.896	0.857	0.861	0.869
	(7.09)	(10.36)	(10.85)	(7.12)	(6.82)
DEDU_LUE	0.646	1.148	1.268	1.488	1.763
	(6.30)	(12.78)	(15.09)	(11.62)	(12.99)
DFAM_SIN	0.417	0.442	0.484	0.431	0.266
	(10.17)	(14.66)	(17.36)	(11.89)	(6.92)
DFAM_MNC	0.140	-0.104	-0.248	-0.297	-0.412
	(2.98)	(-2.88)	(-7.41)	(-6.86)	(-8.98)
DFAM_MWC	-0.623	-0.763	-0.740	-0.753	-0.804
	(-14.45)	(-24.14)	(-25.44)	(-20.04)	(-20.12)
DFAM_MOWC	-0.079	-0.069	-0.023	0.044	0.039
	(-1.74)	(-2.08)	(-0.75)	(1.12)	(0.94)
DFAM_CWJC	-0.223	-0.605	-0.635	-0.763	-0.814
	(-4.54)	(-16.31)	(-18.74)	(-17.67)	(-18.06)
DUM2014	-0.393	-0.227	-0.221	-0.295	-0.300
	(-17.07)	(-12.73)	(-13.23)	(-13.09)	(-12.46)
DUM2015	-0.201	-0.112	-0.107	-0.169	-0.165
	(-9.43)	(-6.68)	(-6.73)	(-7.99)	(-7.26)
DUM2016	-0.162	-0.085	-0.109	-0.126	-0.090
	(-7.69)	(-5.09)	(-6.89)	(-6.08)	(-4.01)
DUM2017	-0.001	0.004	-0.009	-0.021	-0.007
	(-0.06)	(0.22)	(-0.56)	(-1.02)	(-0.32)
DUM2018	0.009	-0.006	0.025	0.001	0.006
	(0.42)	(-0.34)	(1.60)	(0.03)	(0.28)
Constant	-4.936	-4.623	-4.208	-4.558	-4.609
	(-41.69)	(-46.76)	(-46.78)	(-33.97)	(-32.65)

Table B 4: (continued)

Emigration	Centrality 1	Centrality 2	Centrality 3	Centrality 4	Centrality 5*
DMALE	-0.058	-0.094	-0.067	-0.023	-0.053
	(-1.67)	(-2.86)	(-1.89)	(-0.46)	(-0.91)
Age	0.118	0.118	0.126	0.156	0.145
	(16.58)	(17.69)	(18.60)	(15.83)	(13.26)
Age scaled sq.	-0.198	-0.196	-0.206	-0.239	-0.222
	(-23.19)	(-24.50)	(-25.09)	(-20.10)	(-17.08)
DEDU_PSC	-0.898	-0.945	-0.852	-0.755	-0.956
	(-5.21)	(-5.40)	(-4.73)	(-2.38)	(-3.00)
DEDU_HSD	0.019	-0.105	-0.115	0.006	-0.269
	(0.11)	(-0.60)	(-0.64)	(0.02)	(-0.85)
DEDU_PSE	-0.240	-0.016	-0.098	0.066	-0.035
	(-1.11)	(-0.08)	(-0.45)	(0.19)	(-0.09)
DEDU_SHE	0.255	0.491	0.567	0.748	0.539
	(1.49)	(2.82)	(3.14)	(2.36)	(1.69)
DEDU_LUE	0.981	1.589	1.713	2.160	2.225
	(5.61)	(8.94)	(9.20)	(6.68)	(6.78)
DFAM_SIN	0.019	0.134	0.089	0.112	0.142
	(0.21)	(1.54)	(1.00)	(0.88)	(0.95)
DFAM_MNC	-0.921	-1.020	-0.991	-1.151	-1.407
	(-7.25)	(-8.56)	(-8.35)	(-6.72)	(-6.89)
DFAM_MWC	-0.526	-0.576	-0.595	-0.656	-0.641
	(-5.47)	(-6.33)	(-6.45)	(-4.98)	(-4.14)
DFAM_MOWC	-0.253	-0.282	-0.256	-0.292	-0.123
	(-2.44)	(-2.87)	(-2.60)	(-2.04)	(-0.75)
DFAM_CWJC	-1.201	-1.429	-1.440	-1.516	-1.626
	(-9.21)	(-11.30)	(-11.25)	(-8.54)	(-7.64)
DYEAR2014	0.037	0.079	0.169	-0.048	-0.182
	(0.60)	(1.34)	(2.64)	(-0.51)	(-1.69)
DYEAR2015	0.104	0.152	0.242	0.211	0.170
	(1.71)	(2.65)	(3.86)	(2.41)	(1.70)
DYEAR2016	0.206	0.247	0.291	0.206	0.092
	(3.42)	(4.34)	(4.64)	(2.33)	(0.90)
DYEAR2017	0.285	0.220	0.313	0.092	0.266
	(4.73)	(3.80)	(4.95)	(1.00)	(2.62)
DYEAR2018	0.166	0.243	0.318	0.267	0.236
	(2.66)	(4.19)	(5.00)	(2.97)	(2.29)
Constant	-6.722	-7.170	-7.511	-8.463	-8.106
	(-29.61)	(-31.84)	(-32.34)	(-22.12)	(-20.28)

Note: Centrality 5* is the aggregate of Centralities 5 and 6. *t*-values in parentheses.

Table B 5: Estimated variances for random effects for different groups by centrality level

Centrality level	Immigrants		Natives	
	Employees	Unemployed or out of the workforce	Employees	Unemployed or out of the work-force
1	1.535	2.434	0.758	2.686
2	2.124	3.111	1.158	2.453
3	2.117	2.321	1.169	2.461
4	2.818	2.113	1.355	2.803
5*	3.201	1.331	1.006	2.757

Note: Centrality 5* is an aggregate of Centralities 5 and 6.

Table B 6: Number of observations related to the models behind Tables B1-B4

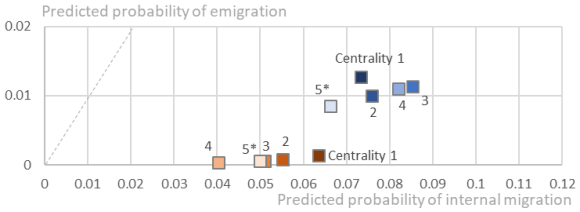
Table	Centrality 1	Centrality 2	Centrality 3	Centrality 4	Centrality 5*
B1	597,356	532,173	406,873	206,018	174,903
B2	2,095,930	3,118,604	3,208,686	2,166,259	1,770,725
B3	352,915	302,620	236,587	114,964	90,950
B4	816,013	1,443,170	1,590,680	1,050,539	887,489

Note: Centrality 5* is an aggregate of Centralities 5 and 6.

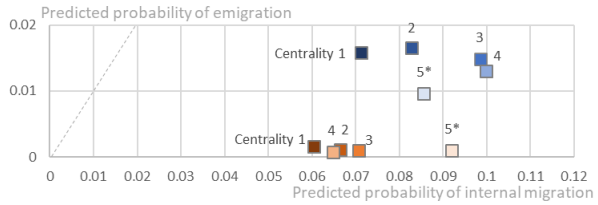
Appendix C: Predicted probabilities

Figure C 1: Predicted probabilities of emigration and internal migration for 35 years old single persons (one-person family) who are employees, by immigrant status (blue = immigrants, orange/brown = natives) and centrality (darker color = more central). Men (□) and women (△) with high school diploma (left) or short university education (right). * = Centralities 5 and 6

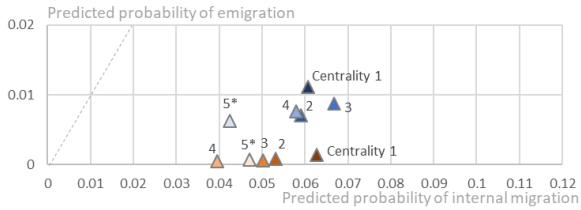
Single (one-person family), employee



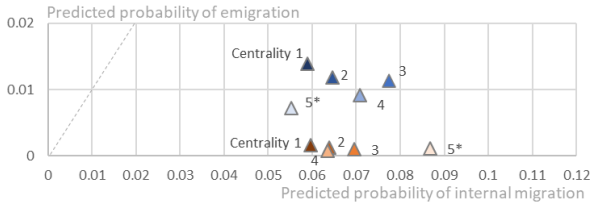
(a) Men, high school diploma



(b) Men, short university education



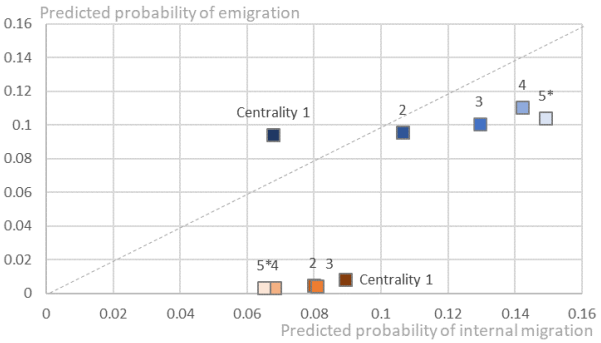
(c) Women, high school diploma



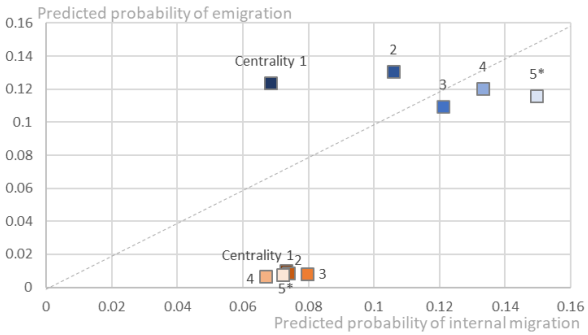
(d) Women, short university education

Figure C 2: Predicted probabilities of emigration and internal migration for 35 years old single persons (one-person family) who are unemployed or out of the workforce, by immigrant status (blue = immigrants, orange/brown = natives) and centrality (darker color = more central). Men (left) and women (right) with high school diploma (upper panel) or short university education (lower panel). * = Centralities 5 and 6

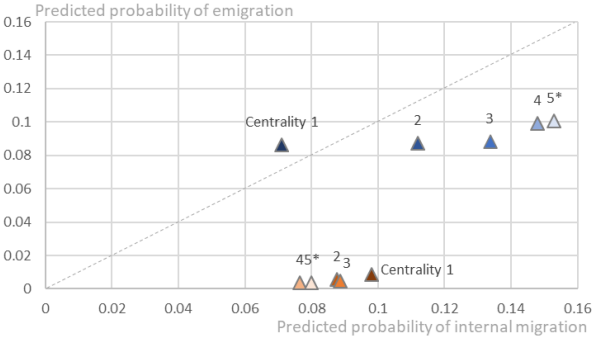
Single (one-person family), unemployed or out of the workforce



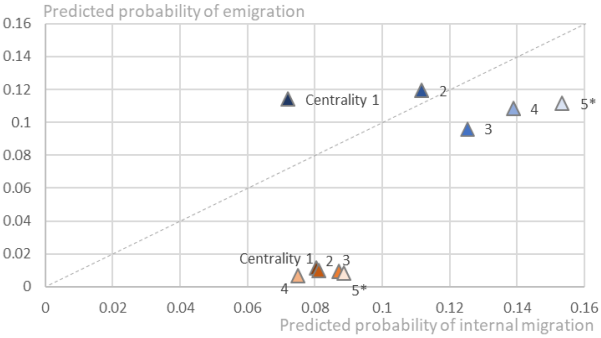
(a) Men, high school diploma



(b) Men, short university education



(c) Women, high school diploma



(d) Women, short university education

Figure C 3: Predicted probabilities of emigration and internal migration for 35 years old married persons with at least one child, who are employees, by immigrant status (blue = immigrants, orange/brown = natives) and centrality (darker color = more central). Men (□) and women (△) with high school diploma (left) or short university education (right). * = Centralities 5 and 6

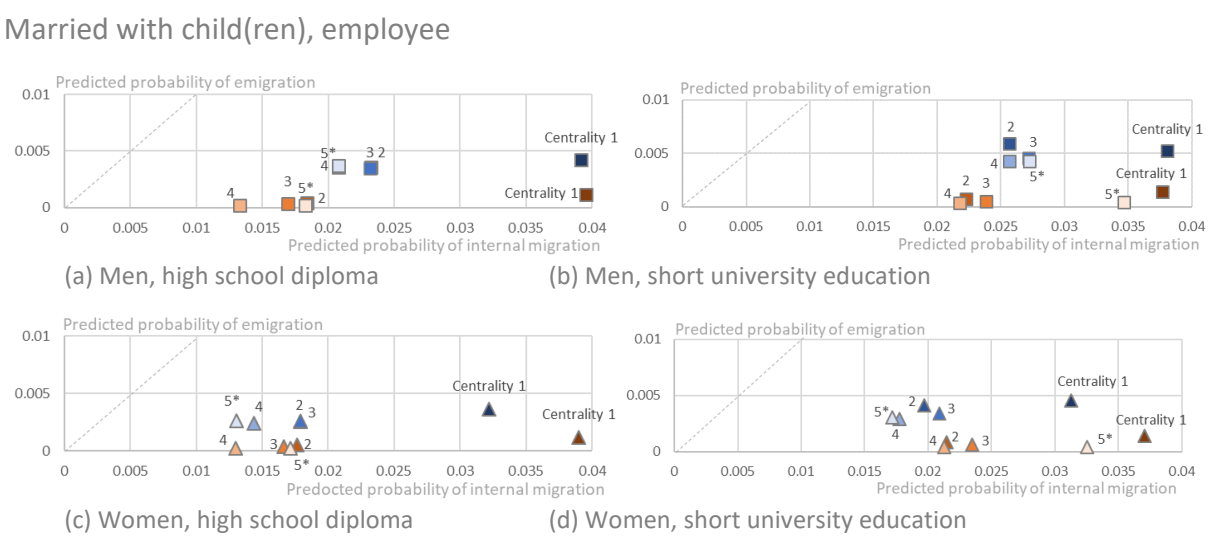


Figure C 4: Predicted probabilities of emigration and internal migration for 35 years old married persons with at least one child, who are unemployed or out of the workforce, by immigrant status (blue = immigrants, orange/brown = natives) and centrality (darker color = more central). Men (□) and women (△) with high school diploma (left) or short university education (right). * = Centralities 5 and 6

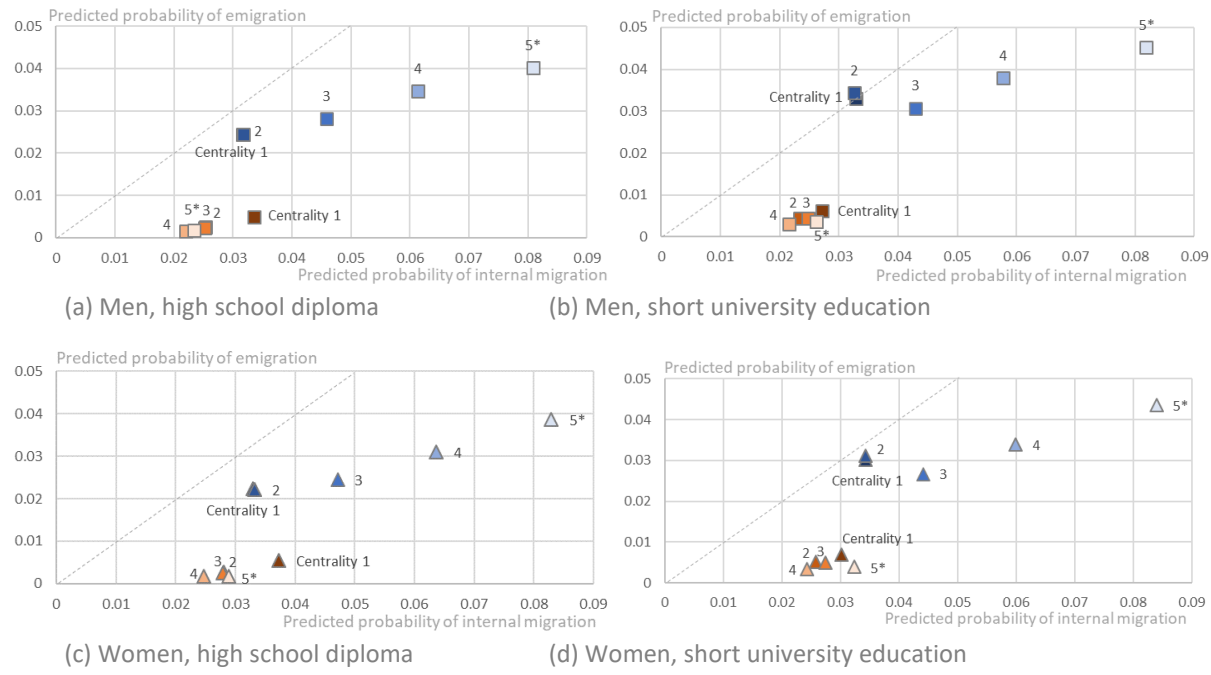


Table C 1: Predicted probabilities for different events for individuals in Group 1

Male						
Natives, employees						
Centrality	IM[a]		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0636	72.4588	0.0013	17.0717	0.9351	1052.2806
Centrality 2	0.0553	87.0399	0.0007	16.3223	0.9440	1476.6601
Centrality 3	0.0511	82.8869	0.0005	13.9727	0.9483	1527.1591
Centrality 4	0.0404	67.9224	0.0003	9.3067	0.9592	1600.4913
Centrality 5*	0.0501	55.5877	0.0005	8.0030	0.9494	1050.5949
Natives, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0895	50.0903	0.0078	17.7600	0.9026	477.5552
Centrality 2	0.0799	64.2459	0.0045	18.5178	0.9155	698.2199
Centrality 3	0.0811	67.5886	0.0041	17.3459	0.9148	730.9032
Centrality 4	0.0683	25.0827	0.0029	19.0958	0.9288	335.5742
Centrality 5*	0.0651	41.3882	0.0032	10.7697	0.9317	569.5442
Immigrants, employees						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0734	48.7308	0.0127	24.6559	0.9139	561.7242
Centrality 2	0.0760	43.5821	0.0099	22.0661	0.9141	480.5706
Centrality 3	0.0853	38.4621	0.0114	18.5370	0.9033	374.1543
Centrality 4	0.0822	27.1420	0.0110	13.1748	0.9069	276.8041
Centrality 5*	0.0663	23.0683	0.0084	11.8280	0.9253	296.8233
Immigrants, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0678	34.7506	0.0937	32.9191	0.8385	224.2380
Centrality 2	0.1065	36.6679	0.0953	33.4929	0.7982	173.9228
Centrality 3	0.1294	36.2954	0.1004	28.4303	0.7702	146.7779
Centrality 4	0.1422	28.3448	0.1100	21.7816	0.7479	102.6562
Centrality 5*	0.1493	28.8000	0.1040	20.0075	0.7467	100.1665

Table C 1: (Continued)

Female						
Natives, employees						
Centrality	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0628	68.7271	0.0013	16.1859	0.9359	1013.2048
Centrality 2	0.0532	81.2659	0.0007	15.4283	0.9460	1435.8981
Centrality 3	0.0503	77.0408	0.0005	13.2301	0.9492	1444.5013
Centrality 4	0.0396	62.5299	0.0004	8.7416	0.9601	1505.2321
Centrality 5*	0.0472	51.6867	0.0006	7.5177	0.9522	1037.9166
Natives, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0983	49.6746	0.0086	17.3006	0.8930	426.7802
Centrality 2	0.0877	62.9043	0.0052	18.0555	0.9071	617.0888
Centrality 3	0.0888	66.8840	0.0046	17.0046	0.9066	654.4604
Centrality 4	0.0765	22.6397	0.0032	16.2784	0.9203	267.8189
Centrality 5*	0.0800	42.2663	0.0036	10.5097	0.9165	468.6027
Immigrants, employees						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0608	43.2161	0.0111	22.3016	0.9280	602.4944
Centrality 2	0.0592	37.2102	0.0070	19.4475	0.9338	543.7259
Centrality 3	0.0668	33.1073	0.0087	16.3178	0.9245	421.7804
Centrality 4	0.0580	22.1945	0.0076	11.2814	0.9343	328.8421
Centrality 5*	0.0426	18.9997	0.0062	10.3893	0.9513	385.2254
Immigrants, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0711	32.3580	0.0861	29.6507	0.8428	212.9219
Centrality 2	0.1120	33.3497	0.0868	29.0664	0.8012	159.3654
Centrality 3	0.1337	33.0870	0.0881	24.6700	0.7782	137.7999
Centrality 4	0.1481	25.4532	0.0989	18.2937	0.7530	92.6175
Centrality 5*	0.1531	26.1051	0.1002	17.4267	0.7467	90.1514

[a] IM is an abbreviation for internal migration.

Note: Centrality 5* is an aggregate of Centralities 5 and 6. See Table C7 for the definition of Group 1.

Table C 2: Predicted probabilities for different events for individuals in Group 2

Male						
Natives, employees						
Centrality	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0396	66.0089	0.0011	16.4357	0.9593	1572.4852
Centrality 2	0.0184	74.8156	0.0004	15.9706	0.9811	3929.5333
Centrality 3	0.0170	72.8413	0.0003	13.6155	0.9827	4158.2296
Centrality 4	0.0133	59.0239	0.0002	9.1517	0.9865	4320.2813
Centrality 5*	0.0183	50.7700	0.0002	7.5852	0.9815	2708.6224
Natives, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0337	36.2383	0.0048	15.2929	0.9614	928.7476
Centrality 2	0.0254	46.8316	0.0024	16.2520	0.9722	1645.8907
Centrality 3	0.0253	50.4192	0.0022	15.5419	0.9724	1787.0749
Centrality 4	0.0220	20.3508	0.0014	15.3489	0.9766	878.4671
Centrality 5*	0.0234	32.8482	0.0016	9.5913	0.9751	1294.8902
Immigrants, employees						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0392	42.3300	0.0042	21.1560	0.9566	985.8526
Centrality 2	0.0233	35.5440	0.0035	19.5730	0.9731	1334.4917
Centrality 3	0.0232	31.0993	0.0035	16.3503	0.9733	1174.3887
Centrality 4	0.0208	21.2315	0.0035	11.5563	0.9758	889.2508
Centrality 5*	0.0208	18.7254	0.0037	10.5916	0.9755	775.0318
Immigrants, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0317	27.5200	0.0243	24.4326	0.9440	539.9749
Centrality 2	0.0318	27.1565	0.0242	24.3177	0.9440	515.0445
Centrality 3	0.0459	27.3616	0.0281	21.3020	0.9260	383.9485
Centrality 4	0.0614	21.5136	0.0345	16.0303	0.9041	227.5825
Centrality 5*	0.0809	22.4787	0.0401	15.2344	0.8789	181.4070

Table C 2: (Continued)

Female						
Natives, employees						
Centrality	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0390	63.1139	0.0011	15.5991	0.9599	1525.9480
Centrality 2	0.0177	71.2862	0.0005	15.2028	0.9818	3895.2273
Centrality 3	0.0167	68.9690	0.0003	12.9915	0.9830	4004.8959
Centrality 4	0.0130	55.6725	0.0002	8.6708	0.9868	4159.9689
Centrality 5*	0.0172	47.9160	0.0002	7.2355	0.9825	2715.4598
Natives, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0373	36.1978	0.0054	15.1218	0.9574	835.6567
Centrality 2	0.0281	46.7496	0.0027	16.2663	0.9692	1479.6284
Centrality 3	0.0279	50.6474	0.0025	15.6213	0.9696	1622.9545
Centrality 4	0.0248	20.7428	0.0016	15.3960	0.9737	792.7350
Centrality 5*	0.0290	33.6055	0.0017	9.5676	0.9693	1069.8465
Immigrants, employees						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0322	39.9687	0.0036	20.2336	0.9641	1134.2295
Centrality 2	0.0179	32.9861	0.0025	18.3839	0.9796	1641.7114
Centrality 3	0.0179	29.0969	0.0026	15.5142	0.9795	1439.9046
Centrality 4	0.0144	19.4154	0.0024	10.8710	0.9833	1184.8617
Centrality 5*	0.0131	17.0848	0.0026	10.1041	0.9843	1108.1447
Immigrants, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0330	28.1490	0.0223	24.6639	0.9447	556.9298
Centrality 2	0.0333	27.5869	0.0220	24.5093	0.9447	529.8282
Centrality 3	0.0471	27.7742	0.0245	21.3965	0.9284	404.0458
Centrality 4	0.0637	21.8780	0.0309	16.0065	0.9055	235.0801
Centrality 5*	0.0830	22.9743	0.0386	15.3264	0.8784	184.5090

[a] IM is an abbreviation for internal migration.

Note: Centrality 5* is an aggregate of Centralities 5 and 6. See Table C7 for the definition of Group 2.

Table C 3: Predicted probabilities for different events for individuals in Group 3

Male						
Natives, employees						
Centrality	IM[a]		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0606	77.2411	0.0016	19.8109	0.9378	1175.4388
Centrality 2	0.0665	91.6161	0.0011	18.0390	0.9323	1273.8220
Centrality 3	0.0708	84.7811	0.0010	14.7158	0.9282	1101.2365
Centrality 4	0.0650	70.1085	0.0007	9.5651	0.9344	999.5496
Centrality 5*	0.0920	58.7732	0.0009	8.0306	0.9071	578.0975
Natives, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0732	46.9035	0.0101	18.6392	0.9168	532.0182
Centrality 2	0.0740	59.1704	0.0083	19.4603	0.9177	656.8705
Centrality 3	0.0797	59.9578	0.0081	17.4965	0.9122	623.8295
Centrality 4	0.0671	21.7111	0.0062	16.7914	0.9267	288.2034
Centrality 5*	0.0724	37.5557	0.0072	10.7359	0.9204	436.4880
Immigrants, employees						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0713	46.6204	0.0157	24.4214	0.9131	536.1988
Centrality 2	0.0828	41.3279	0.0165	21.9964	0.9006	391.9746
Centrality 3	0.0985	36.3061	0.0148	17.3452	0.8867	297.3015
Centrality 4	0.0999	24.8011	0.0130	11.8382	0.8871	204.1094
Centrality 5*	0.0856	21.3754	0.0096	10.6660	0.9048	210.7143
Immigrants, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0686	32.5224	0.1235	32.6395	0.8079	174.8849
Centrality 2	0.1060	33.9237	0.1303	32.7212	0.7636	135.9906
Centrality 3	0.1211	31.8592	0.1094	25.8012	0.7695	128.2929
Centrality 4	0.1334	24.4225	0.1201	19.3208	0.7465	87.4289
Centrality 5*	0.1497	24.9642	0.1157	17.9748	0.7346	82.6118

Table C 3: (Continued)

Female						
Natives, employees						
Centrality	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0598	76.3448	0.0016	19.8624	0.9386	1178.9945
Centrality 2	0.0640	91.0156	0.0012	18.1837	0.9348	1317.6386
Centrality 3	0.0697	84.2102	0.0010	14.9976	0.9293	1112.7010
Centrality 4	0.0636	71.2657	0.0007	9.8373	0.9356	1036.9514
Centrality 5*	0.0869	58.8240	0.0011	8.3382	0.9120	615.1087
Natives, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0805	48.1417	0.0111	18.8932	0.9084	492.1292
Centrality 2	0.0812	59.9559	0.0095	19.6267	0.9094	598.8320
Centrality 3	0.0872	61.4815	0.0091	17.7976	0.9037	578.0290
Centrality 4	0.0752	20.9807	0.0067	15.5910	0.9182	246.6535
Centrality 5*	0.0887	39.5401	0.0079	10.9788	0.9034	373.2722
Immigrants, employees						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0590	44.1016	0.0138	23.5295	0.9272	612.9623
Centrality 2	0.0647	37.9017	0.0118	20.5833	0.9235	477.8453
Centrality 3	0.0774	33.4606	0.0113	16.3942	0.9113	358.5929
Centrality 4	0.0710	22.2772	0.0091	11.1128	0.9199	266.5062
Centrality 5*	0.0554	19.1092	0.0071	10.1862	0.9376	297.2980
Immigrants, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0721	32.0529	0.1138	31.0878	0.8142	176.8191
Centrality 2	0.1119	32.7299	0.1191	30.2863	0.7691	133.4988
Centrality 3	0.1253	30.8352	0.0961	23.9694	0.7786	129.2463
Centrality 4	0.1391	23.4439	0.1082	17.6487	0.7527	85.5832
Centrality 5*	0.1536	24.1128	0.1115	16.8692	0.7349	79.6182

[a]IM is an abbreviation for internal migration.

Note: Centrality 5* is an aggregate of Centralities 5 and 6. See Table C7 for the definition of Group 3.

Table C 4: Predicted probabilities for different events for individuals in Group 4

Male						
Natives, employees						
Centrality	IM[a]		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0377	68.1761	0.0014	17.4841	0.961	1697.7178
Centrality 2	0.0223	75.8509	0.0007	16.4643	0.9769	3250.9644
Centrality 3	0.0239	72.8887	0.0005	13.7315	0.9756	2925.9418
Centrality 4	0.0218	59.5811	0.0003	9.0455	0.9779	2635.4949
Centrality 5*	0.0347	51.6096	0.0004	7.3862	0.9650	1432.5826
Natives, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0273	34.0081	0.0062	15.2970	0.9666	999.9083
Centrality 2	0.0235	43.1104	0.0043	16.1797	0.9722	1484.3616
Centrality 3	0.0249	45.3908	0.0044	15.1510	0.9707	1469.9135
Centrality 4	0.0216	18.3148	0.0030	14.1704	0.9754	770.9176
Centrality 5*	0.0262	29.6485	0.0035	9.1258	0.9704	960.7099
Immigrants, employees						
Centrality	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0381	40.9795	0.0052	21.0671	0.9568	965.4974
Centrality 2	0.0257	34.3731	0.0059	19.8054	0.9684	1098.0240
Centrality 3	0.0272	29.8134	0.0046	15.6521	0.9682	945.2055
Centrality 4	0.0257	19.8954	0.0042	10.7142	0.9702	673.6247
Centrality 5*	0.0273	17.6235	0.0042	9.7620	0.9685	561.9169
Immigrants, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0329	26.2416	0.0329	24.1386	0.9342	439.8067
Centrality 2	0.0327	25.6964	0.0343	23.7940	0.9331	408.4248
Centrality 3	0.0430	24.9510	0.0307	19.9585	0.9263	352.2174
Centrality 4	0.0578	19.3141	0.0378	14.8264	0.9045	205.3315
Centrality 5*	0.0819	20.1466	0.0451	14.1232	0.8730	155.0571

Table C 4: (Continued)

Female						
Natives, employees						
Centrality	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0371	67.6464	0.0014	17.4617	0.9615	1709.0069
Centrality 2	0.0215	76.0829	0.0008	16.6711	0.9778	3389.8279
Centrality 3	0.0235	73.0358	0.0006	14.0437	0.9760	2980.4516
Centrality 4	0.0213	60.9805	0.0004	9.3479	0.9783	2750.2389
Centrality 5*	0.0326	52.1399	0.0004	7.7049	0.9669	1538.0410
Natives, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0302	34.6598	0.0068	15.5794	0.9630	918.6000
Centrality 2	0.0259	43.8723	0.0050	16.6287	0.9691	1355.3031
Centrality 3	0.0275	46.5432	0.0049	15.6766	0.9676	1361.7283
Centrality 4	0.0244	19.3814	0.0033	14.9298	0.9724	724.2412
Centrality 5*	0.0324	30.8851	0.0038	9.4293	0.9637	818.2570
Immigrants, employees						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0313	40.8785	0.0045	21.2233	0.9642	1172.5605
Centrality 2	0.0197	33.7395	0.0041	19.6420	0.9761	1435.3359
Centrality 3	0.0209	29.4268	0.0034	15.7470	0.9756	1222.4912
Centrality 4	0.0178	19.4965	0.0029	10.8397	0.9794	961.8994
Centrality 5*	0.0172	17.1296	0.0030	9.9641	0.9797	857.7087
Immigrants, unemployed or out of the workforce						
	IM		Emigrating		Stay	
	Estimate	*t*-value	Estimate	*t*-value	Estimate	*t*-value
Centrality 1	0.0343	27.9032	0.0301	25.3884	0.9355	476.0208
Centrality 2	0.0343	27.0969	0.0311	25.1052	0.9346	442.7727
Centrality 3	0.0441	26.2378	0.0267	20.9121	0.9292	387.4171
Centrality 4	0.0599	20.3848	0.0338	15.5447	0.9063	222.3050
Centrality 5*	0.0840	21.2992	0.0434	14.8503	0.8726	163.7721

[a]IM is an abbreviation for internal migration.

Note: Centrality 5* is an aggregate of Centralities 5 and 6. See Table C7 for the definition of Group 4.

Table C 5: *t*-statistics related to differences in estimated probabilities between natives and immigrants. Males

	Employees		Unemployed or out of the workforce	
	Internal migration	Emigration	Internal migration	Emigration
Group 1				
Centrality 1	-5.6215	-21.8941	8.2023	-29.8258
Centrality 2	-11.1532	-20.4128	-8.4190	-31.7956
Centrality 3	-14.8575	-17.6940	-12.8400	-27.2084
Centrality 4	-13.5434	-12.8059	-12.9464	-21.1978
Centrality 5*	-5.3783	-11.0812	-15.5425	-19.3603
Group 2				
Centrality 1	0.3625	-14.7969	1.3510	-18.6974
Centrality 2	-6.9986	-17.1685	-4.9593	-21.6687
Centrality 3	-7.9319	-14.8703	-11.7649	-19.5222
Centrality 4	-7.4608	-10.8677	-12.9100	-15.3660
Centrality 5*	-2.1408	-9.9907	-15.6728	-14.5973
Group 3				
Centrality 1	-6.2250	-21.7615	1.7531	-29.6675
Centrality 2	-7.6493	-20.4625	-9.5078	-30.4627
Centrality 3	-9.7581	-16.1222	-10.2811	-23.7497
Centrality 4	-8.4435	-11.1760	-10.5642	-18.2912
Centrality 5*	1.4885	-9.5920	-12.2721	-16.7655
Group 4				
Centrality 1	-0.3698	-14.6439	-3.7616	-18.7770
Centrality 2	-4.2320	-17.2805	-6.6455	-20.4662
Centrality 3	-3.4039	-13.8449	-10.0079	-16.8012
Centrality 4	-2.9049	-9.9135	-11.2540	-13.6029
Centrality 5*	4.3821	-8.7631	-13.3890	-12.9342

Table C 6: *t*-statistics related to differences in estimated probabilities between natives and immigrants. Males

	Employees		Unemployed or out of the workforce	
	Internal migration	Emigration	Internal migration	Emigration
Group 1				
Centrality 1	1.1922	-19.4382	9.1984	-26.3064
Centrality 2	-4.4876	-17.3653	-6.6827	-27.1989
Centrality 3	-7.7805	-15.3415	-10.5563	-23.3151
Centrality 4	-6.8429	-10.6631	-10.6413	-17.6901
Centrality 5*	1.9001	-9.3011	-11.8618	-16.7709
Group 2				
Centrality 1	6.6974	-13.0626	2.7549	-17.3847
Centrality 2	-0.3351	-14.2950	-3.8562	-21.1429
Centrality 3	-1.8151	-13.5956	-10.7681	-19.0282
Centrality 4	-1.8005	-9.9111	-12.3589	-15.1557
Centrality 5*	4.8427	-9.2735	-14.5381	-14.6151
Group 3				
Centrality 1	0.5160	-20.6080	2.9970	-27.7010
Centrality 2	-0.3792	-18.3688	-8.3484	-27.6618
Centrality 3	-3.1342	-14.8788	-8.8523	-21.5253
Centrality 4	-2.2358	-10.2195	-9.2183	-16.5153
Centrality 5*	9.6809	-8.4579	-9.6098	-15.5819
Group 4				
Centrality 1	6.1582	-13.6755	-2.7211	-18.4427
Centrality 2	2.7749	-15.4075	-6.0141	-20.4745
Centrality 3	3.3345	-12.7215	-9.3174	-16.5846
Centrality 4	3.5805	-9.2273	-11.1049	-13.9551
Centrality 5*	13.0193	-8.5100	-12.6441	-13.4230

Table C 7: Definition of Group 1-Group 4

Groups	Education	Family
Group 1	High school diploma	Single (one-person family)
Group 2	High school diploma	Married with at least one child
Group 3	Short university education	Single (one-person family)
Group 4	Short university education	Married with at least one child