

One municipality does not fit all

The employment of refugees in Norway across municipalities of different centrality and size

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Abstract

Refugees coming to Norway are assigned to a municipality where they start their integration process. These municipalities offer very different contexts for refugees' access to employment. Using rich register data, we study how the employment of a refugee varies by both the centrality and the population size of the municipality to which he/she is assigned, conditional on existing labor market conditions and the share of non-Western immigrants. Results show that refugees assigned to the least central municipalities are most likely to be employed the first years after arrival. However, one municipality type does not fit all: Population size matters more for men than it does for women and there is persistent disadvantage for low educated men assigned to large municipalities. For women, a high share of non-Western immigrants correlates with lower long-term employment. Municipality context seems to matter the least for highly educated refugees of both genders.

1 Introduction

The successful labor market integration of refugees remains high on the political agenda. Receiving countries have implemented several policies to promote refugees' integration in the labor market (Hernes et al. 2020), including settling refugees in more “non-traditional” immigrant areas away from large cities, under the assumption that this might make it easier for refugees to integrate into the host society. Recent migration trends both in the US and in Europe do indeed show an increase in the overall share of migrants settling outside large metropolitan areas (Singer 2013; Winders 2014; Natale et al. 2019).

A large literature shows the existence of a “refugee entry effect”, or a gap in employment during the first years after arrival when refugees are compared to other groups of migrants (see e.g. Aydemir 2011; Bakker et al. 2017; Bevelander and Pendakur 2014; Brell et al 2020, Bevelander 2020, Bevelander and Luik 2020). At the same time, surprisingly little is known about whether less central or smaller municipalities where refugees are increasingly settled actually promote the successful integration of refugees into the labor market, and even less is known about whether any such pattern varies between different refugee groups. A recent EU report therefore calls for more research to understand how immigrants fare in small and medium size places (Gauci 2020; but see i.e., Vogiazides and Mondani 2019; Hugo and Morén-Alegret 2008).

In this study we address this question directly by testing whether and how municipalities' centrality and population size are linked to later labor market outcomes of the refugees settled there. Municipality characteristics can matter for labor market integration in many ways, and many mechanisms may be at work simultaneously. On the one hand, a municipality's centrality (i.e. closeness to a large urban center) can for instance impact the residents' access to both more diverse labor markets, more people to interact with and to more advanced public and private services. (Christaller 1933; Høydahl 2017). On the other hand, less centrally located municipalities may welcome refugees as a remedy against depopulation and as a support to shrinking labor force in e.g. agricultural sectors; a challenge that more central municipalities face to a lesser degree (Carr et al. 2012; Hedberg and Haandrikman 2014). Moreover, while small places may have advantages such as more close-knit and transparent communities, proximity to neighbors and jobs that are easier for refugees to access (Hugo and Morén-Alegret 2008), larger municipalities and cities may have a higher concentration of ethnic peers that can help newly arrived refugees to navigate the labor market but also display more residential segregation. It is therefore not straightforward to form clear assumptions about how the population size and centrality of a municipality might influence the labor market outcomes of refugees.

In addition to our focus on centrality and population size, we look into both local unemployment and the concentration of non-Western immigrants. The literature on refugee employment has shown that those local characteristics are relevant to explain refugee employment rates (Åslund and Rooth 2007; Damm 2009; Edin et al. 2003; Godøy 2017; Musterd et al. 2008; Wimarck, et al. 2019). We also know that both labor market characteristics and immigrant populations vary between small, large, central and less central places (Lichter et al. 2010; Singer 2013; Natale et al. 2019). It is therefore important to analyze the relationship between centrality and size on one hand and employment outcomes on the other, *conditional* on those two factors. It is also reasonable to expect that any link between municipality characteristics and employment will differ by refugees' human capital and opportunity costs of participating in the labor market (see e.g. Andersson, Musterd, and Galster 2018; Fuller and Martin 2012; Kanas and Van Tubergen 2009). We therefore split all analyses by the refugees' gender and educational level at arrival.

We exploit the Norwegian settlement policy for refugees as an analytical tool to examine the link between these municipality characteristics and individual-level labor market outcomes. According to the Norwegian settlement policy, a central agency (IMDi) is responsible for distributing new refugees to both large and small Norwegian municipalities (see below for more details). This system ensures meaningful variation in the size and centrality of the municipalities where refugees settle. The assignment policy moreover means that the allocation between an individual refugee and a municipality is considerably more random than if refugees could choose their municipality of residence themselves, although previous analyses (see e.g. Tønnessen and Andersen 2019) show that the allocation process is not completely arbitrary. An important advantage of our analysis, therefore, is that we have access to individual-level information that was available to IMDi at assignment and can control for these characteristics in our regression models. While not a perfect safeguard against selection on unobservables, it means that we are able to account for many of the individual-level factors that are likely to confound any observed relationship between municipality characteristics and labor market outcomes.

We find that refugees assigned to the least central municipalities are most likely to be employed the first years after arrival, but that difference disappears over time. Population size matters more for men than it does for women and there is persistent disadvantage for low educated men assigned to large municipalities. For low and middle educated women, a high share of non-Western immigrants correlates with lower long-term employment. Municipality context seems to matter the least for highly educated refugees of both genders.

2 Theoretical and Empirical background: Municipality Type, Context, and Employment

2.1 Refugee employment

Multiple studies across developed countries reveal the existence of an “entry effect” in employment rates among refugees. Refugee employment rates during the first years after settlement are consistently lower than those of other migrants, and only converge to levels of other migrant groups slowly over time (for recent reviews see Brell et al 2020; Chin and Cortes 2015). Refugee women, in particular, are disadvantaged at arrival compared to their male counterparts and other migrant women (Ruiz and Vargas-Silva 2017, 2018). These patterns have been observed across the Nordic countries, which have been important destinations of refugees for many years (see the special issue by Damm and Åslund 2017). These and other studies highlight that refugees are less likely to be self-selected into the country, and may lack the skills demanded in that particular labor market (Chin and Cortes 2015; Ruiz and Vargas 2017; Brell et al. 2020).

2.2 The role of municipality size and centrality

In line with a broad strand of research emphasizing the impact of the social, economic and institutional environment on individual opportunities and behavior, we argue that both the population size of the municipality to which refugees are assigned and how long refugees have to travel from that municipality to reach significant urban centers (i.e., the municipality’s centrality) matter for refugees’ employment rates in the years following settlement.

First, the *centrality* of a municipality likely impacts the nature of its labor market, including the various kinds of jobs refugees can access. The direction of this association is not straightforward to predict, however. On the one hand, more centrally located municipalities are likely to have access to more – and more diverse – job opportunities (Glaeser et al. 1992), and are better connected (i.e. require less commuting time) to multiple population centers, as well as to educational, cultural and health services (Christaller 1933; Høydahl 2017). Access to higher education is usually easier in cities than in the countryside. Recent trends observed in the US show that high skilled workers are now more over-represented in central cities than ever before (Autor 2019).

On the other hand, and as noted in a recent EU report, migrants may be beneficial for more remote areas where ageing and depopulation leads to the lack of labour force to provide basic services and low-skilled work such as in farming and forestry (Natale et al. 2019, p. 55). This may mean better labor market prospects for refugees in less central municipalities outside metropolitan areas (see also Hedberg and Haandrikman 2014; Carr et al. 2012; Hugo and Morén-Alegret 2008). In particular, Hedberg and Haandrikman (2014) find that migrant women living in rural Sweden have

higher employment rates than those in urban areas. Some research also suggests that employers in less centrally located places may have a stronger sense of local commitment, and may take extra responsibility for providing refugees opportunities in their business (see e.g. Marks 2014).

However, poor performing local economies with high unemployment (compared to thriving areas) hinder the socioeconomic integration of migrants (Portes and Zhou 1993). In a rare causal-design paper on the Norwegian settlement policy, Godøy (2017) found that for quota (i.e. resettlement) refugees, being placed in a labor market where other non-OECD immigrants do well, increased their labor earnings up to 6 years after immigration. For this reason, in our analyses, we consider the centrality of the municipality, after controlling for the local unemployment rate.

Second, the population *size* of a municipality might shape the nature and frequency of social interactions with both the migrant and the non-migrant population, as well as the local government and services refugees have access to. Social capital with both co-ethnics and natives has been shown to be a key factor in migrant integration (Aguilera and Massey 2003). Contact with natives provides valuable opportunities for language training and information about job vacancies, education opportunities etc. – i.e. host-country cultural capital (Chiswick and Miller 2005; Höhne and Koopmans, 2010). Bloch (2008) lists linguistic difficulties as one of the key obstacles to access employment, a challenge he argues might be especially salient for women (see also Auer 2018). Likewise, Wouter (2019) notes the acquisition of the host country language to be particularly relevant for employment prospects of non-economic migrants across Europe. In the same line, Gorinas (2014) stresses how migrants' higher familiarity and openness to the majority norms of their host society facilitate their access to employment. Søholt et al. (2015) show that migrants in Norway that have personal contact with the local majority population have significantly higher odds of being employed. Hence, places with large populations, which are typically also characterized by a more diverse population *and* more immigrant friendly attitudes (see e.g. Dustmann et al 2019 in Denmark), should arguably create the best context for such interactions to take place. In Norway, the attitudes towards immigrants and immigration are generally found to be most positive in places with populations above 100,000 (Blom 2017).

At the same time, settling in a smaller, more close-knit community may facilitate both formal and informal interactions with neighbors and other community members to a greater extent than settling in a large place where newly arrived people might “disappear” more easily in the crowd or live in more segregated neighborhoods (Waters and Jiménez 2005; Hugo and Morén-Alegret 2008; Vogiazides and Mondani 2019). As Zahl-Thanamen and Haugen (2019) show, negative attitudes in rural Norway (where municipalities are on average smaller than in metro areas) may be moderated

by migrant's participation in the local community – something that is often easier in smaller places.¹ Acquiring host-country education may ease job searches via contact with natives (Kanas and Van Tubergen (2009). Rural schools with a higher share of native pupils may facilitate access to local norms both for refugees upgrading their skills or for migrant parents via information received through their children.² Likewise, information on available local public services (e.g, childcare, local libraries, linguistic support, among others) is likely to reach migrants faster in smaller places. Smaller municipality administrations may allow for more flexible and tailor-made solutions when organizing refugee reception, housing, internships and employment.

In addition to contact with natives, the size of a municipality may affect the nature and frequency of social interactions with other migrants. Larger municipalities are more likely to host larger migrant populations both because of their mere size and because migrants have traditionally been overrepresented in large cities (Blom 2017; Singer 2013), whereas new destinations may lack those established ethnic communities (Lichter et al. 2010, Winders 2014). The literature on so-called ethnic enclaves shows that previously settled migrants may constitute a social network that offers information and support to the new arrivals, such as information about jobs and social expectations, in a language they are familiar with (see e.g. Andersson 2018; Bertrand et al. 2000; Damm 2009, Bertrand et al. 2000, Aguilera and Massey 2003). Co-ethnic employers can evaluate education and experience from their country of origin more easily than natives, although a large migrant concentration in a municipality may also increase information available to native employers of those credentials (Kanas and Van Tubergen 2009). However, living in ethnic enclaves can negatively impact language acquisition (Chiswick and Miller 2005) as well as limit exposure to majority norms.

The topic of immigrant concentration and its impacts on integration has received ample attention in the literature. Research from Sweden, Denmark and the US yields mixed results and shows that in some contexts, a higher concentration of ethnic peers is associated both with higher earnings (Edin et al. 2003), better school achievement (Åslund et al. 2011) and more self-employment (Andersson 2018; Andersson and Hammarstedt 2015), but also with higher welfare dependency (Åslund and Fredriksson 2009), and worse employment and income prospects (Musterd et al. 2008; Wimarck et al. 2019; Longhi 2019). In a recent paper, Stipss and Kis-Katos (2020) show that the employment rate of asylum seekers in Germany is not related to the size of the co-ethnic

¹ In fact, Natale et al (2019) point to research that finds smaller antagonism among the least educated natives (who may be the most likely to co-work with refugees) in rural areas than in central cities.

² However, in Norway immigrant classmates from high-achieving origin regions also have a positive influence on immigrant students' educational attainment (Hermansen and Birkelund 2015).

community in the county, but rather increases in the number of employed co-ethnics. Research has also found that the effect of ethnic networks differs by the educational level (see e.g. Cutler et al. 2008) and gender of the person migrating. Studies generally show that higher concentration of immigrants is detrimental for women's labor market prospects (Fuller and Martin 2012; Ryan 2009; Foroutan 2009; Andersson et al. 2018). In Norway, ethnic concentration is usually higher in larger municipalities, but some small fishery municipalities along the coast also have sizable immigrant communities. In our analyses we control for concentration of non-Western migrants in the municipality to separate the role of municipality population size from the intensity of ethnic enclaves.

Taken together, existing theory and research yields a mixed and complex picture of how municipality size and centrality might impact refugees' labor market outcomes, and what mechanisms operate. An important point to stress here is that some small municipalities in Norway are not centrally located, and that not all central municipalities have large populations. This provides a good opportunity to explore the relevant relationship of each municipality characteristic separately, both net of the other, and net of likely confounders like labor market characteristics and immigrant concentration. An intriguing question is also how size and centrality might interact, and whether some combination of the two characteristics can provide "the best of both worlds". Natale et al. (2019) stresses that migrants could benefit from being in smaller yet still central locations as this gives access to closer peer networks, greater interaction with locals *and* access to regional labor markets. Following this line of thought, our analyses include interaction terms between size and centrality to look for such "ideal" combinations.

2.2.1 The Norwegian context and the settlement policy

Since the turn of the millennium, immigration to Norway has increased markedly. In 2020, nearly 800,000 immigrants lived in Norway, constituting 14.7 per cent of the population (Statistics Norway 2020a). After the European Union enlargement in 2004, a substantial number of labor migrants from the new eastern member states arrived to Norway, while immigration from other parts of the world also increased (Statistics Norway 2020a).

Refugees constitute a larger proportion of all migrants in Norway than they do in most other OECD countries, the most recent large group being refugees from Syria (Carlson and Williams 2020). Around one in five immigrants living in Norway arrived as refugees (Statistics Norway 2020b, 2020c). As of January 2020, the number of refugees in Norway totaled 174,000 individuals, of whom 115,000 had arrived as asylum seekers and 41,000 were quota refugees (also called resettlement refugees).

Since the 1990's, a central agency (since 2006, the Directorate of Integration and Diversity, IMDi) has been in charge of assigning refugees to one of Norway's more than 400 municipalities with several goals in mind: limiting the concentration of refugees in metropolitan areas, spreading the fiscal burden of integration, and accelerating integration (Hernes et al. 2020; see also Edin, Fredriksson and Åslund 2004 and Søholt et al. 2020). Since 2004, refugees participate in an introductory full-time course that includes teaching in Norwegian language, Norwegian society and qualification measures for work (such as internships) or education (Lovdata 2020). During that course, refugees are entitled to an economic support of around USD 20,000 annually.³ This increases the economic incentives to stay in the assigned municipality for the duration of the program (usually about two years), as refugees that move out of their assigned municipality risk losing the economic support.

Compared to other policies for refugee settlement, the level of coercion is generally higher in Norway than in many other countries, and the possibilities for refugees to choose their own municipality are more limited (Hernes et al. 2020). After five years, less than 30 per cent of the refugees who arrived between 2002 and 2010 had left the municipality they were settled in (Ordemann 2017). The main consideration for IMDi when allocating refugees to different municipalities is the political goal of 'rapid settlement'. IMDi also aims to find a good match between municipalities and refugees when it comes to, for example, refugees' qualifications, local labor market needs and educational opportunities (Tønnessen and Andersen 2019). This highlights that the assignment process is not completely random, and underscores the importance of using IMDi's data on individual characteristics in our estimations.

As refugee settlement policies have become increasingly common across Europe, some of them have been used in quasi-experimental analyses that seek to explore how local conditions might impact the integration of refugees on various societal arenas. These have, as mentioned above, focused on the effect of local labor market conditions (e.g. Åslund, Östh, and Zenou 2010; Åslund and Rooth 2007; Bevelander and Lundh 2007 for Sweden and Godøy 2017 for Norway) and so-called ethnic enclaves on a diverse set of socioeconomic outcomes (Åslund et al. 2011; Åslund and Fredriksson 2009, Andersson 2018). Although the Norwegian refugee placement policy has received little attention from researchers working on causal identification, many descriptive studies have been conducted on refugees in Norway. Descriptive findings by Blom and Enes (2015) and Lillegård and Seierstad (2013) indicate that refugees who are placed in less central municipalities fare better (measured by whether they are employed or in education) than those placed in more

³ More precisely 2G (2 times the National Insurance scheme basic amount), which in 2020 equalled around NOK 200,000.

central municipalities. Whether this finding holds also in a more rigorous research design, remains to be explored.

3 Empirical strategy and data

To test the relationship between municipality characteristics and labor market outcomes, we estimate a set of linear probability models with robust errors that are clustered at the municipality level. In all models, the dependent variable takes a value of 1 if the individual's main labor market status is "employed" or "self-employed" in a given year, and 0 if not.⁴ We follow refugees during their first eight years in Norway. Models include the key municipality variables of interest (centrality and population size), municipality controls (total unemployment rate, share of non-Western immigrants and age structure (to control for demographic composition), all measured at the year *prior* to settlement to avoid endogeneity), a large battery of individual controls, as well as controls for the year and month of settlement.

As we use information on the municipality each individual was assigned to, and not the municipality in which he or she lives after a given number of years, our estimates can be interpreted as intention-to-treat (ITT) estimates. Our analytical strategy is thus closely related to that of Godøy (2017) in Norway and similar to that of Edin, Fredriksson, and Aslund (2003) and Damm (2009) in Sweden and Denmark. Despite the fact that 7 out of 10 refugees in our sample were still living in the same municipality five years after settlement, as a robustness analysis we explore whether the patterns differ when we restrict the sample to those who stay in the assignment municipality until the year for which the model is estimated.

3.1 Data and Variables

We combine data from two main sources. First, we obtain data on all refugees settling in Norway from 2002 to 2016 and the municipality and date they were settled in, from the Norwegian Directorate for Immigration (UDI). This dataset includes information on other individual characteristics that were available to the officers making the settlement decision, such as sex, age at settlement, and family type. Second, we use the Norwegian register data to draw additional individual variables such as the country of birth and date of settlement. We follow each refugee up to eight years after their settlement. Our data includes 36,273 men and 25,076 women who settled in Norway at age 18-60.

To these individual variables, we link information on the characteristics of the municipality of placement the year before the refugee was assigned there. All the municipality variables used in this

⁴ Note that only a small group are self-employed; during the first 8 years after settlement this group comprises 0.2-2.0 percent of the sample.

study are derived from Statistics Norway’s registers; they are also publicly available at Statistics Norway’s databank (www.ssb.no/en/statbank).

3.1.1 Outcome variable

We analyze annual employment in each of the first 8 years after placement. Annual estimates show how progress in labor market entry is contingent on municipality characteristics at settlement. We run our analysis separately by gender and by education.

3.1.2 Municipality Characteristics

Our main municipality characteristics of interest are centrality and population size. Norway is relatively sparsely populated, with about 13 per cent living in the capital of Oslo, about 15 per cent living in the cities of Bergen, Trondheim, Stavanger, Kristiansand and Tromsø (these are all regional centers in other parts of the country), and the rest of the population spread over several hundred less populous municipalities, mostly along the coast. As of 2020, 16 per cent of the Norwegian population live in remote municipalities with less than 10,000 inhabitants. Some of these municipalities are geographically large, with vast forest and mountain areas, whereas some of them are islands.

To capture centrality, we use Statistics Norway’s 2008 classification of centrality for urban settlements in Norway,⁵ where a municipality’s centrality level depends on the travel distance to different types of settlements. The most central municipalities (in Centrality 3) are located less than 75 minutes travel time from a regional center (90 minutes from Oslo); those in Centrality 2 are less than 60 min travel from settlements with population of more than 15,000; those in Centrality 1 are less than 45 min travel from settlements with pop 5,000-14,999; and finally, Centrality 0 includes all remaining municipalities. Each municipality is assigned to its’ highest possible centrality level. For our main analysis we pool together municipalities in either centrality 1 or 0. Around 57 per cent of refugees in our sample were settled in municipalities in Centrality 3, 20 per cent in centrality 2 and 23 per cent in either centrality 0 or 1 (Table 1).

Our second measure of interest denotes the size of the population in the municipality. Here, we define three categories: Small (less than 10,000 inhabitants), medium (10,000-60,000) and large (more than 60,000 inhabitants). 31 per cent of refugees were settled in small municipalities, 44 per cent in medium-sized ones and 25 per cent in large ones (Table 1).⁶

⁵ See <https://www.ssb.no/en/klass/klassifikasjoner/128/versjon/468/koder>

⁶ All large municipalities are in centrality 3, whereas medium, and small municipalities are found at different centrality levels.

For robustness we also include a more updated measure of centrality (Høydahl, 2017), which is made to fit the more recent municipality structure in Norway.⁷

TABLE 1 ABOUT HERE

Local unemployment rate is a critical variable in our analysis as previous studies have shown that arriving into a municipality with relatively high unemployment may hinder the chances of entering the labor market smoothly (Godøy 2017). The total unemployment rates differ little on average between Norway’s smallest and largest municipalities or more or less central municipalities, with just a few very remote municipalities in centrality 0 portraying relatively high unemployment rates. Within each centrality level, however, there is considerable heterogeneity in unemployment rates across municipalities.

During the sample period, 2002-2016, unemployment rates across municipalities did not oscillate as much as in other European destination countries since Norway was not as hit by the financial crisis. The average unemployment was 2.66 per cent, but it ranged from 0 to 10 per cent. In addition to using total unemployment rates, in robustness analysis (available upon request), we employ the unemployment of non-Western immigrants, calculated annually in the 4th quarter.

To proxy access to peers as well as for competition in labor market, we use the share of non-Western immigrants over all the municipality’s inhabitants at the time of settlement. This proportion varies from zero in several rural municipalities – at least in the first part of our study period – to more than 13 per cent in the capital Oslo in 2015. In robustness models, we use the total share of migrants instead.

All models control for age structure at municipal level measured as the share of 50-74 over 15-74. Results are robust to the exclusion of this variable, but we include it to reduce concerns of ageing as a confounding variable for municipality location.

3.1.3 *Individual characteristics*

The individual characteristics used to define control variables are derived either from IMDi/UDI or from Statistics Norway. Notes in Table 2 indicate the data source of each variable.

All models include information on refugee’s *age* (and age squared), type of *family structure* (using the UDI identifier) and *number of children* (parity) – all measured at time of settlement- as well as an

⁷ Many Norwegian municipalities were merged in the period 2018-2020, so that the total number of municipalities went down from 426 to 356. The new centrality index is continuous, and the correlation between the 0-3 scale and this new scale is 0.7838. This new index is a combination of two sub-indexes; (i) the number of workplaces that people can reach within 90 minutes by car from their grunnkrets (basic geographical statistical unit), and (ii) how many different service functions they can reach within the same distance.

indicator for whether the individual participated in the introductory program and another to distinguish between quota (resettlement) refugees who came through the UNHCR system, often directly from refugee camps (around 12 per cent of men and 20 per cent of women in the sample) and those who travelled to Norway as asylum seekers. We pool countries of birth into three *origin regions*: Africa, Asia (including Turkey) and Eastern Europe

TABLE 2 ABOUT HERE

We use Statistics Norway’s information on the refugees’ *highest educational level* completed *before* first day of settlement. This information includes foreign education confirmed by Norwegian authorities. We group educational levels into three: i) No education, primary education, lower secondary education or unknown/missing info on education (corresponding to the Norwegian “grunnskole” or less), ii) Higher secondary education (corresponding to Norwegian “videregående skole”), and iii) Higher education (corresponding to Norwegian university or college education). Missing education (40 per cent for men and 45 per cent for women) is a usual problem when dealing with migration data, particularly refugees. Since the majority of refugees with missing/unknown education are from countries where more than 70 per cent of those who *did* have information on education had lower secondary education or less, we pool them into the first group.⁸ In the appendix we provide results with both groups separated (see Table A6).

Finally, models control for *month* (1-12) and *year of settlement* (2002-2016) to account for changing trends in refugee flows and labor market conditions, as well as changing conditions in the Norwegian municipalities over time.

4 Results

4.1 Main results

Figure 1 shows the share of men (left panel) and women (right panel) who are employed by year since settlement, in the total sample and by three education groups. For men, employment rates climb sharply during the first 5 years for all educational groups to around 63-67 per cent and stabilize thereafter (or fall slightly to) just over 60 per cent. The trajectory for the three educational groups is remarkably similar. Conversely, among women there is a clear educational divide. The trajectory of tertiary and upper-secondary educated women is quite comparable. Employment rates climb from barely 20 per cent in the first year until they even out in the middle 50s after six years. Labor market attachment of low educated women is markedly lower. Even though the trajectory

⁸ The percentage of missing is particularly large for a few countries (i.e. Eritrea (around 25 per cent), Ethiopia (around 25 per cent), Somalia (40 per cent), Afghanistan (35 per cent)).

is somewhat parallel to that of the other two groups, it only starts at 10 per cent and plateaus in the low 40 per cent after six years. As the majority of refugee women are low educated, the line for the average women is just a tad above the trajectory for that group.

FIGURE 1 ABOUT HERE

Table 3 presents the main models for the full sample, separately for men (Panel A) and for women (Panel B) that include all individual-level controls, municipality age structure and month and year of arrival. Appendix tables A1 and A2 include full results. Both men and women who are settled into a moderately central municipality (centrality 2) are less likely to be employed than those in the most remote locations (centrality 0 or 1, the reference category) for the first five years after assignment. Those in the most central municipalities (centrality 3) are also less likely to be employed for the first three years in Norway, but not thereafter.⁹

Even though large municipalities seem to offer a thick labor market and a large pool of natives and peers, from year three onwards, men settled in them are the least likely to be employed and the difference compared to those settled in smaller municipalities is substantial in some years, up to 8 per cent. After five years or more in Norway, men allocated to medium sized municipalities also seem to do slightly worse than those in small places, but coefficients for medium-sized municipalities are only marginally significant in some years. For women (Panel B), differences in employment by municipality size are not as sizable or as precisely estimated as for men. Small municipalities also offer better chances for a woman to be employed in the years immediately after settlement than medium sized-ones.

TABLE 3 ABOUT HERE

Some combinations of the centrality and population size of the municipality might provide more “ideal” conditions for labor market integration than others, and Figure 2 presents estimates from models in which we interact both variables. The reference category for all estimates is refugees settled in small municipalities situated in the most remote areas (either centrality 1 or 0). The figure presents estimates for years 1, 3, 5 and 7 after assignment to the municipality. The length of the bars corresponds to the 95 per cent CI and thus it is easy to visually ascertain whether coefficients are significantly different from zero. Table A5 in the appendix includes the estimates for all years by gender.

FIGURE 2 ABOUT HERE

⁹ Appendix Table A3 shows a similar negative impact of centrality during the first years in Norway when using the continuous indicator of centrality by Høydahl (2017).

The overall patterns are relatively similar for men (left panel of Figure 2) and women (right panel): The likelihood of employment during the first three years in Norway is the highest for the refugees settled in the least central municipalities independently of their size. Seven years after arrival, however, only men in the largest municipalities (all in centrality 3) or in medium sized municipalities in centrality 2 are still significantly less likely to be employed than the rest (although for women, both the implied employment difference and the confidence intervals are particularly wide for large and centrally located municipalities), other variables held constant. Within each centrality, the employment outcomes for both men and women tend to be best for those settled in less populous municipalities.

Results in Table 3 and Figure 2 are conditional on the labor market circumstances in the municipality of assignment the year before refugees settle. High unemployment seems to be detrimental for refugees' employment prospects not only immediately at arrival, but also for a few years after (cf. Godøy 2017). The unemployment coefficients are negative and statistically significant both for men (until year six) and for women (until year five). However, the size of the coefficients suggests that the negative association with high unemployment at arrival decreases over time, and that this drop is faster for men than for women.¹⁰

Finally, models also include the proportion of non-Western migrants in the municipality at the time refugees settled. Results in Table 3 suggests that the relative size of this local network means different things for the employment outcomes of men and women: for men the correlation is positive the first years and then becomes statistically non-significant; for women, settling in a municipality with a large non-Western immigrant population is significantly and negatively correlated with their likelihood of employment years two through eight.¹¹

In appendix table A4 we re-estimate models in Table 3 for a sample that includes only the non-movers, i.e. those who have not left their municipality of assignment by the start of each estimation year. Results are generally consistent with those of Table 3.¹²

¹⁰ Results are comparable when using non-Western unemployment rates instead (available upon request).

¹¹ In separate estimates (available upon request) we use the total share of immigrants in the municipality instead. For men the coefficients continue to be non-significant after the first year and for women they are negative, highly significant and about half the size of those for the share of non-Western migrants in Table 3.

¹² When including only the non-movers, the estimates cannot be interpreted as ITT. Compared to the results in Table 3, the negative gradient of municipality size and centrality for non-moving refugees' employment is more apparent and remains significant for the whole period. Further, ethnic concentration is now detrimental for non-mover men in years six to eight.

4.2 Analysis by education

Human capital is among the key factors that determine labor market performance of individuals, and Table 4 presents regression estimates separately for the three main educational categories.

TABLE 4 ABOUT HERE

Immediately after arrival, centrality is strongly and negatively associated with employment among men of any educational level. This association is particularly strong for college-educated men in the first year, but declines quite quickly and loses significance afterwards for this group. Among low-educated men, employment rates of those settled in centrality 2 are relatively worse than those in both more or less central locations up until year five. Employment prospects for middle educated men are significantly worse in the most central municipalities only until year three. Among women, settling in a non-central municipality improves employment prospects for the low educated, even after five years in Norway. In contrast, higher centrality only hurts middle educated women's employment immediately after arrival, and it does not seem to be relevant for tertiary educated women even during those first years in Norway.

Population size is only relevant for low and middle educated men (throughout their fifth year in Norway), and employment rates are the lowest for those living in the largest municipalities. For women, only living in middle size municipalities confers a small disadvantage in the first years for low educated women but, overall, and consistent with Table 3, municipality size is not significant.

Table A6 in the appendix includes the estimates for low educated and those with missing/unknown education separately. Results align with those for the joint low/missing category in Table 4 even though the significance levels vary slightly.

Figure 3 presents results from models with the interaction of centrality and population size separately for each educational group. The wider confidence intervals bars in the figures for upper secondary and tertiary education groups compared to low educated are due to the smaller sample size of those groups. Results for the low educated are essentially the same as those described in Figure 2, both for men and women. Employment rates among middle educated men are the lowest in the most central locations at arrival and that penalty persists until year three in middle-size municipalities in centrality 3 and until year five in large cities. Among middle educated women, employment is highest in the first year in the most remote municipalities regardless of population size, but it immediately converges across all municipalities except for large cities in which relatively low employment rates persists throughout year seven. Among tertiary educated men and women, most differences disappear by year three.

Estimates in Table 4 show that a high level of pre-existing unemployment in the municipality of assignment is most detrimental for the least educated, both men and women, and for men with upper secondary education also until their fifth year in Norway. By comparison, the employment of refugees with tertiary education is only negatively related to pre-existing local unemployment conditions during their first year in the country, but not thereafter. Last but not least, a large share of non-Western migrants in the municipality of settlement hampers the employment of low educated women, but not significantly that of women with higher levels of education. For men, it boosts employment for low and middle educated men immediately at arrival and becomes irrelevant later on.

FIGURE 3 ABOUT HERE

4.3 Individual control variables

We finally wish to highlight our findings in relation to a few of the individual-level controls. Full estimates of the main models are presented in tables A1 and A2 in the appendix. First, whereas for women, the number of children at arrival is inversely related with the probability of employment in Norway, among men, arriving with one or two children is associated with higher likelihoods of employment compared to those arriving without children. Second, participating in the introductory program is associated with lower employment during the first two years in Norway, a finding that is not surprising as it coincides with the length of the program for most participants. For men there is no significant relationship between program participation and later employment, but among women it seems to constitute a pathway toward more stable employment attachment later on – particularly among low-educated women (see Table A2). Third, our results show that after controlling for individual and municipal characteristics, those who arrived as asylum seekers have higher employment rates than the quota refugees the first years after settlement. However, in the longer run, employment rates are higher for quota refugees with similar characteristics settled in similar municipalities. This is the case for both female and male refugees (see Tables A1, and A2) and in particular for women with low and medium education (results available upon request).

5 **Discussion and conclusion**

In this paper we take advantage of the quasi-random Norwegian settlement policy to present -intention-to-treat estimates of the relevance of a municipality's population size and its centrality in explaining differential employment rates for refugees settled there. We present results for the first eight years since arrival, across gender, and by educational attainment.

In the theoretical section we argue that labor markets in central and less central areas are different, and that mechanisms may work in both directions: more central areas have a larger and more

diverse labor market, whereas the jobs available in less central places may be more accessible for refugees. We find that, in the first years since arrival, employment rates are significantly higher for refugees settled in the least central municipalities. Those differences disappear, however, over time and for both genders. The results are heterogeneous across educational groups; even though employment of both men and women with tertiary and upper secondary education is substantially higher in the most remote municipalities during their first year in Norway, long-term differences by centrality only appear among the least educated. A possible explanation for this finding is that, even though more central locations afford more diverse labor markets that may ease the transition to employment among relatively educated refugees, the closeness to employers, the better match in skill needs in some sectors (i.e. agriculture, fishery) and the commitment from local businesses (Marks 2014) in less central locations may offer more employment opportunities for the least educated.

With regard to municipality size, we theorize it may be relevant in two ways, through the extent of social contact in the municipality and the size of the local administration. We find that, within each centrality level, the employment outcomes for men tend to be best for those settled in less populous municipalities. For low and medium educated men assigned to large cities a sizable employment gap persists (of up to 8 per cent) compared to those in small municipalities. For women, population size on its own does not seem as relevant, even though those settled in small municipalities have the highest likelihood of employment in early years in Norway. While most international migrants across Western countries tend to settle in large cities (Singer 2013), our results are consistent with previous work showing some non-linearities (or negative gradient) in the link between the population size of a municipality and employment rates of migrants (Vogidiazes and Mondani 2019; Wimark et al. 2019; Hedberg and Haandrikman 2014).¹³ To our best knowledge, we are the first to show this heterogeneity by the educational attainment of refugees. Closeness to both natives and local public institutions as well as lower residential segregation are likely mechanisms behind these differences (Waters and Jiménez 2005; Hugo and Morén-Alegret 2008; Vogiazides and Mondani 2019). Even though Blom (2017) notes more pro-immigrant attitudes in larger Norwegian municipalities, the frequency of every day exchanges between refugees and natives in small municipalities and the important role refugees may play in sustaining some local sectors and services may boost natives' implication towards new arrivals and ease men's transition to employment

¹³ Vogidiazes and Mondani (2019) find that migrants in Sweden are most successful in finding employment in both the largest municipality, Stockholm, and small cities and rural regions compared to the rather large region of Malmö. Wimark et al. (2019) find better employment outcomes (four and ten years after arrival in Sweden) for those settling in metro areas and countryside compared to those on large cities for some cohorts, even after controlling for the economic deprivation of their neighborhoods. Similarly, Hedberg and Haandrikman (2014) find higher employment rates of female migrants in rural areas than in urban areas in Sweden.

(Zahl-Thanamen and Haugen 2019). Further, officers responsible for refugees in smaller municipalities may encounter a smoother cooperation with other parts of the municipality administration and with non-government organizations and have a better overview of local workplaces, making it easier to match refugees with employers for internships (Søholt et al. 2015).

Overall, centrality and municipality size matter the most for low educated refugees. Interaction models show that low educated men experience persistently lower employment when assigned to the largest municipalities within the most central and moderately central locations. By contrast, employment prospects of tertiary-educated men and women assigned to a central and large municipality are only lower during their first year in Norway, but differences across municipalities disappear in subsequent years. This suggests that this group may integrate more easily into the Norwegian labor market independent of their settlement location. Their lower labor market performance in more centrally located large municipalities during the first year may be related to their high aspirations in the labor market and their waiting for validating credentials or acquiring some local human capital. Some refugees may also decide to complete some type of formal education when settling in Norway to boost their employment chances later on. Some of those settled in large municipalities may be attending universities and this is why their employment rates are lower. Our controlling for education and age, eases up this concern.

Our results on centrality and size are net of the influence of non-Western migrant concentration in the municipality at the time of settlement. While for men a large local migrant pool seems to be irrelevant or boost employment prospects immediately at arrival for the least educated, for (low and middle educated) women it is consistently shown to be detrimental for their labor market integration. This accords with the literature that finds an ambiguous employment impact of ethnic enclaves in general (Musterd et al. 2008; Wimark et al. 2019; Longhi 2019), contingent in many cases on quality of the ethnic enclave (Edin et al. 2003;) or on migrant's education (Cutler et al. 2008) and a more unambiguous negative impact on women's labor force participation, especially for those from more patriarchal societies (Fuller and Martin 2012; Ryan 2009; Foroutan 2009; Andersson et al. 2018). Living in segregated neighborhoods with less interaction with natives or with local institutions in general slows linguistic acquisition (Chiswick and Miller 2005) and this can be particularly important for women (Auer 2018; Bloch 2018). Language proficiency facilitates the understanding of majority norms (Gorinas 2014) and may be particularly valued in small and less central communities (Zahl-Thanamen and Haugen 2019).

Our results may offer guidance for future research in this field. Obtaining data on commuting paths and interactions of migrants at the individual level both in their place of residence and outside their

municipality would be key to better understand both the independent role of centrality and population size and how they interact with each other to explain employment patterns. Analyzing the refugees' network in each municipality to understand the density and the level of segregation of the interactions at micro level would also provide key information. Unfortunately, information on personal networks is not available in our data, nor is information on the linguistic ability of the migrant, which is an important mediator for access to employment. The introductory program may provide a boost to linguistic proficiency which may be particularly important for women (i.e. De Vroome and Van Tubergen 2010 in Netherlands). This is consistent with our finding of a positive coefficient of having participated in the introductory program on women's employment starting on year three, just after completion of the program.

In our analysis we are unable to control for health status even though some refugees – in particular quota refugees – have health issues and may be settled in (large) municipalities with hospital facilities. This should affect both their employment and the interpretation of our IIT estimates. Yet only about 20 new quota refugees annually have a life-threatening health problem (Norwegian Directorate of Immigration (UDI) 2020).

Further, in this study we focus on integration via entry into the labor market. Some refugees may decide to upgrade their skills or complete some type of formal education when settling in Norway to boost their employment chances later on. Some of those settled in large municipalities may be attending universities and this is why their employment rates are lower. Controlling for education and age, eases up this concern.

Migrants moving to remote municipalities may be key for the survival of the economies in more rural areas, avoid depopulation and justify the provision of services such as health or education (Carr et al. 2012; Hedberg and Haandrikman 2014), and may appear as an opportunity for counter-urbanization. This issue is clearly becoming more pivotal in the policy debate as a recent EU reports attest (Natale et al. 2019). As part of its *Cities and Regions for Integration* initiative, the EU Committee of the Regions (CoR) note the need for small and medium cities to have the tools to help integration of the new migration outside large cities (Gauci 2020). The results of our paper shed some light on how placement in municipalities with different degrees of centrality and population size is related to later labor market prospects among different types of refugees. Better knowledge of those factors can have policy implications on how to support refugees dispersed through heterogeneous municipalities in the future to minimize their “entry effect” in employment (Brell et al. 2020). Of course, our paper only focuses on one labor market dimension, namely employment. Future work

should examine whether the types of jobs refugees take, as well as their earnings, also correlate with the municipality characteristics underlined here.

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Figure 1: Share of refugees employed, by year since arrival and educational group, men (left panel) and women (right panel)

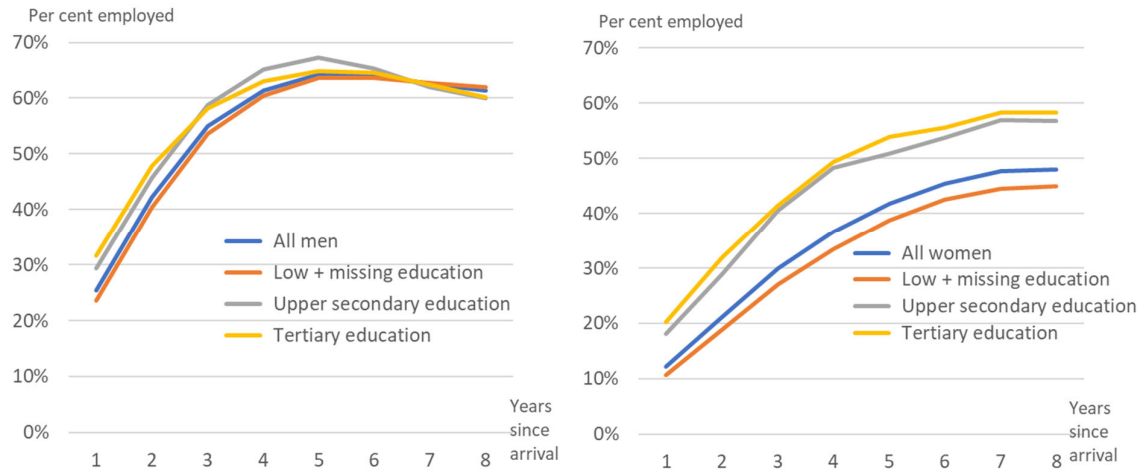
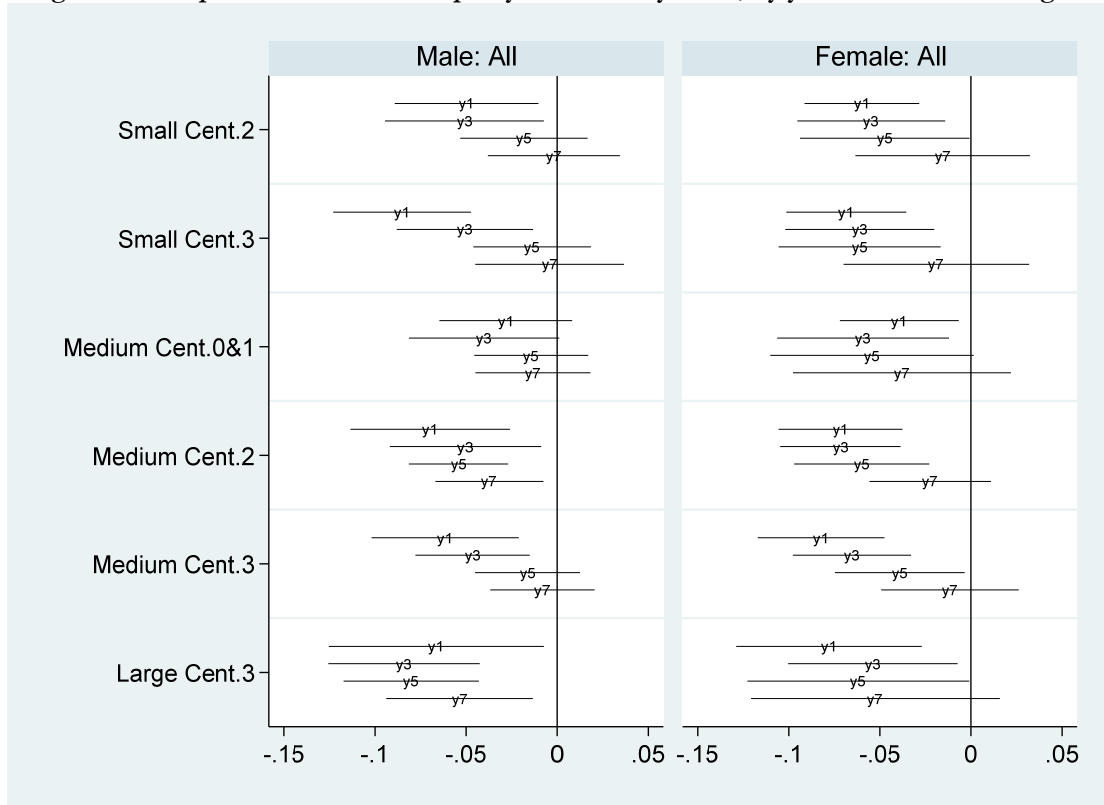
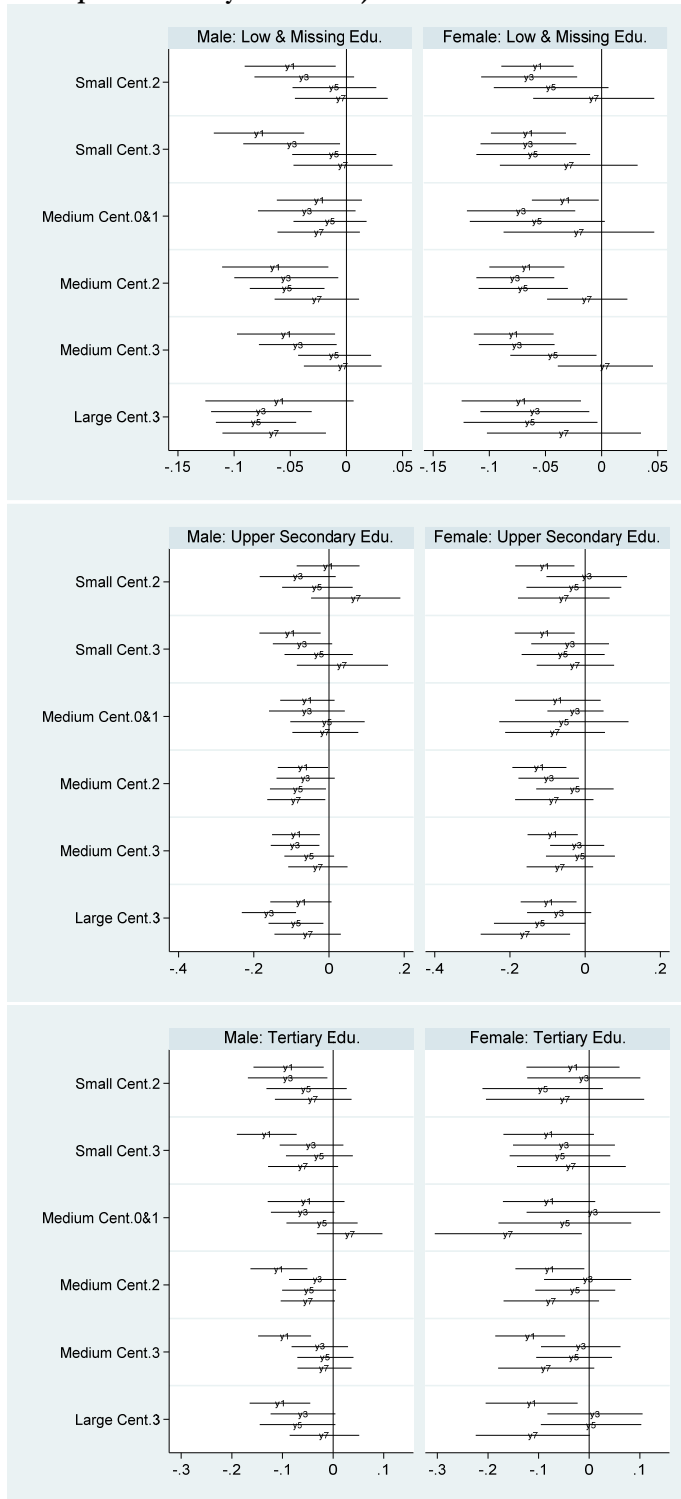


Figure 2: Likelihood of being employed depending on the size and centrality of municipality of assignment compared to small municipality in Centrality 0 or 1, by year since arrival and gender.



Note: OLS coefficient estimates relative to small municipalities situated in either Centrality 0 or 1. Each bar corresponds to a year since arrival. Point estimates shown at the year label and length of bars is 95 per cent CI. Complete estimates shown in Table A3 in the appendix.

Figure 3: Likelihood of being employed depending on the size and centrality of municipality of assignment compared to small municipality in Centrality 0 or 1, by year since arrival, gender and education (upper panel: low and missing education, middle panel: upper secondary education, lower panel: tertiary education).



Note: OLS coefficient estimates. Each bar corresponds to a year since arrival. Point estimates shown at the year label and length of bars is 95 per cent CI.

Table 1: Descriptive statistics, municipality variables. Minimum value, maximum value, mean and standard deviation.

	Mean	Std. dev.	Min.	Max.	N
Population size					
Small municipality (9,999 or less)	0.3102	0.4626	0	1	61,349
Medium municipality (10,000-59,999)	0.4369	0.4960	0	1	61,349
Large municipality (60,000 or more)	0.2528	0.4347	0	1	61,349
Centrality					
Centrality 0 or 1 (least central)	0.2320	0.4221	0	1	61,349
Centrality 2	0.2010	0.4008	0	1	61,349
Centrality 3 (most central)	0.5669	0.4955	0	1	61,349
Centrality index (2018 standard, in 100)*	7.88	1.30	3.15	10	61,262
Labor market conditions					
Total unemployment rate	2.66	0.97	0	10.06	61,334
Unemployment rate, non-Western immigrants*	8.98	4.12	0	41.30	58,059
Population					
Share of non-Western immigrants	0.0400	0.0289	0	0.1337	61,349
Age structure (age 50-74/age 15-74)	36.31	4.57	23.74	54.43	61,349
Total share of migrants*	0.0901	0.0049	0.0078	0.2529	61,349

*: Used in robustness analyses only

Table 2: Descriptive statistics, individuals, by gender. Mean and standard deviation.

	Men (N=36,273)		Women (N=25,076)	
	Mean	Std.dev.	Mean	Std.dev.
Age at settlement^a	30.54	8.73	30.85	8.87
Family type at settlement^a				
One adult	0.6706	0.4700	0.3087	0.4620
Two married adults, no children	0.0331	0.1789	0.0538	0.2256
Small family with at least one child	0.1388	0.3458	0.3631	0.4809
Large family with at least one child	0.1326	0.3392	0.2325	0.4224
Large family without children	0.0249	0.1558	0.0420	0.2006
Parity at settlement^b				
No children	0.6807	0.4662	0.3970	0.4893
One child	0.0880	0.2833	0.1928	0.3945
Two children	0.0914	0.2882	0.1683	0.3741
Three children	0.0650	0.2464	0.1111	0.3143
Four or more children	0.0750	0.2633	0.1308	0.3371
Country of origin, region^{a, b}				
Africa	0.5029	0.5000	0.5045	0.5000
Asia	0.4478	0.4973	0.4220	0.4939
Eastern Europe	0.0493	0.2166	0.0736	0.2611
Quota refugee^a	0.1272	0.3332	0.2072	0.4053
Educational level at settlement^b				
Lower secondary or less	0.0934	0.2910	0.0807	0.2724
Upper secondary or postsecondary	0.1463	0.3534	0.0933	0.2908
University or college	0.3559	0.4788	0.3730	0.4836
Unknown/missing	0.4045	0.4908	0.4530	0.4978
Introductory course^b				
Participation in introductory course, any	0.8479	0.3591	0.8261	0.3790
Participation in introductory course, months	15.86	10.72	17.76	11.88
Year of settlement^b				
2002	0.0511	0.2202	0.0772	0.2670
2003	0.0561	0.2301	0.0591	0.2358
2004	0.0530	0.2240	0.0499	0.2177
2005	0.0390	0.1937	0.0467	0.2109
2006	0.0309	0.1730	0.0425	0.2017
2007	0.0346	0.1827	0.0407	0.1975
2008	0.0425	0.2018	0.0474	0.2124
2009	0.0601	0.2377	0.0676	0.2510
2010	0.0610	0.2393	0.0643	0.2453
2011	0.0518	0.2216	0.0681	0.2519
2012	0.0543	0.2266	0.0750	0.2634
2013	0.0633	0.2435	0.0825	0.2751
2014	0.0852	0.2792	0.0829	0.2757
2015	0.1486	0.3557	0.0949	0.2930
2016	0.1686	0.3744	0.1014	0.3018

^a: Derived from IMDi/UDI data; ^b: Derived from Statistics Norway data

Table 3: Intention-to-treat estimates of the impact of population size and centrality on employment rates, males (Panel A) and females (Panel B). 1-8 years after settlement. With covariates.

	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
PANEL A: Men								
Centrality (ref=0 and 1)								
Centrality 2	-0.0536**	-0.0508**	-0.0347*	-0.0289*	-0.0327**	-0.0127	-0.0160	-0.00370
Centrality 3	-0.0564***	-0.0552***	-0.0305*	-0.0106	-0.00333	0.00488	0.00492	-0.00297
Population size (ref=Small)								
Medium	-0.00520	-0.00444	-0.0108	-0.0155	-0.0164+	-0.0232*	-0.0165	-0.0263*
Large	-0.00335	-0.00529	-0.0451*	-0.0570**	-0.0769***	-0.0854***	-0.0589**	-0.0828**
Unemployment rate	-0.0276***	-0.0302***	-0.0245***	-0.0137*	-0.0111*	-0.0118*	-0.00693	-0.00727
Proportion non-Western immigrants	0.447*	0.0763	0.0711	-0.0658	-0.147	-0.0789	-0.259	-0.244
<i>With individual-level and municipality-level controls</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
N	36,263	29,983	24,410	21,230	18,909	16,898	14,951	12,696
PANEL B: Women								
Centrality (ref=0 and 1)								
Centrality 2	-0.0488**	-0.0513**	-0.0402*	-0.0139	-0.0368*	-0.0143	-0.00548	-0.00851
Centrality 3	-0.0581***	-0.0459**	-0.0357*	-0.00245	-0.0233	0.00171	0.00241	0.00748
Population size (ref=Small)								
Medium	-0.0205*	-0.0286*	-0.0241+	-0.0239+	-0.0103	-0.0283+	-0.00946	-0.0229
Large	-0.0146	-0.0187	-0.00837	-0.0236	-0.0259	-0.0533+	-0.0464	-0.0706*
Unemployment rate	-0.0112**	-0.0230***	-0.0220***	-0.0184*	-0.0212*	-0.0159	-0.00985	-0.0144
Proportion non-Western immigrants	-0.215	-0.612**	-0.876***	-1.056***	-1.010***	-1.056***	-1.303***	-1.036***
<i>With individual-level and municipality-level controls</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
N	25,071	22,407	19,881	17,758	15,674	13,771	12,044	10,390

Note: Models include month and year of settlement. +: p<0.1 *:p<0.05 **:p<0.01 ***: p<0.001
 Estimates for all covariates can be seen in Table A1 for men and A2 for women.

Table 4: Intention-to-treat estimates of the impact of population size and centrality on employment rates, by highest completed educational level at settlement, males (panel A) and females (panel B). 1, 3 and 5 years after settlement. With covariates.

	Low education			Upper secondary			Higher education		
	1 years	3 years	5 years	1 years	3 years	5 years	1 years	3 years	5 years
PANEL A: Men									
Centrality (ref=0 and 1)									
Centrality 2	-0.0517**	-0.0328+	-0.0286*	-0.0221	-0.0442	-0.0555	-0.0838***	-0.0296	-0.0420+
Centrality 3	-0.0517**	-0.0273+	0.00276	-0.0617*	-0.0606*	-0.0328	-0.0837***	-0.0132	-0.0108
Population size (ref=Small)									
Medium	-0.00208	-0.0143	-0.0179+	-0.0283	-0.0195	-0.0262	-0.00685	0.00499	0.00007
Large	-0.00176	-0.0421*	-0.0834***	-0.00428	-0.0889**	-0.0612+	-0.00753	-0.0266	-0.0523
Unemployment rate	-0.0262***	-0.0255**	-0.0144*	-0.0342**	-0.0343**	-0.0210+	-0.0288**	-0.00921	0.0129
Proportion non-Western immigrants	0.489*	0.0740	-0.263	0.848+	-0.184	0.120	0.102	0.195	-0.0406
<i>With individual-level and municipality-level controls</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
N	27,569	17,170	12,844	3,387	2,822	2,266	5,307	4,418	3,799
PANEL B: Women									
Centrality (ref=0 and 1)									
Centrality 2	-0.0477**	-0.0417*	-0.0393*	-0.0925**	-0.0523	-0.0165	-0.0183	-0.0161	-0.0313
Centrality 3	-0.0578***	-0.0390*	-0.0221	-0.0656*	-0.00719	-0.0123	-0.0590+	-0.0350	-0.0260
Population size (ref=Small)									
Medium	-0.0175*	-0.0291*	-0.0175	-0.0115	-0.0234	0.00935	-0.0511*	0.0192	0.0154
Large	-0.00970	-0.00913	-0.0304	-0.0135	-0.0602	-0.0886	-0.0451	0.0505	0.0517
Unemployment rate	-0.00816+	-0.0249***	-0.0276**	-0.0216+	-0.00868	0.00775	-0.0318**	-0.0148	-0.00723
Proportion non-Western immigrants	-0.195	-0.919***	-1.213***	-0.0687	-0.791+	0.0480	-0.421	-0.539	-0.536
<i>With individual-level and municipality-level controls</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
N	20,708	15,830	12,180	2,024	1,884	1,624	2,339	2,167	1,870

Note: Models include month and year of settlement. +: p<0.1 *:p<0.05 **:p<0.01 ***: p<0.001

Estimates for all covariates are available upon request.

ONLINE SUPPLEMENTARY APPENDIX

Table A1: Intention-to-treat estimates of the impact of population size and centrality on employment rates, men. 1-8 years after settlement. With covariates.

	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Centrality (ref=0 and 1)								
Centrality 2	-0.0536**	-0.0508**	-0.0347*	-0.0289*	-0.0327**	-0.0127	-0.0160	-0.0037
Centrality 3	-0.0564***	0.0552***	-0.0305*	-0.0106	-0.0033	0.0049	0.0049	-0.0030
Population size (ref=Small)								
Medium	-0.0052	-0.0044	-0.0108	-0.0155	-0.0164+	-0.0232*	-0.0165	-0.0263*
Large	-0.0034	-0.0053	-0.0451*	-0.0570**	0.0769***	0.0854***	-0.0589**	-0.0828**
Unemployment rate								
	-0.0276***	0.0302***	0.0245***	-0.0137*	-0.0111*	-0.0118*	-0.0069	-0.0073
Proportion non-Western immigrants	0.4470*	0.0763	0.0711	-0.0658	-0.1470	-0.0789	-0.2590	-0.2440
Age structure (age 50-74/age 15-74)								
	-0.0048**	0.0067***	0.0068***	0.0067***	0.0069***	0.0070***	-0.0044*	0.0082***
Age at settlement	0.0129***	0.0224***	0.0291***	0.0233***	0.0226***	0.0176***	0.0180***	0.0181***
Age Squared	-0.0003***	0.0004***	0.0005***	0.0005***	0.0005***	0.0004***	0.0004***	0.0004***
Family type at settlement (ref=one adult)								
Two married adults, no children	-0.0552***	0.0592***	-0.0071	0.0259	0.0331+	0.0456**	0.0716***	0.0598**
Small family with at least one child	-0.0727***	0.0600***	0.0532***	-0.0285*	-0.0085	0.0033	0.0262+	0.0140
Large family with at least one child	-0.0942***	0.0812***	0.0731***	0.0523***	-0.0446**	-0.0257	-0.0065	0.0064
Large family without children	-0.0575***	-0.0546**	0.0702***	-0.0498**	-0.0474+	-0.0474*	-0.0303	-0.0062
Parity at settlement (ref= no children)								
One child	0.0286**	0.0406***	0.0463***	0.0365**	0.0123	0.0543***	0.0137	0.0446**
Two children	0.0379**	0.0302*	0.0489***	0.0465**	0.0459**	0.0469**	0.0301+	0.0518*
Three children	0.0447***	0.0192	0.0095	-5.6E-05	0.0130	0.0233	0.0084	0.0288

Four or more children	0.0240*	-0.0209	-0.0335*	-0.0473**	-0.0414*	-0.0298	-0.0379	-0.0448+
Country of origin, region (ref=East. Europe)								
Africa	-0.0595***	0.0769***	-0.0315*	-0.0055	0.0134	0.0289+	0.0106	0.0036
Asia	0.0139	-0.0044	-0.0018	-0.0041	0.0090	0.0181	-0.0007	-0.0135
Quota refugee^a	-0.1580***	0.1580***	0.1060***	0.0575***	-0.0107	0.0170	0.0393***	0.0498***
Educational level at settlement (ref=Upper secondary or postsecondary)								
University or college	0.0035	0.0139	-0.0003	-0.0023	-0.0023	0.0148	0.0292*	0.0239
Less than Upper Secondary/missing	-0.0346***	0.0493***	0.0585***	0.0638***	0.0569***	0.0397***	-0.0216	-0.0113
Introductory course participation	-0.0943***	0.0726***	-0.0135	0.0263+	0.0250+	0.0212	0.0228	0.0091
Year of settlement (ref=2002)								
2003	0.0408*	0.0513**	0.0863***	0.0692***	0.0433*	-0.0518**	-0.0178	0.0385*
2004	0.0221	0.120***	0.1540***	0.0591**	-0.0154	-0.0563**	0.0140	0.0636***
2005	0.0929**	0.1850***	0.1450***	-0.0163	-0.0451+	-0.0476*	0.0217	0.0435*
2006	0.1150***	0.1530***	0.0387	-0.0345	-0.0184	-0.0442*	0.0193	0.0678*
2007	0.1380***	0.0599*	0.0231	-0.0436+	-0.0413+	-0.0500*	-0.0034	0.0265
2008	0.0634*	0.0632**	0.0299	-0.0213	-0.0289	-0.0292	0.0084	0.0438
2008	0.0703*	0.0879***	0.0676*	0.0025	-0.0060	-0.0326+	0.0399+	0.0863***
2010	0.0040	0.0521*	0.0408	0.00049	-0.0196	-0.0118	0.0667**	
2011	-0.0388	0.0173	0.0158	-0.0474+	-0.0229	-0.0104		
2012	-0.0723**	-0.0132	-0.0294	-0.0229	-0.0132			
2013	-0.0367	0.0149	0.0130	-0.0227				
2014	-0.0548*	0.0135	0.00859					
2015	-0.0913***	-0.0173						
2016	-0.1270***							
N	36,263	29,983	24,410	21,230	18,909	16,898	14,951	12,696

Note: Models include month of settlement +: $p < 0.1$ *: $p < 0.05$ **: $p < 0.01$ ***: $p < 0.001$.

Table A2: Intention-to-treat estimates of the impact of population size and centrality on employment rates, women. 1-8 years after settlement. With covariates.

	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
Centrality (ref=0 and 1)								
Centrality 2	-0.0488**	-0.0513**	-0.0402*	-0.0139	-0.0368*	-0.0143	-0.0055	-0.0085
Centrality 3	-0.0581***	-0.0459**	-0.0357*	-0.0025	-0.0233	0.0017	0.0024	0.0075
Population size (ref=Small)								
Medium	-0.0205*	-0.0286*	-0.0241+	-0.0239+	-0.0103	-0.0283+	-0.0095	-0.0229
Large	-0.0146	-0.0187	-0.0084	-0.0236	-0.0259	-0.0533+	-0.0464	-0.0706*
Unemployment rate	-0.0112**	-0.0230***	-0.0220***	-0.0184*	-0.0212*	-0.0159	-0.0099	-0.0144
Proportion non-Western immigrants	-0.2150	-0.6120**	-0.8760***	-1.0560***	-1.0100***	-1.0560***	-1.3030***	-1.0360***
Age structure (age 50-74/age 15-74)	-0.0053**	-0.0058**	-0.0063***	-0.0061**	-0.0071**	-0.0073**	-0.0105***	-0.0103***
Age at settlement	0.0144***	0.0233***	0.0326***	0.0405***	0.0451***	0.0431***	0.0406***	0.0399***
Age Squared	-0.0002***	-0.0003***	-0.0005***	-0.0006***	-0.0007***	-0.0007***	-0.0007***	-0.0007***
Family type at settlement (ref=one adult)								
Two married adults, no children	-0.0563***	-0.0788***	-0.0742***	-0.0628***	-0.0559**	-0.0376*	-0.0188	0.0060
Small family with at least one child	-0.0390***	-0.0396***	-0.0372**	-0.0252*	-0.0242+	-0.0121	-0.0154	-0.0056
Large family with at least one child	-0.0449***	-0.0402***	-0.0344*	0.0038	0.0207	0.0082	0.0244	0.0270
Large family without children	-0.0121	-0.0194	-0.0280	-0.0358	-0.0140	-0.0095	-0.0002	0.0073
Parity at settlement (ref= no children)								
One child	-0.0656***	-0.0868***	-0.1040***	-0.0858***	-0.0796***	-0.0445**	-0.0152	-0.0103
Two children	-0.0564***	-0.0730***	-0.0628***	-0.0554***	-0.0476**	-0.0315+	0.0043	0.0240
Three children	-0.0584***	-0.0958***	-0.1080***	-0.1290***	-0.1190***	-0.1020***	-0.0613**	-0.0499**
Four or more children	-0.0734***	-0.1250***	-0.1660***	-0.1990***	-0.1990***	-0.1610***	-0.1490***	-0.1220***
Country of origin, region (ref=East. Europe)								
Africa	-0.0975***	-0.1080***	-0.1230***	-0.1310***	-0.1120***	-0.1050***	-0.0825***	-0.0904***
Asia	-0.1080***	-0.1190***	-0.1320***	-0.1370***	-0.1200***	-0.1200***	-0.1180***	-0.1320***
Quota refugee	-0.0597***	-0.0454***	-0.0288**	0.0100	0.0533***	0.0843***	0.1090***	0.1330***
Educational level at settlement (ref= Upper secondary or postsecondary)								
University or college	0.0217	0.0329*	0.0109	0.0097	0.0304+	0.0205	0.0213	0.0253
Less than Upper Secondary/missing	-0.0431***	-0.0686***	-0.1010***	-0.1160***	-0.0941***	-0.0891***	-0.1060***	-0.1000***
Introductory course	-0.0486***	-0.0410***	-0.0079	0.0253+	0.0429*	0.0769***	0.0597***	0.0515**
Year of settlement (ref=2002)								

2003	0.0314*	0.0434*	0.0768***	0.0905***	0.0877***	0.0100	0.0420*	0.0705***
2004	0.0244	0.0935***	0.1650***	0.1280***	0.0650**	0.0048	0.0446*	0.0639**
2005	0.0550*	0.1310***	0.1580***	0.0991***	0.0566*	0.0319	0.0682*	0.0807**
2006	0.0948***	0.1480***	0.1170***	0.1010***	0.0888**	0.0580+	0.1050***	0.1040***
2007	0.1240***	0.0820**	0.0780**	0.0573+	0.0283	0.0025	0.0539	0.0358
2008	0.0882***	0.1090***	0.0792**	0.0785*	0.0315	0.0015	0.0611+	0.0740*
2008	0.0695***	0.0808***	0.0857**	0.0662*	0.0342	0.0073	0.0719*	0.0920**
2010	0.0360	0.0673**	0.0752**	0.0445	0.0195	-0.0001	0.0676*	
2011	0.0161	0.0367+	0.0303	0.0019	-0.0114	-0.0352		
2012	-0.0035	0.0050	0.0001	-0.0067	-0.0408			
2013	0.0025	0.0162	0.0316	0.0323				
2014	0.0014	0.0242	0.0291					
2015	-0.0059	0.0245						
2016	-0.0092							
N	25,071	22,407	19,881	17,758	15,674	13,771	12,044	10,390

Note: Models include month of settlement +: p<0.1 *:p<0.05 **:p<0.01 ***: p<0.001.

Table A3: Intention-to-treat estimates of the impact of population size and continuous centrality index on employment rates, men (Panel A) and women (Panel B). 1-8 years after settlement.

	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
PANEL A: Men								
Centrality index (2018 standard, in 100)	-0.0283***	-0.0276***	-0.0116	-0.0007	0.0062	0.0073	0.0028	-0.0051
Population size (ref=Small)								
Medium	0.0109	0.0097	-0.0091	-0.0217*	-0.0302**	-0.0332**	-0.0216+	-0.0210
Large	0.0150	0.0110	-0.0416+	-0.0596**	-0.0855***	-0.0930***	-0.0597**	-0.0757**
Unemployment rate	-0.0303***	-0.0330***	-0.0258***	-0.0145*	-0.0116*	-0.0118*	-0.0080	-0.0077
Proportion non-Western immigrants	0.8920***	0.5190+	0.2680	-0.0372	-0.2350	-0.1930	-0.2830	-0.1470
<i>With individual-level and municipality-level controls</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
N	36,202	29,936	24,386	21,213	18,899	16,894	14,947	12,692
PANEL B: Women								
Centrality index (2018 standard, in 100)	-0.0296***	-0.0291***	-0.0151*	-0.0060	-0.0095	0.0009	0.0025	0.0041
Population size (ref=Small)								
Medium	-0.0022	-0.0091	-0.0195	-0.0192	-0.0090	-0.0312+	-0.0129	-0.0275
Large	0.0051	0.0066	-0.0010	-0.0147	-0.0204	-0.0527+	-0.0486+	-0.0724**
Unemployment rate	-0.0139***	-0.0263***	-0.0238***	-0.0195**	-0.0224*	-0.0163+	-0.0096	-0.0145
Proportion non-Western immigrants	0.2590	-0.1310	-0.6230**	-0.9490***	-0.8360*	-1.0580**	-1.3420***	-1.0910***
<i>With individual-level and municipality-level controls</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
N	25,045	22,385	19,864	17,746	15,665	13,766	12,039	10,385

Note: Models include month and year of settlement. +: p<0.1 *:p<0.05 **:p<0.01 ***: p<0.001

Table A4: Intention-to-treat estimates of the impact of population size and centrality on employment rates for those still living in the municipality of assignment at the start of the year (non-movers), men (Panel A) and women (Panel B). 1-8 years after settlement. With covariates.

	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
PANEL A: Men								
Centrality (ref=0 and 1)								
Centrality 2	-0.0530**	-0.0519**	-0.0484*	-0.0460*	-0.0648***	-0.0647**	-0.0726**	-0.0647*
Centrality 3	-0.0549**	-0.0566**	-0.0597**	-0.0490**	-0.0500**	-0.0654**	-0.0749***	-0.0698**
Population size (ref=Small)								
Medium	-0.0030	-0.0035	-0.0061	-0.0180	-0.0240+	-0.0406*	-0.0413*	-0.0548**
Large	0.0017	-0.0025	-0.0274	-0.0534*	-0.0710**	-0.1010***	-0.0791**	-0.1240***
Unemployment rate	-0.0272***	-0.0335***	-0.0294***	-0.0188*	-0.0133	-0.0046	-0.0064	-6.8E-05
Proportion non-Western immigrants	0.4640*	0.1210	-0.0521	-0.1520	-0.3570	-0.5720*	-0.8420***	-0.8000*
<i>With individual-level and municipality-level controls</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
N	34,784	26,803	19,646	15,494	12,569	10,278	8,480	6,898
PANEL B: Women								
Centrality (ref=0 and 1)								
Centrality 2	-0.0451**	-0.0516**	-0.0505**	-0.0472*	-0.0916***	-0.0749**	-0.0982***	-0.1160***
Centrality 3	-0.0560***	-0.0530**	-0.0525**	-0.0435*	-0.0882***	-0.0671**	-0.1030***	-0.11101***
Population size (ref=Small)								
Medium	-0.0220*	-0.0320**	-0.0362*	-0.0372*	-0.0266+	-0.0702***	-0.0443*	-0.0493*
Large	-0.0144	-0.0170	-0.0119	-0.0243	-0.0343	-0.0948**	-0.0837*	-0.1110**
Unemployment rate	-0.0125**	-0.0266***	-0.0262***	-0.0255**	-0.0286**	-0.0220+	-0.0146	-0.0131
Proportion non-Western immigrants	-0.2300	-0.6220**	-0.9650***	-1.3300***	-1.252***	-1.4750***	-1.8870***	-1.6020***
<i>With individual-level and municipality-level controls</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
N	24,100	20,482	16,897	13,992	11,423	9,324	7,732	6,437

Note: +: p<0.1 *:p<0.05 **:p<0.01 ***: p<0.001.

Table A5: Intention-to-treat estimates of the impact of population size and centrality combinations on employment rates, men (Panel A) and women (Panel B). 1-8 years after settlement. With covariates.

	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years
PANEL A: Men								
Size*Central (ref = Small*Centrality 0 and 1)								
Small and Centrality 2	-0.0497*	-0.0508*	-0.0509*	-0.0232	-0.0183	-0.0310+	-0.0017	-0.0135
Small and Centrality 3	-0.0852***	-0.0819***	-0.0507**	-0.0233	-0.0137	-0.0102	-0.0041	-0.0036
Medium and Centrality 0 and 1	-0.0282	-0.0278	-0.0401+	-0.0217	-0.0143	-0.0487*	-0.0133	-0.0338
Medium and Centrality 2	-0.0697**	-0.0643**	-0.0503*	-0.0494***	-0.0541***	-0.0390**	-0.0372*	-0.0293
Medium and Centrality 3	-0.0615**	-0.0606**	-0.0464**	-0.0251+	-0.0163	-0.0239+	-0.0081	-0.0321+
Large and Centrality 3	-0.0663*	-0.0673*	-0.0841***	-0.0698***	-0.0801***	-0.0883***	-0.0536**	-0.0880**
<i>With individual-level and municipality-level controls</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
N	36,263	29,983	24,410	21,230	18,909	16,898	14,951	12,696
PANEL B: Women								
Size*Central (ref = Small*Centrality 0 and 1)								
Small and Centrality 2	-0.0599***	-0.0763***	-0.0548**	-0.0386+	-0.0474*	-0.0127	-0.0156	-0.0173
Small and Centrality 3	-0.0684***	-0.0842***	-0.0611**	-0.0356+	-0.0612**	-0.0231	-0.0190	0.0017
Medium and Centrality 0 and 1	-0.0393*	-0.0847***	-0.0593*	-0.0745**	-0.0543+	-0.0511+	-0.0379	-0.0348
Medium and Centrality 2	-0.0716***	-0.0907***	-0.0717***	-0.0471*	-0.0600**	-0.0521**	-0.0223	-0.0328+
Medium and Centrality 3	-0.0822***	-0.0837***	-0.0653***	-0.0354*	-0.0391*	-0.0279	-0.0115	-0.0184
Large and Centrality 3	-0.0780**	-0.0801**	-0.0539*	-0.0402+	-0.0618*	-0.0582+	-0.0524	-0.0667*
<i>With individual-level and municipality-level controls</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
N	25,071	22,407	19,881	17,758	15,674	13,771	12,044	10,390

Note: Models include month and year of settlement. +: p<0.1 *:p<0.05 **:p<0.01 ***: p<0.001
 Estimates for years 1, 3, 5 and 7 shown in Figure 2.

Table A6: Intention-to-treat estimates of the impact of population size and centrality on employment rates, separately for low educated and for those with missing education at settlement, males (panel A) and females (panel B). 1, 3 and 5 years after settlement. With covariates.

	Low Education			Missing		
	1 years	3 years	5 years	1 years	3 years	5 years
PANEL A: Males						
Centrality (ref=0 and 1)						
Centrality 2	-0.0594**	-0.0349+	-0.0370*	-0.0439*	-0.0317	-0.0141
Centrality 3	-0.0585**	-0.0304	0.0007	-0.0467**	-0.0237	0.0043
Population size (ref=Small)						
Medium	-0.0031	-0.0127	-0.0175	-0.0022	-0.0185	-0.0183
Large	-0.0125	-0.0392+	-0.0879***	0.0079	-0.0507	-0.0698**
Unemployment rate	-0.0319***	-0.0241**	-0.0167*	-0.0202**	* -0.0264*	-0.0108
Proportion non-Western immigrants	0.2730	-0.1400	-0.1260	0.6400*	0.3440	-0.4990+
<i>With individual-level and municipality-level controls</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
N	12,908	10,279	8,540	14,661	6,891	4,304
PANEL B: Females						
Centrality (ref=0 and 1)						
Centrality 2	-0.0435**	-0.0300	-0.0371	-0.0522**	-0.0611**	-0.0440+
Centrality 3	-0.0635***	-0.0274	-0.0186	-0.0554**	-0.0603***	-0.0323
Population size (ref=Small)						
Medium	-0.0273*	-0.0566**	-0.0233	-0.0120	0.0052	-0.0097
Large	-0.0040	-0.0408	-0.0373	-0.0173	0.0331	-0.0173
Unemployment rate	-0.0131*	-0.0266***	-0.0202*	-0.0048	-0.0226**	-0.0371**
Proportion non-Western immigrants	-0.5470*	-0.9890***	-1.3970***	0.1230	-0.8010**	-0.8520*
<i>With individual-level and municipality-level controls</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
N	9,353	8,510	7,372	11,355	7,320	4,808

Note: +: p<0.1 *:p<0.05 **:p<0.01 ***: p<0.001.