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285
2018

December 2018

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ifo INSTITUTE

Leibniz Institute for Economic Research
at the University of Munich

Impressum:

ifo Working Papers
Publisher and distributor: ifo Institute – Leibniz Institute for Economic Research at the University of Munich
Poschingerstr. 5, 81679 Munich, Germany
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ifo Working Paper No. 285

On the Anatomy of a Refugee Dispersal Policy: Neighborhood Integration and Dynamic Sorting

Abstract

This paper uses Swedish geocoded data to empirically investigate the effect of a geographic dispersal policy on the characteristics of the refugees' individualized (k-nearest) neighborhoods and the placed refugees' neighborhood trajectories over time. Our findings indicate that the initial neighborhood of placed refugees are defined by a higher share of natives, a lower share of non-Western immigrants and a higher share of high-income individuals compared to refugees that arrived in a time period when they could choose themselves where to locate. In this sense, the placed refugees are geographically more integrated. We also find that, in subsequent moves for the placed refugees, those moving longer distances experience a drop in the share of natives and an increase in the share of non-Western in their close neighborhoods. Stayers and short-distance movers, on the other hand, have a less drastic change in their neighborhood in terms of share of natives and nonwestern over time.

JEL code: J15
Keywords: Refugees, placement policy, individualized neighborhoods, sorting, geographic integration

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1 Introduction

The unprecedented influx of asylum seekers to the 28 European Union (EU) member states led to 2,463,100 first-time claims for protection in 2015 and 2016 (Eurostat, 2018). Although many applications were rejected and some of the applicants subsequently left the EU, in total 1,043,750 received protection status (Eurostat, 2016, 2017). Integrating such a sizeable number of migrants, many of whom from countries that differ greatly from European countries in terms of culture, language and educational systems, is an important political goal in many countries but also proves to be a major challenge.

There is an emerging consensus that the neighborhood in which immigrants live plays a key role in fostering or hindering integration in the host countries (Ager and Strang, 2008; Danzer and Yaman, 2013). As Galster (2008) points out, the process of socialization occurs through contact with peers in the neighborhood. As such, the behaviors and attitudes of a neighborhood resident can impact his neighbor by means of social interaction (Johnston and Pattie, 2011). Neighbors can thus form an important part of social networks and diffuse information, knowledge and resources, which could increase labor market and other economic opportunities (Gould and Turner, 1997). In a neighborhood context, the degree to which a refugee is exposed to natives has an impact on acquiring language and other country-specific skills as well as the political beliefs and voting patterns. Additionally, the share of highly educated individuals and high-income earners in the refugees' neighborhood contribute to their access to high-quality social networks through daily, local interactions.

The purpose of this paper is to examine how a commonly used integration policy, a geographic dispersal policy, succeeded in affecting the characteristics of the refugees' individualized neighborhoods and how it affected the placed refugees neighborhood trajectories over time (including an examination of the dynamic sorting based on background characteristics). More specifically, we have three goals with the paper:

1. Document what type of neighborhood the refugees were initially placed in during the placement program and how the characteristics of their neighborhoods evolved over time (where the characteristics of the neigh-

borhood is defined by the characteristics of the k closest neighbors of the refugees).

2. Examine if there are any differences in the dynamics of the individualized neighborhoods between stayers and movers (comparing the neighborhoods of those that do not move from the initial neighborhood with those of the short-distance movers, the long-distance movers and those that move to any of the three big cities in Sweden).

3. Examine how the sorting into different neighborhoods over time varies with the characteristics of the refugees and the characteristics of the initial neighborhood (dynamic sorting based on background characteristics).

Throughout the analysis, we compare the neighborhoods of the refugees who arrived during the years of the placement program to the neighborhoods of the refugees who immigrated after the placement policy had ended (in years in which the refugees were allowed to freely choose where to locate). We will also compare with the characteristics of the average neighborhood of the native-born individuals. In this first version of the paper, we present the results from the first two aims.

Refugee dispersal policies[1] are used as a political instrument to decrease residential segregation and break the concentration of immigrants to the larger cities. Even though this type of policy has been around for quite some time, very little is known on how they affect neighborhood integration and dynamic sorting. This paper concerns the Swedish placement policy that was in effect for almost a decade, between the beginning of 1985 and mid-1994. The policy was encompassing in the sense that it was targeted towards all immigrants arriving in Sweden as refugees. The goal of the policy was to decrease residential segregation and break the concentration of immigrants to the three largest cities in Sweden; Stockholm, Gothenburg, and Malmö. Section 2 provides a brief overview of refugee dispersal policies that have been used in different countries, with a particular focus on the Swedish placement policy.

Our paper contributes to the strand of literature on the effect of dispersal

[1]This paper uses "dispersal policy", "placement policy", "settlement policy" and "allocation policy" interchangeably.

policies on the geographic allocation of refugees, and their subsequent migration behavior. Among the few empirical papers analyzing the effects of the refugee placement policy on secondary migration is Åslund (2005). Examining migration between municipalities, he finds that refugees tend to move to regions with a high presence of immigrants from their native country, with a large population, and with prevalent welfare receipts. Andersson and Mekkonen (1996) analyzes the geographic and social mobility of placed refugees and shows that the ethnic composition changed during the policy. Both these studies identifies secondary migration at a rather aggregate geographic scale (at the municipality level or the labor market regional level), implying that they are not able to capture the characteristics of the closest neighbors of the refugees, how these neighborhoods evolve over time, and what the dynamic sorting looks like at this very local level (which, as discussed above, is quite likely an important part of the integration process).[2]

To the best of our knowledge, this paper is the first to evaluate a placement policy in terms of neighborhood integration. To be able to examine neighborhood integration and to calculate the characteristics of the k closest neighbors, one needs to have data with a high geographic resolution. This kind of data is rather rare, especially in combination with full population register data rich on individuals' background characteristics, and this is probably the reason why no earlier study have examined the questions under study in this paper. In examining our questions, we will use the comprehensive database GeoSweden. There are two aspects that are particularly interesting with this database. First, it is very detailed on individual characteristics, implying that we, among other things, can identify the individuals that arrive in Sweden as refugees and hence are affected by the placement policy. Second, it contains coordinate information on a 100×100 meter level on where the individuals live. This means that we can construct individualized neighborhoods for all individuals living in Sweden using a k-nearest neighbors approach (which constructs neighborhoods consisting of the k nearest neighbors for each individual).[3]

[2]Dispersal policies have also been used quite extensively in earlier research to evaluate how the placed refugees fare in terms of education, labor market, welfare, health and criminal outcomes; see, e.g., Edin et al. (2003), Edin et al. (2004), Åslund and Rooth (2007), Damm (2014), Damm (2009), Grönqvist et al. (2015), Grönqvist et al. (2012).

[3]To calculate the individualized neighborhoods, we use Equipop, a software developed by John Östh; see (Östh, 2014)

The k-nearest neighbors approach enables us to evaluate the quality of refugees' neighborhoods, that is how integrated they are in terms of having close neighbors that are born in Sweden, born in a non-Western country, are highly educated and have high earnings. Understanding the individualized neighborhood of refugees is crucial because it captures their neighborhood composition and economic as well as social integration through individual socioeconomic characteristics. Using small scale neighborhood enables taking into consideration socialization as well as network patterns. Additionally, k-nearest neighbors approach enables small scale analysis, which is likely to matter for the arriving refugees' integration. The nearest neighbors are the individuals that the refugees have a higher likelihood to meet. The advantage with the individualized neighborhoods is that we do not have to rely on administratively determined neighborhoods and can define the neighborhoods at a very fine-grained scale. Creating individualized neighborhood implies that each refugee has their own individual neighborhood, with varying size of the neighborhoods, but nearly constant number of people inside the neighborhood. The methodological approach of k-nearest neighbors offers several advantages in terms of capturing what refugees perceive as a neighborhood, because the refugee is placed at the center of its own neighborhood. We discuss further the advantages of our methodological approach in section 4.2.

In examining the first two aims, we reach the following two main conclusions. First, we find that the initial individualized neighborhoods of the placed individuals are characterized by more integration (in terms of having a larger share of natives, a lower share of non-Western immigrants and a higher share of high-income individuals) than what is the case for the non-placed individuals. However, over time in Sweden, the share of natives and the share of non-Western immigrants in the neighborhoods of the placed refugees converge to that of the neighborhoods of the non-placed refugees.

Second, we find that those that move longer distances, and especially those that move to one of the three big city regions, end up in neighborhoods with a significantly lower share of natives and a significantly higher share of non-Western (compared to the neighborhood they left). The change in share of natives and share of non-Western in the neighborhoods of the stayers and the short-distance movers are much less dramatic.

The remainder of the paper is structured as follows. Section 2 provides the background on the refugee placement policies in different countries and gives more details on the Swedish refugee placement policy, commonly known as the "Sweden-wide" strategy. Section 3 presents the data as well as the methodological approach used in the rest of the paper,and descriptives. Section 4 reports the individualized neighborhoods for all the refugees and for refugees from Muslim-majority countries over time. Section 5 investigates the subsequent moves of refugees and examines whether initial neighborhood change over time. Finally, Section 6 draws the conclusion.

2 Brief overview of refugee dispersal policies

In the recent decades, several European countries were faced with the issue that refugees cluster geographically, leading to the formation of ethnic enclaves and leaving major cities with an unequal burden of immigration, higher financial costs and housing shortages (Danzer and Yaman, 2013; Robinson et al., 2003). As a result, several European countries, including Sweden, Germany, Denmark, UK and Ireland, but also Canada and the US among others, applied refugee placement policies OECD (2016). The aim of the policy is to affect refugees' location (Andersson, 2003; Damm, 2005). Dispersal policies may offer benefits in terms of spreading financial costs, opportunities for long-term integration and decreased pressure on housing and social services. Therefore, refugee dispersal can lead to several policy implications in terms of regional policies, urban issues, residential segregation, labor market integration, language learning, educational integration and welfare.

Refugee dispersal policies were not only launched at the national level in certain countries but also at the city level and the neighborhood level. For instance, the Netherlands, which pursued a dispersal policy from 1950 to 1992, had the policy implemented in some cities with a five percent immigrants regulation at some point in time (Robinson et al., 2003). Furthermore, refugee dispersal policy can be operated either on a voluntary or on a compulsory basis. For example, while the compulsory dispersal of ethnic minorities and refugees has only been introduced formally in the 1999 Asylum and Immigration Act in the UK, dispersal was implemented on a voluntary

basis for specific groups of refugees from the 1970s to 1990s (Boswell, 2003). Thousands of Ugandan Asians in 1972 and Vietnamese were encouraged to settle in small groups on a voluntary basis. Since 1999, the UK operates a compulsory dispersal policy, put in place by the central government (Bell et al., 2013). The policy applies for refugees and asylum seekers who are not self-sufficient and does not take into account the preferences of asylum seekers. The asylum seekers are dispersed in areas with regards to sufficient housing supply and integration measures in place in those regions. In Ireland, refugee placement policy is still in place since its implementation in 2000.

In Norway, refugees are scattered equally between municipalities in order to guarantee placement into a municipality, which has the capacity to offer the required services (Borevi and Bengtsson, 2015). Refugees can express their wish to settle in a municipality, but settlement in their preferred municipality is not guaranteed. Canada also operates a policy of geographically dispersing refugees and minimum numbers of refugees from each visa post are sent to designated cities in each province. Provincial views influence the distribution of refugees and financial resources are transferred to each province based on targets. In the US, decision about where to resettle refugees is made before their arrival (Mayda et al., 2017; Beaman, 2011). Some of the resettlement agencies responsible for the process follow a policy of clustering refugees in geographic locations which have preexisting ethnic communities.

Given the scale of the refugee crisis after World War II, the Federal Republic of Germany put in place a policy dispersing refugees from territories in former Eastern Germany in 1949 in order to spread the burden between different regions (Boswell, 2003). The system based on the so-called "Königsteiner Schluessel" - a quota system that attributes a specific number of asylum seekers to each federal state according to its population numbers which account for one third of the quota, and the tax revenues of the federal state that accounts for two thirds of the quota - still guides the asylum distribution in the whole country until today. In comparison to Sweden, the dispersal policy in Germany is largely driven by the incentives given to refugees in remaining in the assigned location - for instance, if the refugees move to another federal state, he/she would no longer receive any welfare.

Faced with an increasing number of refugees and aiming to discourage ge-

ographical concentration of refugees, Denmark also carried out the refugee dispersal policy led by the Danish Refugee Council over the period 1986 to 1998 for all refugees, except reunification refugees (Damm and Vasiljeva, 2016). The goal was to disperse refugees across counties and municipalities proportional to the number of inhabitants. The Danish dispersal policy shared several features of the Swedish dispersal policy: the policy was applied nation-wide, municipalities where refugees were placed should have the necessary facilities for integration. Similar to the Swedish dispersal policy, refugees could migrate to another municipality as long as they could find alternative housing. Individual location wishes could not be taken into consideration and local authorities could not cream-skim refugees.

The refugee dispersal policy in Sweden, which is the subject of this paper, is commonly known as the "Sweden-wide" or "All-of-Sweden" strategy. It was implemented in 1985 and officially continued until 1994 (Robinson et al., 2003). This policy meant that refugees' residential preferences were disregarded, and the government placed all refugees during those years, with the exception of those who came for family reunification, i.e. if a refugee had migrated as part of a family member, then he would be placed in the same municipality as his family. The process began with the asylum seekers being first placed in refugee centers which were distributed all over Sweden and sorted by their native language (Åslund et al., 2009), the refugees were placed in the respective municipality (Edin et al., 2003). The main motivation of the dispersal policy was to direct refugees away from the metropolitan areas and to aim a balance between urban and rural municipalities. The needs of the refugees were taken into account and the refugee should have been able to remain in the municipality and integrate in education and the labor market. However, housing shortages quickly became apparent in certain municipalities and soon availability of housing dictated the placement of refugees. While refugees could express preferences for locations and generally had a preference for the cities, including Stockholm, Malmö and Gothenburg, there were few apartment vacancies in these locations (Åslund et al., 2009).

The Swedish Migration Board (SIV) initially calculated a maximum of 5,000 refugees during 1985 and 60 large and medium-sized municipalities in the southern and central parts of Sweden as well as three northern municipalities were chosen. However, the actual influx of asylum seekers increased

to twice the estimated number in 1985 (Robinson et al., 2003). As a result, SIV included 137 out of 284 municipalities in the spring of 1985. With increased refugee immigration and many refugees receiving permanent residence permits, the program was expanded to include 210 municipalities and the number of municipalities joining increased annually. By 1989, 277 out of 284 municipalities took part in the dispersal policy. The dispersal policy was not binding because the refugees could migrate to another municipality at any time, as long as they could find housing elsewhere. Moreover, migrating to another municipality did not imply that welfare was not received. Beginning of 1992, the system collapsed due to high influx of refugees from former Yugoslavia, but was formally implemented until 1994.

For the purpose of this paper, the Swedish refugee placement policy is used as it presents several advantages: it was targeted towards all immigrants arriving in Sweden as refugees. Furthermore, access to detailed data on individual characteristics means that we can identify the individuals who arrived in Sweden as refugees and we can also conduct heterogeneity analysis. The data also contain information on coordinate where the refugees live.

3 Data: Source, sample selection and descriptives

3.1 Data source and sample selection

The analysis in this paper is based on GeoSweden, a comprehensive database collected on a yearly basis from 1990 until 2014. It covers all individuals living in Sweden and contains variables from several different registers, including the education, the income and the employment registers.[4] What makes it truly unique is, however, that the database includes very detailed geographical information (given by coordinates that defines 100×100 meter grids) on where the individuals live and work. In addition, it contains information on exactly when and from which country an individual immigrates to Sweden and, from 1997 and onward, the reason for immigrating to Sweden (to work, to study, as a refugee, or a tied family member), emigration information as well as information on migration patterns within Sweden. Specifically,

[4] All data is collected and made anonymous by Statistics Sweden, and administered by the Institute for Housing and Urban Research at Uppsala University.

from the annual geocodes, we observe when, from where and to where an individual moves. This makes the database very well suited for examining questions related to immigration, within-country migration, segregation, and integration.

Refugees are recorded in the data at the end of the year in which they obtain a residence permit. The analysis is restricted to the refugees aged 18 to 65 years old upon arrival. For the purpose of our analysis, we examine the refugee cohorts who entered Sweden during the implementation of the refugee placement policy, in 1990 and 1991, and the refugee cohorts who immigrated after the policy ended, from 1997 to 2004.

The refugees who arrived in the first two years, 1990 and 1991, form our treated group of refugees, in the sense that they were affected by the dispersal policy and could not freely choose where to locate; the refugees arriving in those two years are bundled together into one group. Although the refugee placement policy was implemented between 1985 and 1994, Åslund and Rooth (2007) point out that the unprecedented influx of Yugoslavian refugees in 1992 led to the unofficial breakdown of the dispersal policy. Therefore, this paper does not use refugees from 1992 until 1994 as part of the treated group. Furthermore, using refugees arriving before 1990 is not possible because our data start in 1990. The refugees immigrating in the period 1997 to 2004 are used as the comparison group as the refugees arriving in those years were allowed to choose freely where to locate within Sweden[5].

We follow all of the cohorts until 2014 in order to examine their neighborhood locations over time. The maximum observation period is then 24 years (for those arriving in 1990) and the minimum observation period is 10 years (for those arriving in 2004). Any refugees who emigrated or died before 2014 are dropped from our sample in order to consistently follow the same refugees throughout the years. We also drop refugees who initially do not have any coordinates in the data, i.e. those who do not have a registered place of residence in the data, since we cannot identify the k nearest neighbors for these individuals.

[5]If a refugee that received a residence permit could not arrange for his or her own housing in this latter time period, Swedish authorities helped to arrange for housing (**add report from Statistics Sweden as reference on this**). In this sense, there were streaks of refugee placement also in the 1997-2004 period.

3.2 k-nearest neighborhoods

To examine the degree of geographic integration, we will construct bespoke (individualized) neighborhoods by calculating the characteristics of each individual's k nearest neighbors. This approach, which is made possible due to the fine-grained geographical resolution in the data, has several advantages.

First, with this approach we can better capture what refugees perceive as their neighborhood, given that it locates the refugee in the center of its own neighborhood. Thus, the resulting neighborhood characteristics is a good representations of the actual urban context surrounding each individual. Second, we can perform the analysis at a very small scale. A small scale analysis is crucial for catching nuances that might be overlooked when using data on a larger geographical scale, such as municipalities or cities. Furthermore, a small scale analysis allows us to observe potential social networks and ties that can be important. Since the nearest neighbors are the individuals that the refugees have a higher likelihood to meet, the nearest neighbors can have an effect on the arriving refugees' integration. As Galster (2008) point out, the behaviors and attitudes of a neighborhood resident can impact his neighbor. The process of socialization occurs through contact with peers in the neighborhood. Neighbors can thus form an important part of social networks and diffuse information, knowledge and resources, which could increase labor market and other economic opportunities. Using k-nearest neighborhood approach provide better insights into neighborhood contexts and their effects for social integration, and it also allows capturing residential mobility on a smaller scale.

To obtain the individualized neighborhoods for each refugee, we proceed as follows:

1. From our full population register, and for all years, we identify all coordinates in Sweden (100×100 meter squares) at which at least one individual lives.

2. For each of the coordinates identified in the former step, we calculate both the total number of individuals and the total number of individuals with a certain characteristic (such as country of birth, earnings and degree of education) living on that coordinate.

3. Using the information obtained in the former two steps, we construct individualized neighborhoods for all individual living in Sweden by identifying the characteristics of the k nearest neighbors for each individual (which provides us with the share of individuals among the k nearest neighbors that share a certain characteristic).

Using the constructed individualized neighborhoods, we then analyze what the individualized neighborhoods of the refugees look like and how they evolve over time. With the k nearest approach, we obtain contextual neighborhood information based on different scales, where scale is calculated as the counts of nearest neighbors.[6] We have calculated individualized neighborhoods for several different k's. In the paper, we have chosen to mainly present the results for $k = 500$ but will, for comparative reasons, also present some results for $k = 50$.[7] Using the 50 nearest neighbors to define the individualized neighborhood can be thought of as the individuals that the refugee would meet in close vicinity to his or her own apartment or house while using the 500 nearest neighbors is tantamount to the individuals that the refugee may meet at the local bus stop or metro station. These varying levels of neighborhoods are meaningful because they provide different social roles and interactions.

3.3 Definition of variables and some descriptive statistics

The main focus in this paper is on refugees. In identifying which of the immigrants coming to Sweden are refugees, we proceed in two different ways depending on in which time period the immigrants arrive. The most straightforward way is for those immigrants arriving in the 1997-2004 period; from 1997 and onward, we have direct information on refugee status since the register data include a variable on the reasons for migration to Sweden (as a refugee, to work, to study or as a tied family member to an earlier arrived immigrant).

[6] This means that the size of the neighborhood may vary, but the number of individuals in the neighborhood stays the same. The k-values are used to characterize the population within which interaction can occur i.e. how many of the same group are likely to be exposed to others of a similar background. In calculating the individualized neighborhoods we use EquiPop, a program developed by John Östh at Uppsala University (see Östh, 2014).

[7] The patterns are very similar for different k's

For immigrants arriving in 1990 or 1991, we do not have direct information on refugee status because it does not exist in the registers before 1997. Instead, we first identify refugee sending countries following the Swedish Migration Board's (Migrationsverket) list of refugee sending countries (2014), excluding OECD countries and China where we suspect a large flow of student migrants. Then, for immigrants arriving in 1990 and 1991, we identify refugees as immigrants being born in the defined refugee sending countries, but where we, to ensure that our sample only includes placed refugees, exclude those individuals who already had a family member living in Sweden. The second restriction is imposed since tied family migrants were exempted from the refugee placement program.

Table 1 presents the absolute number of refugees from each of the refugee sending countries and for each cohort considered. In total, our sample consists of 42,445 refugees. The treated (placement years) group consists of 13,957 refugees and represents about 33 percent of our sample. The comparison group contains 28,488 refugees and makes up for the remaining 67 percent of our sample. The top refugee sending country in 1990/91 is Iran followed by Iraq and Lebanon. Similarly, the top refugee sending country in 2004 is Iran followed by Afghanistan and Iraq. The refugees in our sample come from African, West Asian, East Asian and Eastern European regions. The total highest refugee inflow occurred in 1990, dominated by a large inflow of refugees from the West Asian region and from former Yugoslavia. As can be seen, there is heterogeneity in the number of individuals coming from the refugee sending countries across the cohorts. By having refugees from seven cohorts (1997-2004) in the comparison group, we hope to account for some of the heterogeneity coming from this variation.

Table 1: Sample of refugee sending countries for the considered cohorts

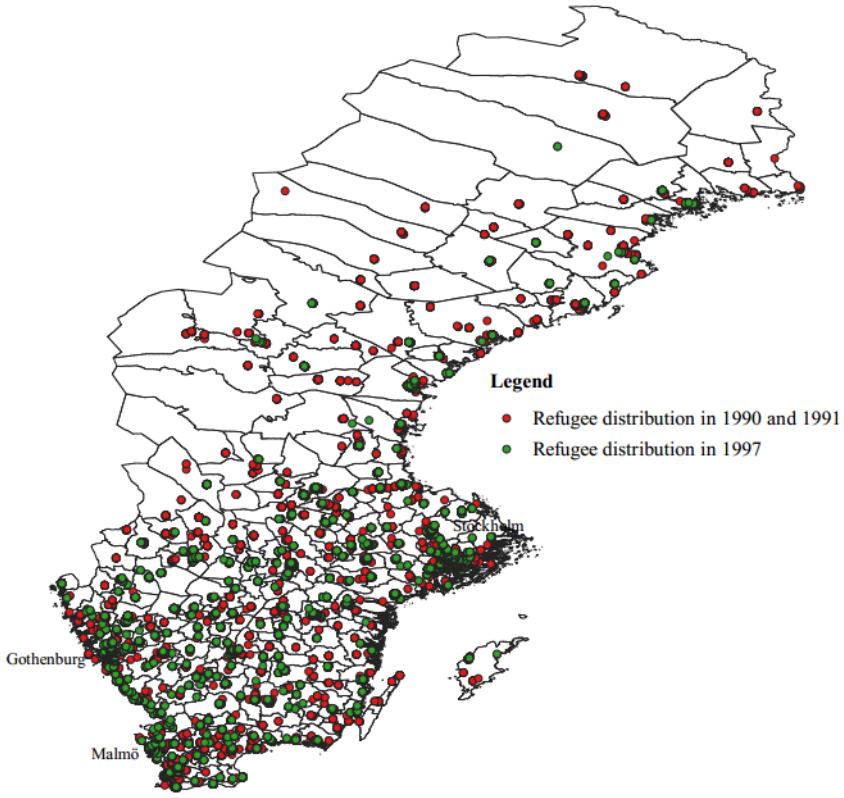
Refugee sending countries	1990/91	1997	1998	1999	2000	2001	2002	2003	2004
Eastern European region:									
Yugoslavia	1038	1446	843	211	744	660	580	333	54
Croatia	53	132	70	20	152	8	12	22	2
Bosnia	14	1046	810	332	214	179	309	333	139
Macedonia	60	15	8	14	21	13	16	17	14
Romania	695	9	7	7	13	19	17	14	14
Bulgaria	509	4	2	6	7	8	13	14	7
Russia	7	30	44	80	109	80	111	130	230
African region:									
Ethiopia	956	11	29	66	31	35	12	17	28
Somalia	720	217	139	33	89	129	265	517	139
Uganda	66	18	17	2	2	4	2	9	2
Eritrea	453	17	30	39	22	19	19	24	48
West Asian region:									
Lebanon	1808	91	50	19	17	53	35	43	30
Syria	1330	65	65	58	62	95	128	97	85
Iraq	1882	1016	1557	1440	2361	1914	2069	827	230
Iran	2815	217	302	143	177	239	290	177	309
East Asian region:									
Vietnam	937	6	4	4	12	14	17	9	19
Afghanistan	139	125	94	68	332	336	266	282	234
Bangladesh	184	36	23	21	27	31	30	49	50
Sri Lanka	172	7	5	7	3	8	6	11	13
Latin American region:									
Colombia	119	27	18	28	29	59	40	25	77
Total	13957	4535	4117	2598	4424	3903	4237	2950	1724

Note: The sample consists of non-OECD refugee sending countries (excluding China).

Source: Own calculations based on data from the GeoSweden database.

To get an idea on where the refugees were geographically located in their initial year in Sweden, Figure 1 displays a map of Sweden with the locations of refugees featured by coordinate points for the refugees arriving in 1990/91 and in 1997.[8] Comparing the geographic distribution of the two cohorts, it appears that the placed refugees in the 1990/91 cohort are more uniformly distributed around Sweden than the later cohort; in particular, they are more represented in the northern and in the western parts of the country. For the 1997 cohort, when the refugees were allowed to choose themselves where to locate, there is a higher concentration in the southern part of Sweden and in the three metropolitan areas of Stockholm, Malmö and Gothenburg.

Figure 1: Refugee distribution in 1990/91 and 1997



Note: The figure shows the distribution of refugees in Sweden during the placement years considered and in the non-placement year of 1997.

Source: Own calculations based on data from the GeoSweden database.

[8] Using any of the other cohorts in the comparison group yields a geographic distribution that is very similar to the one obtained for the 1997 cohort.

We characterize the individualized neighborhoods via four demographic and economic variables; share of natives, share of non-Western individuals, share of high-educated individuals and share of high-income individuals. Natives are described as those born in Sweden, irrespective of the country of birth of the parents. Non-Western individuals are those individuals that are born in a non-OECD country. High-educated individuals are defined as those with more that high school education (more than gymnasium).[9] The high-income individuals are defined as those being in the top 20 percent of the municipal earnings distribution.[10]

Table 2 provides summary statistics on the characteristics of the refugees for each cohort. The table shows that the average age at migration revolves around 33. The majority of refugees are male across the cohorts, with only the year 2004 consisting of a nearly equal gender composition. There is a high proportion of married individuals over the cohorts, ranging from 58 to 70 percent, as well as a fairly high proportion of refugees with children, ranging from 35 to 60 percent. For the education variables (number of years and share with more than high school education), there is considerable heterogeneity over the different cohorts, probably reflecting which countries the majority of the refugees come from in a certain cohort. In terms of region of origin, the share of refugees born in West Asia remains high throughout the different cohorts, ranging from 31 to 64 percent. The share of Eastern European refugees are also fairly high over all cohorts, ranging from 17 to 59 percent. The share of Latin American refugees, comprising of Colombians, remains low throughout the years.

[9]For refugees, the education variable in our data contains several missing values given that refugees' educational attainment are often not well measured upon arrival. However, for the rest of the population this is not a problem.

[10]When calculating the individualized neighborhoods, we calculate the share of the individuals with a specific characteristic as the number of individuals with that characteristic divided by the total number of individuals among the k nearest neighbors.

Table 2: Summary statistics for refugee cohorts considered

	1990/91	1997	1998	1999	2000	2001	2002	2003	2004
Age	31.47	33.57	34.05	34.35	34.20	33.80	34.05	33.20	32.53
	(9.47)	(9.33)	(10.03)	(10.28)	(10.64)	(10.66)	(10.24)	(10.20)	(10.33)
Female	0.43	0.45	0.38	0.37	0.42	0.38	0.37	0.43	0.52
	(0.50)	(0.50)	(0.49)	(0.48)	(0.49)	(0.49)	(0.48)	(0.49)	(0.50)
Marital status	0.58	0.70	0.64	0.64	0.66	0.64	0.66	0.67	0.58
	(0.49)	(0.46)	(0.48)	(0.48)	(0.47)	(0.48)	(0.47)	(0.47)	(0.49)
Children	0.44	0.60	0.43	0.35	0.41	0.40	0.38	0.44	0.53
	(0.50)	(0.49)	(0.49)	(0.48)	(0.49)	(0.49)	(0.48)	(0.50)	(0.50)
Income	46.22	37.55	38.68	38.51	36.77	43.20	58.72	68.31	60.31
	(168.20)	(200.34)	(201.44)	(207.74)	(208.32)	(233.79)	(277.79)	(320.06)	(287.12)
Education level	1.00	3.61	1.20	0.43	1.64	1.82	2.01	1.98	1.66
	(1.62)	(1.57)	(1.93)	(1.35)	(2.29)	(2.31)	(2.36)	(2.26)	(2.26)
High educated	0.06	0.28	0.10	0.05	0.19	0.20	0.23	0.20	0.19
	(0.23)	(0.45)	(0.30)	(0.21)	(0.39)	(0.40)	(0.42)	(0.40)	(0.39)
Region of origin:									
African born	0.16	0.06	0.05	0.05	0.03	0.05	0.07	0.19	0.13
	(0.36)	(0.23)	(0.22)	(0.23)	(0.18)	(0.21)	(0.26)	(0.39)	(0.33)
Latin American born	0.01	0.01	0.00	0.01	0.01	0.02	0.01	0.01	0.04
	(0.09)	(0.08)	(0.07)	(0.10)	(0.08)	(0.12)	(0.10)	(0.09)	(0.21)
West Asian born	0.56	0.31	0.48	0.64	0.59	0.59	0.60	0.39	0.38
	(0.50)	(0.46)	(0.50)	(0.48)	(0.49)	(0.49)	(0.49)	(0.49)	(0.49)
East Asian born	0.10	0.04	0.03	0.04	0.08	0.10	0.08	0.12	0.18
	(0.30)	(0.19)	(0.17)	(0.19)	(0.28)	(0.30)	(0.26)	(0.32)	(0.39)
Eastern European born	0.17	0.59	0.43	0.26	0.28	0.25	0.25	0.29	0.27
	(0.38)	(0.49)	(0.50)	(0.44)	(0.45)	(0.43)	(0.43)	(0.46)	(0.44)
Observations	13957	4535	4117	2598	4424	3903	4237	2950	1724

Note: Standard deviations are reported in parentheses. The variables are measured at the cohorts' arrival. The variable 'High educated' comprises of individuals with university education while the variable 'Low educated' indicates those with less than 9 years of education.

Source: Own calculations based on data from the GeoSweden database.

4 Individualized neighborhoods of refugees over time

In this section, we start the analysis by showing how the individualized neighborhoods of the refugees evolve over time in Sweden in terms of socio-economic and demographic characteristics of their k nearest neighbors. In doing this, we follow each individual, no matter if he or she has moved neighborhood or not. The characteristics we look at are share natives (i.e., share born in Sweden), share born in a non-Western country, share high-educated, and share high-income individuals. We look at refugees arriving at different time periods; 1990/1991 (i.e., during the dispersal policy years, the treated cohort) and during the years 1997-2004 (years for which there was no dispersal policy in effect, the comparison cohorts), and then follow the different cohorts until 2014. We first look at all refugees and then turn to refugees that arrive to Sweden from Muslim-majority countries.

4.1 All refugees

Starting with the share of natives among the refugees' $k = 500$ nearest neighbors[11], we can draw a couple of conclusions from the pattern observed in Figure 2a.[12] First, in the initial year, the share of natives are higher among the placed 1990/91 cohort, at almost 80 percent, than among the non-placed cohorts, with a mean of around 63 percent. Second, the share of natives in refugees' close neighborhoods decreases faster in the first years in Sweden for the 1990/91 cohort than the 1997-2004 cohorts, over time converging towards the share of natives in the neighborhoods of the non-placed cohorts. After ten years in Sweden, the share of natives in the neighborhoods of the placed individuals have dropped from almost 80 percent to less than 60 percent.

When turning to the share of non-Western individuals in the refugees' neighborhoods, we get almost a mirror image of that in Figure 2a. There is a lower share of non-Western individuals in the initial year in the neighborhoods of the placed individuals than for the non-placed individuals, but the difference

[11] In this section, we present the results for $k = 500$. In Appendix A, we present the results for $k = 50$. The results are qualitatively the same, which is true for all of the ks we have examined. Given the similarities, we have chosen to only present the results for $k = 500$ in the main analysis of the paper.

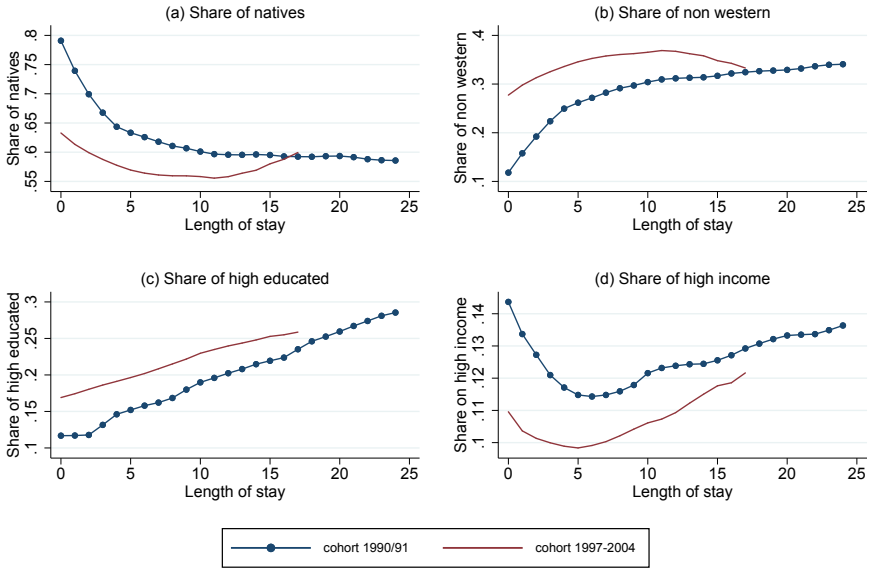
[12] In Figure 2, we present the mean of the different comparison cohorts. The distributions for each one of the comparison cohorts are presented in Appendix B.

between the two types of cohorts decreases with the length of stay in Sweden (through a sharper initial increase in the share for the placed individuals; c.f. Figure 2b).

For share of highly educated, the pattern is a bit different. Even though there is an initial difference between the placed and non-placed cohorts (with the placed cohorts having a lower share of high-educated individuals in their close neighborhoods; c.f. Figure 2c) there seems to be no real convergence over time (there is a steady increase in the share of high-educated in the individualized neighborhoods for all refuges, no matter which cohort they arrive in). The initial difference is likely to reflect the concentration of highly educated individuals to more urban and larger regions; if the 1990/91 cohort were placed in non-urban/non-metropolitan areas to a larger extent than the 1997-2004 cohorts, then this can be the reason for this pattern to occur.

Figure 2d) shows the share of individuals in the highest income quintile in each refugees' neighborhood. We can first note that the share is initially higher for the placed cohort. In the first years in Sweden, it decreases for all cohorts, but more so for the placed cohort. However, after approximately five years, the share of high-income individuals start to increase in the neighborhoods of all refugees irrespective of their arrival cohort. In the longer run, there seems to be no convergence.

Figure 2: Share of different characteristic in refugees' neighborhoods: $k = 500$

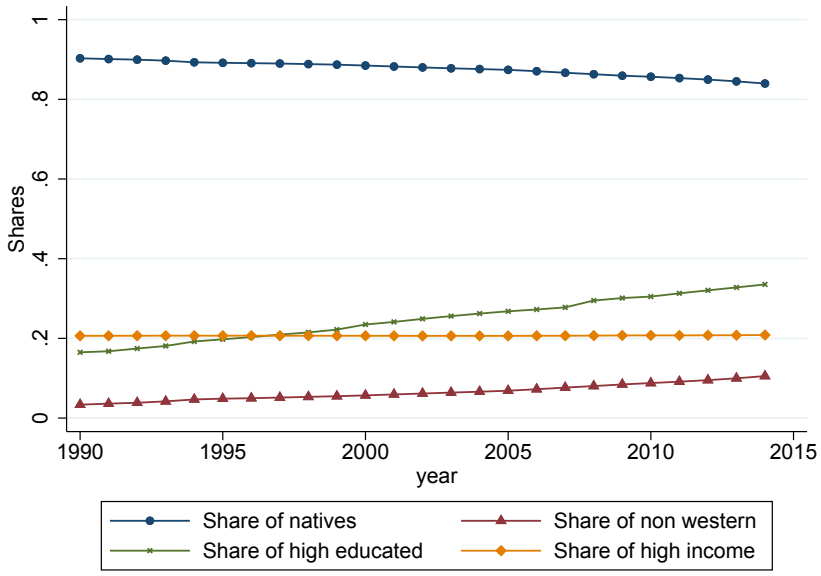


Note: The figure shows the share of natives, non western, high educated and high income earners among the 500 nearest neighbors of refugees.

Source: Own calculations based on data from the GeoSweden database.

Relating the different shares in Figure 2 to the corresponding shares of the native-born population (c.f. Figure 3), it is clear that the placed 1990/91 cohorts initially ended up in neighborhoods that were more similar to the natives' neighborhoods in terms of share of natives, share of non-Westerners, and share of high-income earners than was the case for the non-placed comparison cohorts (in an absolute sense, the 1990/91 cohorts also ended up in neighborhoods that were very similar to the natives' neighborhoods). The only characteristic in which the comparison cohorts ended up in neighborhoods that were more similar to the natives' neighborhoods than the treatment cohort was for share of highly educated. As mentioned above, this is probably due to an urban/non-urban divide between those with a higher education.

Figure 3: Share of different characteristic in natives' neighborhoods: $k = 500$



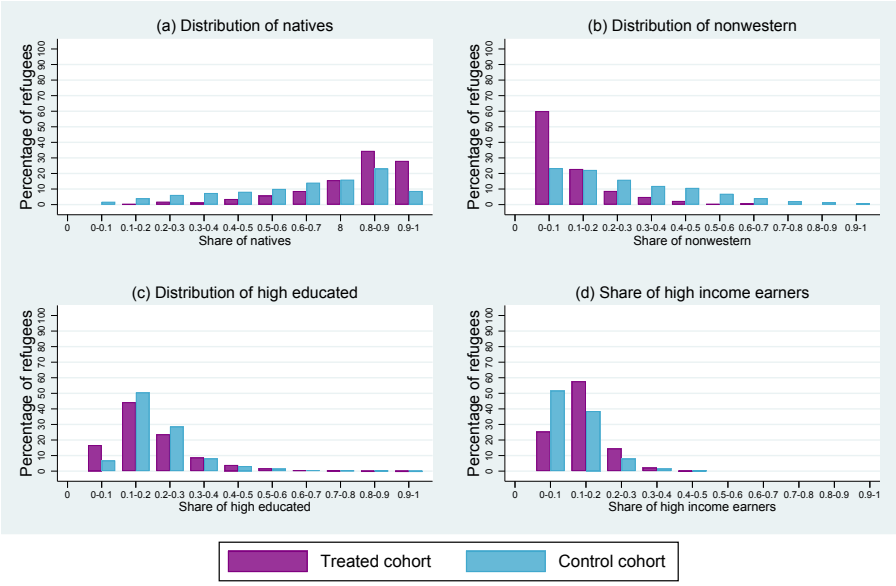
Note: The figure shows the share among the 500 nearest neighbors of the natives.

Source: Own calculations based on data from the GeoSweden database.

In Figure 2, we look at the mean values for the individualized neighborhoods. It is also of interest to examine how the dispersal policy affected the overall distribution of the refugees' neighborhoods in their initial year. From Figure 4, we note that the whole distributions where affected by the dispersal policy, but that a diverging pattern is most visible for the share of natives and the share of non-Western. For the later cohorts, when they

were allowed to choose themselves where to locate, they to a larger extent ended up in neighborhoods with a large share of non-Western (also in neighborhoods with 70-100 percent non-Westerners) and a small share of natives (also in neighborhoods with almost zero natives) than the placed cohorts (the placed cohorts never ended up in a neighborhood with more than 70 percent non-Westerners and very seldom in neighborhoods with a very low share of natives).

Figure 4: Distribution of different characteristic in placed and control refugees' neighborhoods: $k = 500$



Note: The figure shows the distribution of different characteristics among the 500 nearest neighbors of placed and control refugees.

Source: Own calculations based on data from the GeoSweden database.

Relating the results in this section to the spatial assimilation theory (see, e.g., (Massey and Denton, 1985)), it is interesting to note that our findings do not seem to be consistent with that theory. The spatial assimilation theory predicts that refugees tend to settle with others from a similar backgrounds at arrival in the host country, but those who experience upward socioeconomic mobility over time seek neighborhoods with a high presence of natives. This does not seem to be the case for the refugees examined in this paper; even though they enter into more "elite" neighborhoods in terms of education level and earnings over time, they tend to enter into neighborhoods with a

smaller share of natives and a higher share of non-Western. Although the findings are not consistent with the spatial assimilation theory in terms of integration with more natives over the long term, the refugees are integrated in other socio-economic dimensions.

Overall, the analysis for all refugees shows that the initial individualized neighborhoods of the placed individuals are characterized by more integration (in terms of having a larger share of natives, a lower share of non-Western immigrants and a higher share of high-income individuals) than what is the case for the non-placed individuals. However, over time in Sweden, the share of natives and the share of non-Western immigrants in the neighborhoods of the placed refugees converge to that of the neighborhoods of the non-placed refugees. For all years, the neighborhoods of the placed individuals are also characterized by a higher share of high-income individuals and a lower share of high-educated individuals than the neighborhoods of the non-placed individuals. A natural follow-up question is whether the observed pattern is different depending on the characteristics of the refugees. This is a question we turn to next.

4.2 Refugees from Muslim-majority countries

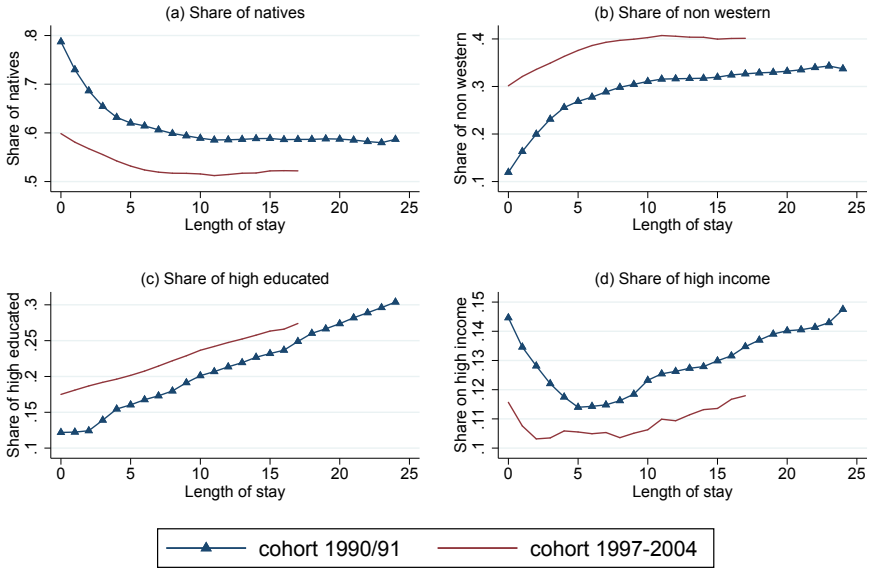
So far, we have used all refugees in the analyses, but since different types of refugees have characteristics that to varying degrees differ from the characteristics of the native population (e.g., in terms of religious and cultural background), the time pattern of the individualized neighborhoods can be different for different types of refugees. To examine this, we will next redo the analysis for refugees from countries that have a predominantly Muslim population. The reason for doing this is that individuals from Muslim-majority countries might differ from the native population in both religious and cultural terms.[13]

Using refugees from the Muslim-majority countries, we calculate the individualized neighborhoods for this group of refugees and present the same type of figures as in the former section but for this group. From Figure 5, which

[13]For most of the years considered in this paper, more than half of all refugees arriving in Sweden are from Muslim-majority countries. For our definition of a Muslim-majority country, for some descriptive statistics and for results with $k = 50$, see Appendix C.

presents results for $k = 500$, we note many similarities to the figures when we used all refugees (especially when it comes to the differences in characteristics in initial neighborhoods), but with one major difference; there seems to be less convergence over time. What is extra interesting in this case is that the non-converging pattern is more clearly visible in very small neighborhoods (see the Appendix for results for $k = 50$). From an integration perspective, in terms of characteristics at very local neighborhoods, the placement policy seems to be successful in this sense.

Figure 5: Share of different characteristic in the neighborhoods of Muslim-majority countries' refugees: $k = 500$



Note: The figure shows the share of natives, non western, high educated and high income among the 500 nearest neighbors of Muslim refugees.

Source: Own calculations based on data from the GeoSweden database.

From the analysis presented in this section, we have hence seen how the socio-economic and demographic characteristics of the refugees' individualized neighborhoods change over time. This can be due to either of two scenarios:

1. The refugees move to neighborhoods with other characteristics
2. The refugees do not move, but the characteristics of the stayers' neighborhoods change over time.

Next we will examine these two channels.

5 Individualized neighborhoods over time: Stayers vs. movers

To examine whether refugees move to neighborhoods with other characteristics, we select the group of individuals that have moved neighborhood (defined as having moved from the initial coordinates to new coordinates that are more than 500 meters away) at some point within their first five years in Sweden and then we plot the characteristics of the initial neighborhood and those of the new neighborhood.[14] A comparison is then made to the neighborhoods of the non-movers.

Table 3 provides figures on the number of stayers (defined as being on a coordinate point that is within 500 meters from the initial coordinate point), short-distance movers (defined as having conducted a move that is more than 500 meters but less than 10 km from the initial location) and long-distance movers (defined as having moved more than 10 km), respectively, within the first five years in Sweden for the different cohorts.[15] From the table, it is clear that fewer individuals stayed in the initial locations and more individuals moved a long-distance in the cohort that could not choose themselves where to locate (compare the highlighted 1990/91 cohort with the other cohorts). The figures for the short-distance moves (which can be thought of as a move within the same municipality) are approximately the same for the different cohorts.

[14] We have conducted the same analysis for those that have moved within the first ten years. This provides the same pattern as for the five-year movers, but, this comes as no surprise as there are more individuals that have moved neighborhood when extending the time period to ten years. The ten-year results are available on request.

[15] Distance is computed as the length of the shortest curve between two points along the surface of the earth. We calculate the distance through the differences in latitude and longitude from one year to the next and use the geodist command in Stata.

Table 3: Stayers and movers among the refugees within their first five years in Sweden for the different arriving cohorts

	1990/91	1997	1998	1999	2000	2001	2002	2003	2004
Stayers	**2375**	1574	1506	817	1373	1101	1097	817	469
	(17.02)	(34.71)	(36.58)	(31.45)	(31.04)	(28.21)	(25.89)	(27.69)	(27.20)
Movers (<10 km)	**5114**	1805	1609	1093	1813	1651	1904	1206	656
	(36.64)	(39.80)	(39.08)	(42.07)	(40.98)	(42.30)	(44.94)	(40.88)	(38.05)
Movers (≥10 km)	**6468**	1156	1002	688	1238	1151	1236	927	599
	(46.34)	(25.49)	(24.34)	(26.48)	(27.98)	(29.49)	(29.17)	(31.42)	(34.74)
Total	**13957**	4535	4117	2598	4424	3903	4237	2950	1724
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)

Note: The table presents the frequency of stayers and movers. Sample percentages are shown in parentheses.

Source: Own calculations based on data from the GeoSweden database.

Among the long-distance movers, there is a tendency to a concentration to the three larger metropolitan areas in Sweden; see Figure 6, which shows the geographical distribution over municipalities of the treated refugees at different time points. In the initial year, the refugees are rather uniformly distributed over Sweden (as we have seen before) and they are concentrated in several different geographical places. However, when following the placed refugees over time (after five years in Figure 7 and after ten years in Figure 8), we note that they tend to leave the Northern part of Sweden to concentrate in the cities. This pattern has been shown before (see, e.g., Andersson and Mekkonen, 1996 and Åslund, 2005). Here, we are however interested to examine how the individualized neighborhoods change over time for the movers.

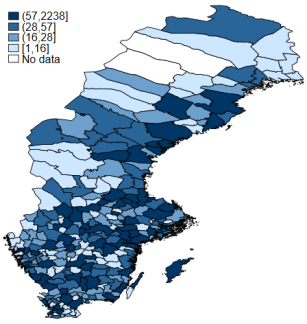


Figure 6: Initial year

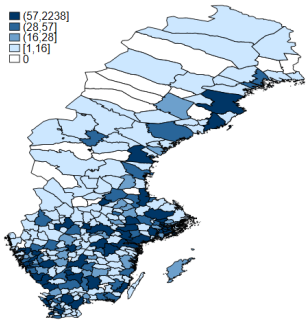


Figure 7: After 5 years

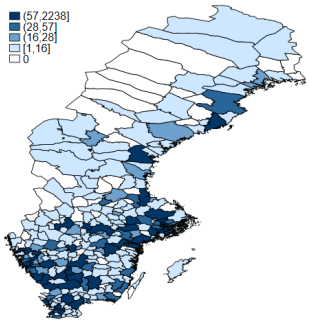
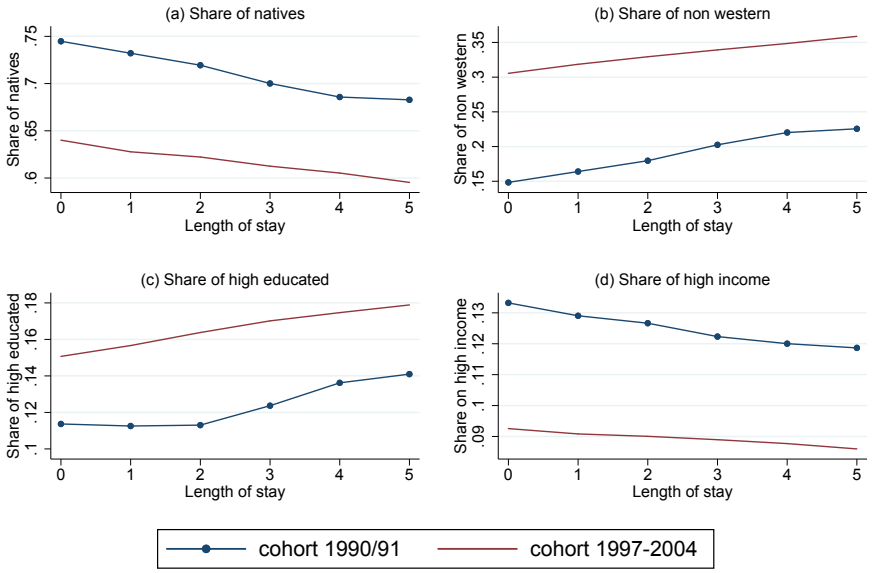


Figure 8: After 15 year

Neighborhood dynamics for non-movers, short-distance movers, long-distance movers and individuals that moved to any of the three metropolitan areas of Stockholm, Gothenburg and Malmö (and that did no live in these areas before the move; called "city movers" in the figure) are presented in Figures 9,

10, 11 and 12, respectively.[16] The main conclusion from Figures 9-12 is that those that move longer distances, and especially those that move to one of the three big city regions, end up in neighborhoods with a significantly lower share of natives and a significantly higher share of non-Western (compared to the neighborhood they left); c.f. Figures 11a, 11b, 12a and 12b. The change in share of natives and share of non-Western in the neighbothoods of the stayers and the short-distance movers are much less dramatic (c.f. Figures 9a, 9b, 10a and 10b). This difference is clearly visible in Figures 13a and 13b (Figure 13 combines the neighborhood trajectories in Figures 9-12 for the placed refugees).

Figure 9: Share of characteristics in fifth year stayers' neighborhoods

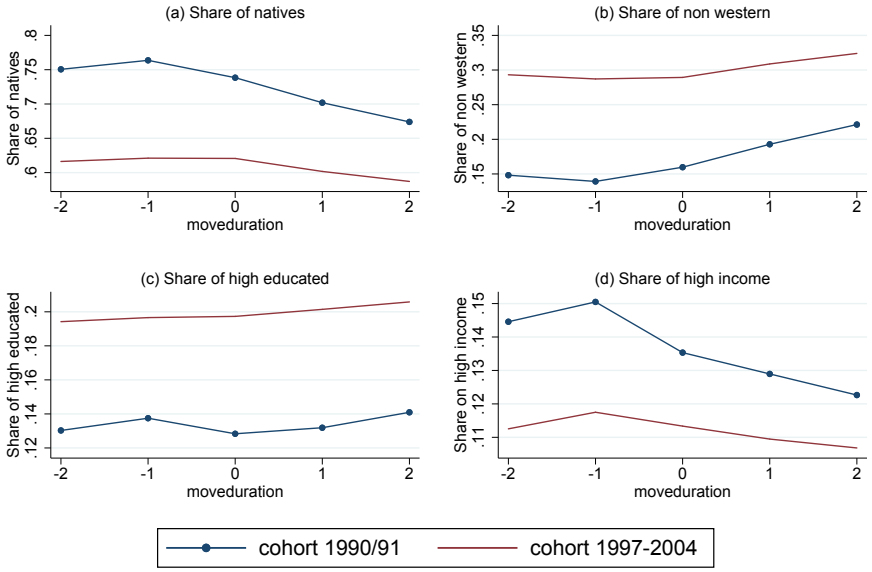


Note: The figure shows the share of natives among the 500 nearest neighbors of refugees who stayed in a neighborhood for at least five years.

Source: Own calculations based on data from the GeoSweden database.

[16]The horizontal axis in Figures 10-12 measures...

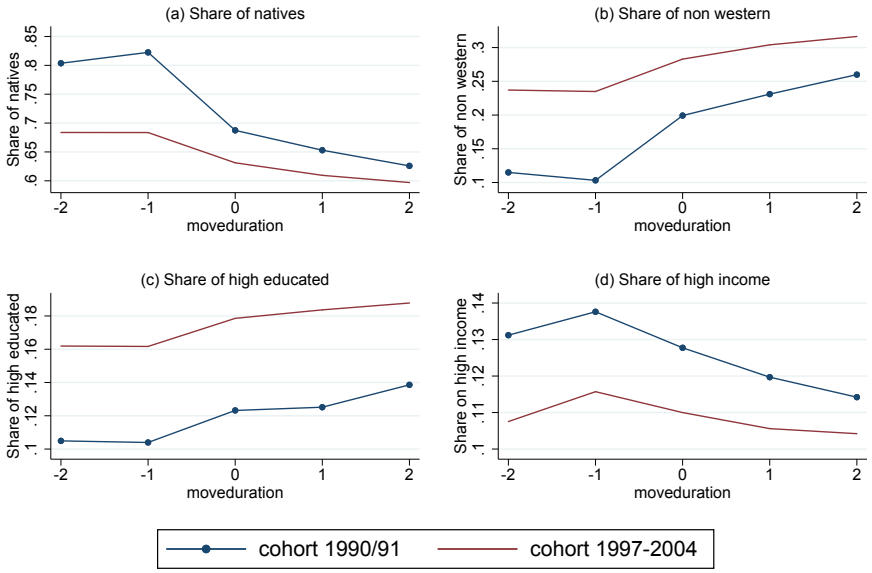
Figure 10: Share of different characteristic in the short movers refugees' neighborhoods: $k = 500$



Note: The figure shows the share of natives, non western, high educated and high income among the 500 nearest neighbors of refugees who moved a short distance.

Source: Own calculations based on data from the GeoSweden database.

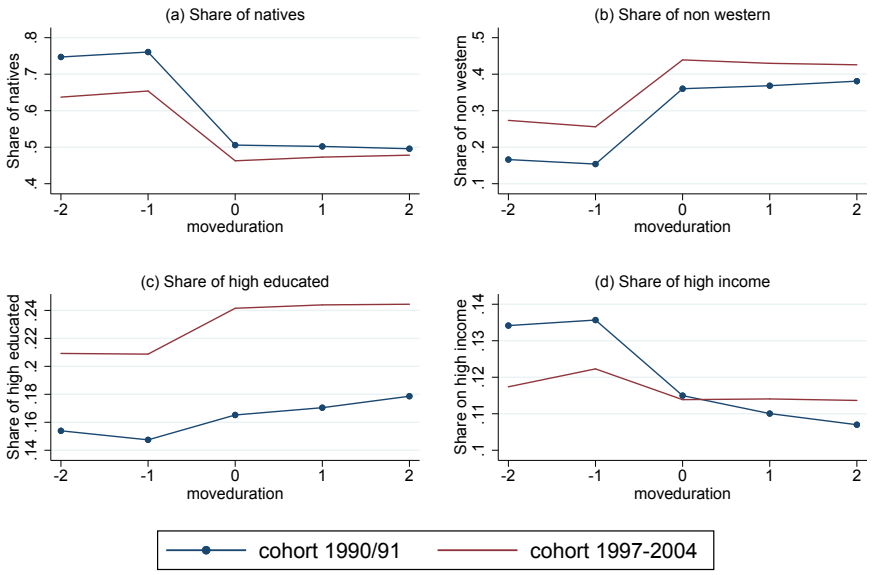
Figure 11: Share of different characteristic in the long movers refugees' neighborhoods: $k = 500$



Note: The figure shows the share of natives, non western, high educated and high income among the 500 nearest neighbors of refugees who moved a long distance.

Source: Own calculations based on data from the GeoSweden database.

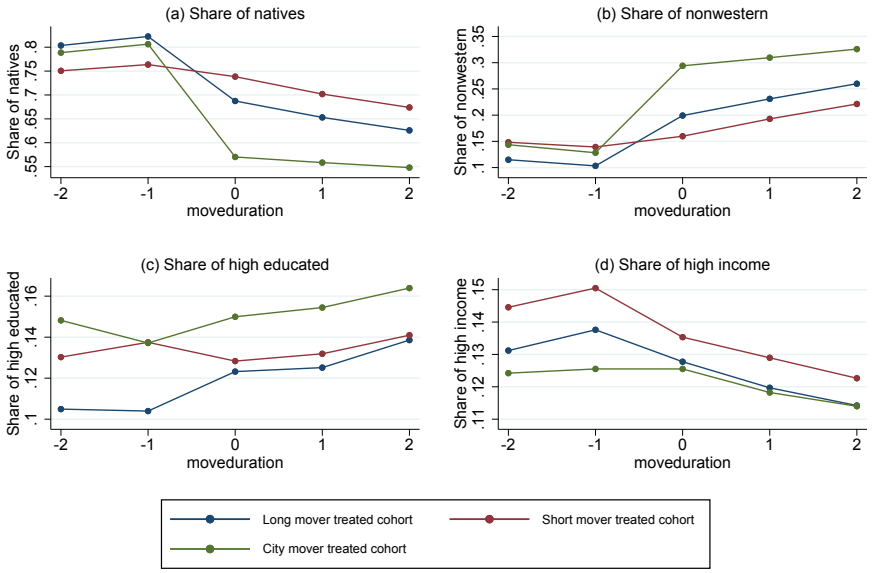
Figure 12: Share of characteristics in city movers' neighborhoods



Note: The figure shows the share of non western individuals among the 500 nearest neighbors of city movers' refugees. Year 0 is the first year in which the refugees move from a non-city to a city in Sweden.

Source: Own calculations based on data from the GeoSweden database.

Figure 13: Share of characteristics in short, long and city treated movers' neighborhoods



Note: The figure shows the share of different characteristics among the 500 nearest neighbors of treated refugees who moved a short distance, long distance and who moved from non-city to city.

Source: Own calculations based on data from the GeoSweden database.

6 Conclusion

This paper has analyzed the effect of the Swedish geographic dispersal policy on the characteristics of the placed refugees' individualized (k-nearest) neighborhoods and the dynamic sorting for the placed refugees using high-resolution geocoded data. The individualized neighborhoods are defined by share of natives, share of non-Western individuals, share of high-educated individuals and share of high-income individuals, respectively.

Our findings indicate that the initial individualized neighborhoods of placed refugees are characterized by more integration than what is the case for the non-placed individuals (according to our definition of neighborhood integration). Our findings so far indicate that the dispersal policy may be successful at geographically integrating refugees in the host country. Furthermore, our analysis shows an inconsistency related to the spatial assimilation theory

because refugees prefer neighborhoods with higher presence of immigrants over time. For refugees from Muslim-majority countries, there is less convergence over time between placed and non-placed refugees for small neighborhoods, indicating that the policy might be more successful for certain refugee-groups. For long distance movers and movers to the three big cities, the neighborhoods change to a considerably lower share of natives and a substantially higher share of non-Western immigrants; in contrast, the individualized neighborhoods of stayers and short-distance movers do not change drastically over time.

This paper is currently being extended to include detailed analyses on sorting on background characteristics (in terms of socio-economic characteristics of the individuals and in terms of the characteristics of the initial neighborhood; i.e., who are the refugees leaving integrated neighborhoods for less integrated neighborhoods, particularly among those moving long distances. This paper will be extended to take into account sample selection and include sensitivity analysis by applying the same methodology for the selection of refugees to all cohorts. In a future paper, we will examine how the placement of refugees into a local neighborhood affected the migration behavior of natives in the neighborhood.

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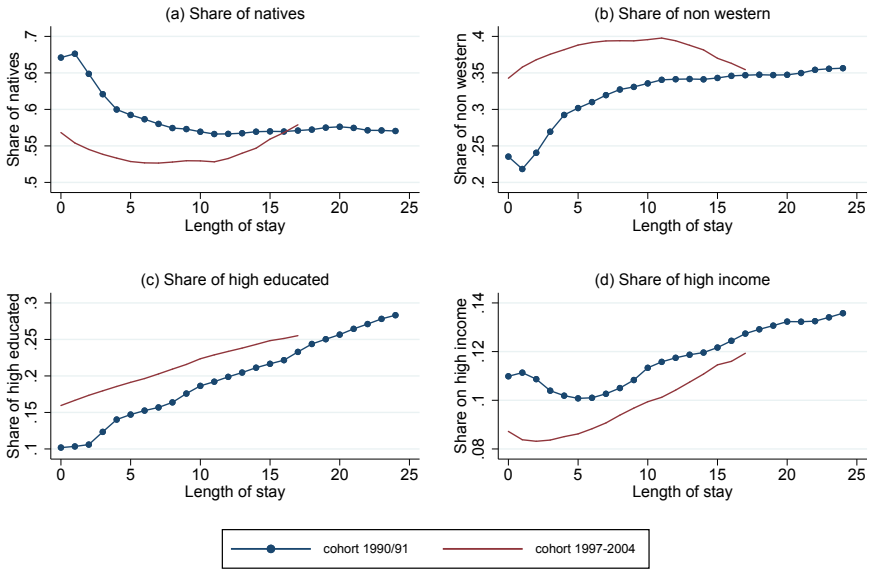
Appendix

A Individualized neighborhoods with $k = 50$

Here we present the distribution of the individualized neighborhoods for $k = 50$ instead of $k = 500$ (c.f. Figure 2).

Figure 14: Share of different characteristic in refugees' neighborhoods: $k = 50$



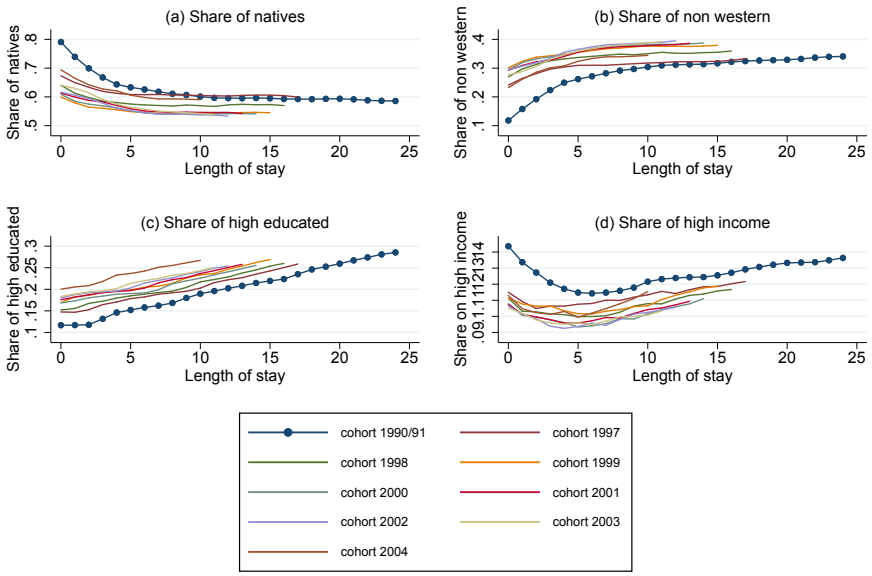
Note: The figure shows the share of natives, non western, high educated and high income earners among the 50 nearest neighbors of refugees.

Source: Own calculations based on data from the GeoSweden database.

B Individualized neighborhoods for all comparison cohorts

Here we present the distribution of the individualized neighborhoods for all of the comparison cohorts 1997-2004 (c.f. Figure 15). The variation in the share of natives in the initial year for the 1997-2004 cohorts might be a function of which refugees (in terms of origin country) that arrive in a given year; c.f. Table 1.

Figure 15: Share of different characteristic in refugees' neighborhoods: $k = 500$



Note: The figure shows the share of natives, non western, high educated and high income earners among the 500 nearest neighbors of refugees for all the cohorts.

Source: Own calculations based on data from the GeoSweden database.

C Refugees from Muslim-majority countries

We define Muslim-majority countries as countries with more than 80 percent Muslims according to a Pew Research Center report on the global Muslim population (Center, 2009). The report's sources include national censuses, demographic and health surveys, and other general population surveys and studies. Countries selected by this criteria are Somalia, Gambia, Syria, Iraq, Iran, Afghanistan, and Bangladesh. Table 5 reports the summary statistics for refugees to Sweden from Muslim-majority countries, broken down by arriving cohorts.

From Table 4, more than half of all refugees arriving in Sweden from the considered arriving cohorts are from Muslim-majority countries, except in 1997 where 37 percent of all refugees are from Muslim-oriented countries. In 2002, there is the highest proportion of refugees from Muslim-majority countries at just below 72 percent. The 2004 cohort has a lower absolute number of refugees from Muslim-majority countries. Iran sends the most refugees in 1990/91 while Iraq consistently ranks among the top refugee sending country from 1997 to 2003.

Table 4: Sample of refugee from Muslim-majority countries for the considered cohorts

Refugee sending countries	1990/91	1997	1998	1999	2000	2001	2002	2003	2004
Somalia	720	217	139	33	89	129	265	517	139
Syria	1330	65	65	58	62	95	128	97	85
Iraq	1882	1016	1557	1440	2361	1914	2069	827	230
Iran	2815	217	302	143	177	239	290	177	309
Afghanistan	139	125	94	68	332	336	266	282	234
Bangladesh	184	36	23	21	27	31	30	49	50
Total	7070	1676	2180	1763	3048	2744	3048	1949	1047

Note: The sample consists of refugee sending countries with more than 80 percent Muslims.

Source: Own calculations based on data from the GeoSweden database.

Table 5 shows the summary statistics for refugees coming from Muslim-majority countries. The mean of the characteristics are very similar to that of all the refugees. Most of the refugees are male, except for the 2004 cohort with half of the refugees being female. More than half of the refugees coming from Muslim-majority countries are married, irrespective of the cohort. A large proportion for all the cohorts are on social welfare upon arrival. The

majority comes from West Asian region. There is a low proportion of high educated refugees for the different cohorts under consideration.

Table 5: Summary Statistics for refugees from Muslim-majority countries

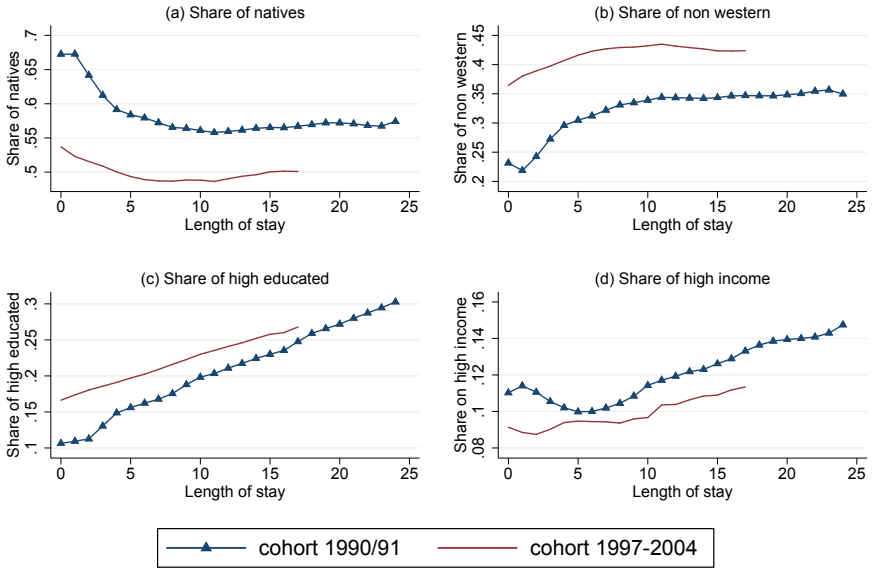
	1990/91	1997	1998	1999	2000	2001	2002	2003	2004
Age	32.78	33.84	34.05	34.47	34.37	33.74	34.24	33.11	31.93
	(9.48)	(9.98)	(10.50)	(10.39)	(10.85)	(10.72)	(10.36)	(10.55)	(11.06)
Female	0.40	0.36	0.33	0.32	0.36	0.32	0.31	0.37	0.50
	(0.49)	(0.48)	(0.47)	(0.47)	(0.48)	(0.47)	(0.46)	(0.48)	(0.50)
Marital status	0.59	0.64	0.68	0.66	0.66	0.64	0.66	0.66	0.55
	(0.49)	(0.48)	(0.47)	(0.47)	(0.47)	(0.48)	(0.47)	(0.47)	(0.50)
Children	0.43	0.36	0.37	0.29	0.31	0.29	0.27	0.34	0.48
	(0.50)	(0.48)	(0.48)	(0.45)	(0.46)	(0.46)	(0.44)	(0.47)	(0.50)
Income	23.66	8.52	8.36	11.91	20.74	22.22	39.72	48.40	46.18
	(106.68)	(68.49)	(66.34)	(83.11)	(134.57)	(145.63)	(217.19)	(267.25)	(252.26)
Education level	1.07	3.86	1.19	0.46	1.77	1.86	2.06	1.95	1.34
	(1.74)	(1.66)	(2.01)	(1.42)	(2.35)	(2.34)	(2.40)	(2.31)	(2.12)
Social welfare	0.83	0.92	0.88	0.79	0.82	0.86	0.77	0.88	0.73
	(0.37)	(0.27)	(0.33)	(0.41)	(0.39)	(0.35)	(0.42)	(0.33)	(0.45)
Low educated	0.81	0.25	0.77	0.91	0.68	0.67	0.63	0.65	0.75
	(0.39)	(0.43)	(0.42)	(0.28)	(0.47)	(0.47)	(0.48)	(0.48)	(0.43)
High educated	0.07	0.37	0.12	0.06	0.21	0.21	0.25	0.22	0.14
	(0.26)	(0.48)	(0.33)	(0.23)	(0.41)	(0.41)	(0.43)	(0.41)	(0.35)
Region of origin:									
African born	0.10	0.13	0.06	0.02	0.03	0.05	0.09	0.27	0.13
	(0.30)	(0.34)	(0.24)	(0.14)	(0.17)	(0.21)	(0.28)	(0.44)	(0.34)
West Asian born individual	0.85	0.77	0.88	0.93	0.85	0.82	0.82	0.56	0.60
	(0.35)	(0.42)	(0.32)	(0.25)	(0.35)	(0.38)	(0.39)	(0.50)	(0.49)
East Asian born individual	0.05	0.10	0.05	0.05	0.12	0.13	0.10	0.17	0.27
	(0.21)	(0.29)	(0.23)	(0.22)	(0.32)	(0.34)	(0.30)	(0.38)	(0.44)
Observations	7070	1676	2180	1763	3048	2744	3048	1949	1047

Note: The table presents the mean and standard deviation in parentheses. The sample consists of refugee sending countries with more than 80 percent Muslims.

Source: Own calculations based on data from the GeoSweden database.

Results for $k = 50$ are given in Figure 16.

Figure 16: Share of different characteristic in the neighborhoods of Muslim-majority countries' refugees: $k = 50$



Note: The figure shows the share of natives, non western, high educated and high income among the 500 nearest neighbors of Muslim refugees.

Source: Own calculations based on data from the GeoSweden database.

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