Prague and Central Bohemia

Current Population Processes and Socio-spatial Differentiation

Martin Ouředníček (ed.)

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Contents

4 / Migration and Residential Mobility of Foreign Citizens in Prague and the Central Bohemian Region

Ivana Křížková, Adam Klsák, Martin Šimon

4.1 INTRODUCTION

Metropolitan regions are the main gateways for international migration and places of immigrant integration. More than a third of immigrants[12] in Czechia lives in Prague and the Central Bohemian Region, making it the most ethnically diverse and dynamic of the Czech regions (Janská, Čermák, Wright, 2014; Klsák, Křížková, 2022 in this book). Residential mobility of immigrants exceeds that of the domestic population, making the understanding of immigrant population's social geography highly relevant for urban transformation and integration policies. Therefore, the aim of this chapter is to describe and explain migration and residential mobility of foreign population in Prague and the Central Bohemian Region. We focus on the data from the key period of migration growth (2005 to 2018), when the key patterns of immigrant spatial distribution have been developed. We use migration rates, logistic regressions and cartographical visualisations to explore trends in migration and residential mobility and its structuring variables.

Although it is difficult to distinguish between residential mobility and migration, scholarly literature has found an important difference between short-distance and long-distance moves (Bell et al., 2015). Contrary to long-distance moves that tend to be job-related (Boman, 2011) and lead to a disruption of daily activity spaces, residential mobility is thought to be a function of the need to adjust one's residential environment to suit one's preferences (Rossi, 1980). Therefore, the majority of such moves occur over shorter distances, allowing people to sustain their daily activity spaces (Niedomysl, 2011; Coulter, van Ham, Findlay, 2016). Being associated with the adjustment of people's residence to their needs and preferences, immigrants' residential mobility may lead to either the creation of ethnic concentrations in certain areas or their spatial de-concentration (van Kempen, Özüekren, 1998). Because immigrant spatial concentrations are often presented as a concern in public discourse (Peach, 1996; Přidalová, Klsák, 2019), one of the themes we examine in more detail is the relationship between the presence of co-ethnics[13] and immigrants' residential mobility. More specifically, we want to discover whether residential mobility of immigrants in Central Bohemia contributes to their spatial concentration or de-concentration moves.

As residential mobility is believed to be an expression of adjusting one's residential environment to one's preferences, it may have several determinants relating to (i) the residentially mobile person's characteristics (see e.g. Cooke, 2008; Geist, McManus, 2008; Schaake, Burgers, Mulder, 2014); (ii) their former place of residence (more frequently theorised as residential satisfaction, see e.g. Clark, Deurloo, Dieleman (2006) and Špačková, Dvořáková, Tobrmanová (2016)); and (iii) their preferred new place of residence (Hedman, van Ham, Manley, 2011; van Ham, Boschman, Vogel, 2018). For foreign citizens, the first group of determinants may include indicators such as their stage in life-course, age, gender, resident status or length of stay in the country. In the second group, relevant residential mobility determinants may include the type of neighbourhood, home ownership and presence of (co-)ethnic population in the original place of residence. Although the characteristics of the third – new place of residence – may also play a role, the preferred residence does not have to be the same as the eventual destination of residential mobility for most population groups, including certain immigrants. As the choice of the actual new place of residence may be influenced by vacancies on the housing market and other phenomena that we were unable to operationalise, we refrained from evaluating these (pull) factors of residential mobility in this chapter. Instead, we relied more on the factors that urge people to move.

12 Given that this chapter is based on quantitative analysis of data that use citizenship as the main distinctive characteristic between groups, we hereafter use the notion of foreign citizens (foreigners) as synonymous to „immigrants", the more oft-used term in international literature; see similar procedure in (Janská, Bernard, 2018). Technically, "foreigners" also include children of foreign citizens born on the Czech territory (second-generation migrants), while Czech citizens do not count as immigrants in our approach. Otherwise, there is a large overlap between "foreigners" and "immigrants" in Czechia (Křížková, Ouředníček, 2020), which allows us to comment on literature that focuses on any of the two populations.

13 These are people who share the same ethnic background as the reference group. In this paper, co-ethnics are operationalised as people holding citizenship of the same country as the given group of foreigners.

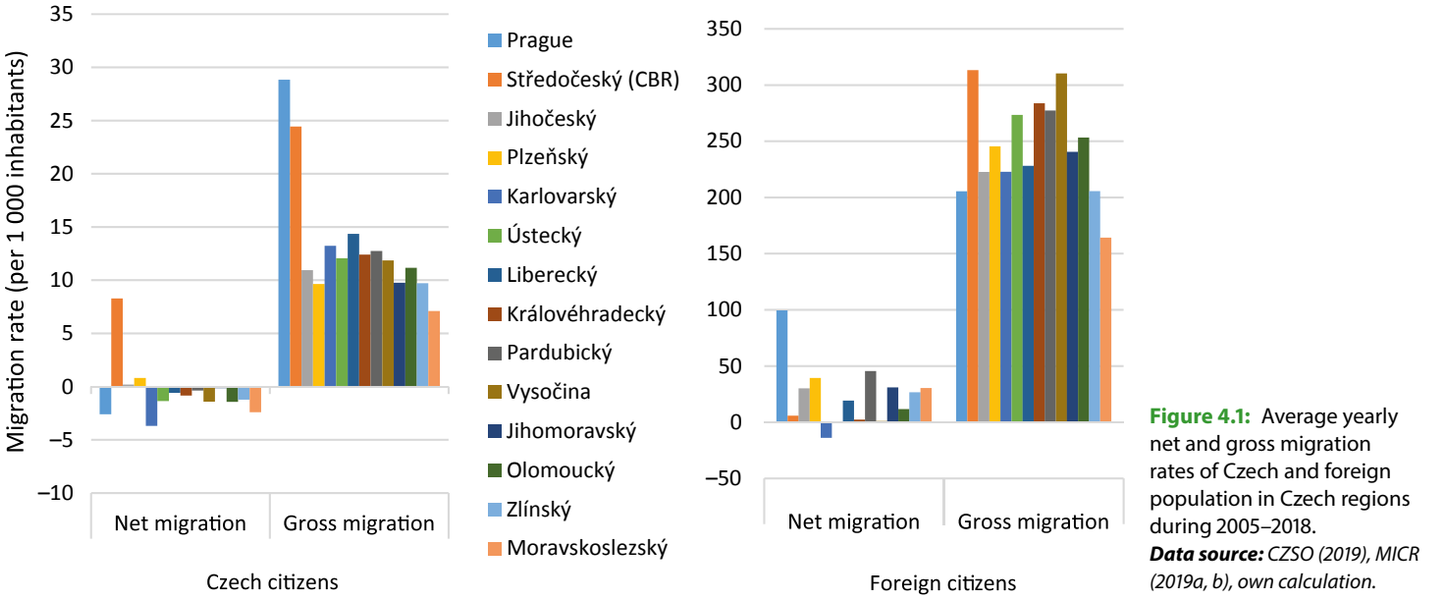

Figure 4.1: Average yearly net and gross migration rates of Czech and foreign population in Czech regions during 2005–2018.
Data source: *CZSO (2019), MICR (2019a, b), own calculation.*

Contrary to the research on immigrant spatial distribution, the study of their residential mobility in Czechia has received only limited attention so far (Přidalová, Ouředníček, 2017). Internal migration of foreign population in Czechia has been researched in relation to settlement size and age structure of migrants (Čermák, Janská, 2011), indicating that foreigners tend to undergo up-scale migration (towards urban areas) and that they are more likely to move when aged 20–24. This demonstrates that the internal migration of foreigners is different from that of the Czechs, who tend to partake in down-scale migration (toward suburbs) and mostly relocate when aged 25–29. Determinants of immigrants' internal migration were studied by Janská and Bernard (2015; 2018) who observed a preference for urban-bound migration in Ukrainians and Vietnamese in Czechia. They also concluded that internal migration of Ukrainians leads to their de-concentration at the neighbourhood level while the concentration of co-ethnics remains constant for Vietnamese after internal migration. A recent analysis by Křížková and Ouředníček (2020) suggests a partial reversal in the trend of immigrant participation in urbanisation processes with a (re-)urbanisation of some Czechs and development of suburbanisation in some immigrant groups. Despite the above studies also having looked at determinants of immigrant internal migration, they have mostly focused on the role of co-ethnic concentrations (Janská, Bernard, 2015; 2018) and/or on factors contributing to immigrant suburbanisation, leaving aside other urbanisation processes (Křížková, Ouředníček, 2020).

Nevertheless, a detailed understanding of immigrants' residential mobility in Central Bohemia, being their main concentration area in Czechia, is still lacking, despite the immigrant net migration in Prague and gross migration in the Central Bohemian Region being among the highest in the country (Figure 4.1). This chapter focuses on the development and spatial patterns of immigrant migration and residential mobility in Central Bohemia. Determinants of immigrant residential mobility might differ when using migration register data or stock migration data for analysis, since the latter type of data is more detailed (see Data and methods).

The study tests three hypotheses on immigrant spatial behaviour within the Central Bohemian Region. Various international studies suggest that people in their 20s are more prone to relocating, than others (Andersson, 2012). We can therefore hypothesise, that groups with a higher proportion of younger people will be more likely to change place of residence, than groups where the proportion of young people is lower (H1). Drbohlav and Dzúrová (2007) note that the presence of compatriots is varies in importance for different groups of people. For instance, Russian respondents of their Prague-and-surroundings-based survey missed their kin, while transnationalism was typical for Ukrainians. Dissimilarity in links between the presence of co-ethnics and residential mobility can thus be expected for different immigrant groups (H2). As the transition towards home ownership is associated with more time spent in the destination country and more secure migrant status (Vono-de-Vilhena, Bayona-Carrasco, 2012; Janská, Bernard, 2018), it may be assumed that immigrants' housing is likely to be less stable shortly after arrival in the destination country, motivating them to relocate. We therefore expect to find a correlation between persons living in unstable housing conditions, characterised by buildings that are not intended for long-term living (H3), and the probability of relocation.

4.2. DATA AND METHODS

This chapter employs two main sources of data on migration and residential mobility. Firstly, for the period between 2005 and 2018, we rely on data from migration registers, made available for research by the Czech Statistical Office. It contains all residential relocations registered with Czech authorities throughout the mentioned years. This set of data allows us to establish the differences between migration intensity of Czech and foreign citizens and provides a longitudinal perspective on its development. Migration rates are plotted for the groups of Czech and foreign citizens throughout the period. Furthermore, this data is used to visualise the spatial patterns of immigrants' international and internal migration in the Central Bohemia in the more recent period of 2012–2018. In the Central Bohemian Region, this set of data is a record of the citizens' changing residence from one municipality to another. In Prague, it demonstrates the relocation of citizens between smaller basic settlement units. The figures presented in this chapter only consider migration across the borders of municipalities and various city parts of Prague, making greater comparability between the migration rates in the two types of areas possible. However, in order to explain the function of migration within the parts of Prague, the residential reolocations between basic settlement units, belonging to the same part of the city, were calculated. Results of these analyses are stated in text, however are not plotted on the graphs. The graphs contained in this chapter allow us to compare the zones of Prague, with only basic settlement units listed by Ouředníček et al. (2012) and Ouředníček and Kopecká (2014) (i.e. those with 50 or more inhabitants or with new housing construction) considered. Due to missing sets of data from that period regarding the numbers of Czech and foreign citizens in various zones of Prague, the data for 2015 was used as a denominator for the calculation. Numbers of Czech and foreign citizens as of 2006 and 2018 were used as a denominator in the calculation for other areal units.

Our second data set was provided by the 'Alien Police' of the Czech Republic and contains geocoded data on all immigrants registered to reside in the country as of 1st January 2013 and 2018, the earliest and the most recent points available in given time period. Tracking the changes in residence between the two given dates enables us to uncover the micro-level determinants of residential mobility, an undertaking that would not be possible using migration registers, as the latter are only released to administrative units. The merit of this approach lies in the fact that it allows for the understanding of certain micro-level determinants of immigrant residential mobility that would otherwise be susceptible to greater ecological fallacy. Despite known differences between registered and usual address of people's residence (Špačková, Ouředníček, 2012; Baštecká, Kurkin, 2018), the data should be more reliable for the foreign population (from third countries in particular) than for the Czech population, as the former are formally obliged to declare their relocation, and whose place of residence is randomly verified by the police.

As Central Bohemia covers Prague and its largely defined metropolitan area, internal migration within the region takes place over predominantly short distances and is therefore unlikely to disrupt people's daily activities, compared to long-distance migration[14], thus qualifying as residential mobility. It has to be stressed, however, that only registered changes of residence within the Central Bohemia were considered, leaving out the possible short-distance moves across the external border of the Central Bohemian Region as well as the relocations not registered with the authorities.

To uncover the determinants of immigrant residential mobility, we ran a series of binary logistic regression analyses, where the dependent variable was whether the person changed residence in the time period between the 1st of January 2013 and the 1st of January 2018 (1 = mover, 0 = stayer). These analyses are conducted for all foreign citizens, and subsequently for three major subgroups – Ukrainians, Russians and Vietnamese – in order to determine the differences in residential mobility between the mentioned groups. We restrict the regressions to persons aged 15 and older, as inclusion of children under 15 years, who tend to change residence together with their parents, might result in biases. The propensities of residential mobility are related to a) individual characteristics of the movers and b) features of their areas of residence in 2013. We test the relationship of propensity to move and the following independent variables: (i) Individual characteristics: gender, residence permit type, length of stay in Czechia, age group, and citizenship. Length of stay is calculated as the difference between the actual year of residence and the initial year of validity of the person's residence permit valid in January 2013. Neighbourhood level characteristics used are (ii) residential type, house size, and share of foreigners and co-ethnics in the place of residence.[15] Each address was assigned the type of residential areas for larger administrative units (cores of

14 It should be noted that residential mobility, often motivated by changes in family, can also alter people's daily activities. For instance, families may move to a larger apartment following a birth of a child, which also implies a change in the parents' daily activities and places visited. However, relocating over a short distance allows to maintain the same workplace and places of some other activities (e.g. shopping) as before relocation rather than in the case of long-distance migration.

15 These variables relate to the place of residence on the 1st of January, 2013. The reason for not considering the characteristics of place of residence in 2018 is twofold. Firstly, as argued above, the actual destination of residential mobility may differ from that of the preferred place of residence. Secondly, the residential type categories and the size of house prior to and after moving, were highly correlated.

Table 4.1: Frequency of independent variable categories used in logistic regression analyses.

		All foreigners		Ukrainians		Russians		Vietnamese	
		N	%	N	%	N	%	N	%
Gender	**Male**	71 031	55.5	16 171	50.9	4 769	43.5	4 412	54.1
	Female	56 845	44.5	15 576	49.1	6 187	56.5	3 736	45.9
Residence permit type	**Permanent**	67 667	52.9	15 439	48.6	5 135	46.9	2 397	29.4
	Long-term	60 209	47.1	16 308	51.4	5 821	53.1	5 751	70.6
Length of stay in Czechia	**0–2 years**	31 778	24.9	8 379	26.4	2 986	27.3	569	7.0
	3–5 years	47 677	37.3	15 435	48.6	4 612	42.1	2 431	29.8
	6–9 years	32 791	25.6	6 407	20.2	2 076	18.9	3 090	37.9
	10 years and longer	15 630	12.2	1 526	4.8	1 282	11.7	2 058	25.3
Citizenship groups	**EU**	51 582	40.3						
	Third country	76 294	59.7						
Selected country citizenship	**Ukraine**	35 711	27.9						
	Russia	27 986	21.9						
	Slovakia	11 982	9.4						
	Vietnam	8 772	6.9						
	Other	43 425	34.0						
Age group	**15–24**	11 611	9.1	2 649	8.3	1 992	18.2	1 155	14.2
	25–34	38 647	30.2	9 290	29.3	2 101	19.2	2 027	24.9
	35–44	37 156	29.1	10 408	32.8	2 363	21.6	2 347	28.8
	45–54	24 513	19.2	6 869	21.6	2 460	22.5	1 884	23.1
	55 and older	15 949	12.5	2 531	8.0	2 040	18.6	735	9.0
House size	**0 apartments**	7 515	5.9	1 371	4.3	270	2.5	202	2.5
	1 apartment	26 918	21.1	6 600	20.8	2 630	24.0	2 022	24.8
	2–10 apartments	23 563	18.4	6 598	20.8	1 490	13.6	1 664	20.4
	11–20 apartments	27 032	21.1	6 967	21.9	2 422	22.1	1 420	17.4
	21–40 apartments	27 794	21.7	7 447	23.5	2 672	24.4	2 206	27.1
	41+ apartments	15 054	11.8	2 764	8.7	1 472	13.4	634	7.8
Residential type	**Prague city centre**	4 469	3.6	474	1.5	390	3.6	130	1.6
	Prague inner city	44 176	35.6	11 652	36.7	4 095	37.4	1 851	22.7
	Prague outer city	32 167	25.9	9 002	28.4	3 483	31.8	3 045	37.4
	Prague periphery	9 500	7.6	2 457	7.7	880	8.0	523	6.4
	Smaller cities	12 217	9.8	2 492	7.9	504	4.6	1 304	16.0
	Suburbs	16 557	13.3	4 331	13.7	1 428	13.0	886	10.9
	Rural areas	5 107	4.1	1 302	4.1	179	1.6	411	5.0
Share of migrants in neighbourhood	**1st to 5th decile**	12 519	9.8	2 926	9.2	656	6.0	538	6.6
	6th and 7th decile	18 359	14.4	5 107	16.1	1 152	10.5	1 050	12.9
	8th decile	18 026	14.1	4 929	15.5	1 290	11.8	1 156	14.2
	9th decile	26 900	21.0	6 660	21.0	2 231	20.4	1 796	22.0
	10th decile	52 072	40.7	12 125	38.2	5 627	51.4	3 608	44.3
Representation of co-ethnics	**LQ ≤ 1**			4 160	13.1	942	8.6	193	2.4
	LQ > 1			27 587	86.9	10014	91.4	7 955	97.6

Data source: *CZSO (2016), MICR (2019c).*

Note: Blank cells refer to the variables used only in some of the regression analyses (citizenship groups and selected citizenships in the analysis of all foreigners and representation of co-ethnics in the analyses of the three individual foreigner groups). Buildings without apartments are not intended for long-term living and include two types of addresses: a) dormitories, hostels and hotels, and b) newly built houses not yet approved for housing.

suburbanisation, suburbs, and other municipalities, and four concentric zones of Prague; Ouředníček et al., 2012; Ouředníček, Kopecká, 2014; Ouředníček, Nemeškal, 2022 in this book). In a different vein, representation of co-ethnics is calculated as their location quotient (LQ) in the nearest 400 neighbours based on 100m grid squares (for further discussion of this method, see Šimon, Křížková, Klsák, 2022 in this book). The combination of these three sets of independent variables allows us to establish the extent to which the different factors of residential mobility are relevant for the different immigrant groups. The basic breakdown of the categories relevant to the individual variables is presented in Table 4.1.

4.3 THE DEVELOPMENT OF FOREIGN CITIZENS' MIGRATION IN CENTRAL BOHEMIA

Longitudinal data based on continuous migration registers, confirms the significance of immigrants regarding Central Bohemia's population geography; their mean absolute net migration was positive in both Prague and the Central Bohemian Region (CBR) between 2005 and 2018 (around 215 000 and 5 000, respectively) as opposed to the net migration of Czech citizens, which was negative at that time (–41 000) in Prague and positive (142 000) in CBR. Foreigners' migration has clearly been much more dynamic than that of the domestic population, particularly in the Central Bohemian Region, where the extreme numbers are a result of still, rather moderate, numbers of registered foreign residents (Figure 4.2; Klsák, Křížková, 2022 in this book). Considering that our data also included international migration and focused on the most attractive region for immigrants, the numbers presented here do not seem extraordinary, as intensity of internal migration alone exceeded 200 per mille for some immigrant groups in Czechia in 2007 (Drbohlav et al., 2010). Furthermore, Figure 4.2 shows a decrease in immigrant migration rates after 2007 and a slow increase in immigrant net migration after 2013. The values of immigrant migration rates are highly dependent on the numbers of foreign residents which increased markedly between 2005 and 2018, particularly in Prague. Therefore, the high values of migration rates in 2007 can partially be explained by the dynamic immigration to a previously low-immigration area.

The data on migration used in Figures 4.2 and 4.3, as registered with the Czech authorities, has several interpretational limits. Firstly, the number of registered moves may differ from the actual number. This can be attributed to a number of reasons; either (i) people may move without registering their relocation, which is likely to be the case particularly in the majority population (Špačková, Ouředníček, 2012), or (ii) they declare a change in residence without actually moving, which was observed amongst some immigrant groups (Čermák, Janská, 2011), or (iii) people reside at different addresses to the ones they have declared, which is more likely to be the case within the majority population than within the immigrant population. In addition, people who leave the country tend not to register their out-migration, as this is not enforced, leading to an underestimation of the number of out-migrants in both the Czech and the immigrant populations. These factors together explain the greater dynamics of in-migration as opposed to out-migration, particularly among foreign citizens (Figure 4.3). Secondly, the data is based on the calculation of registered

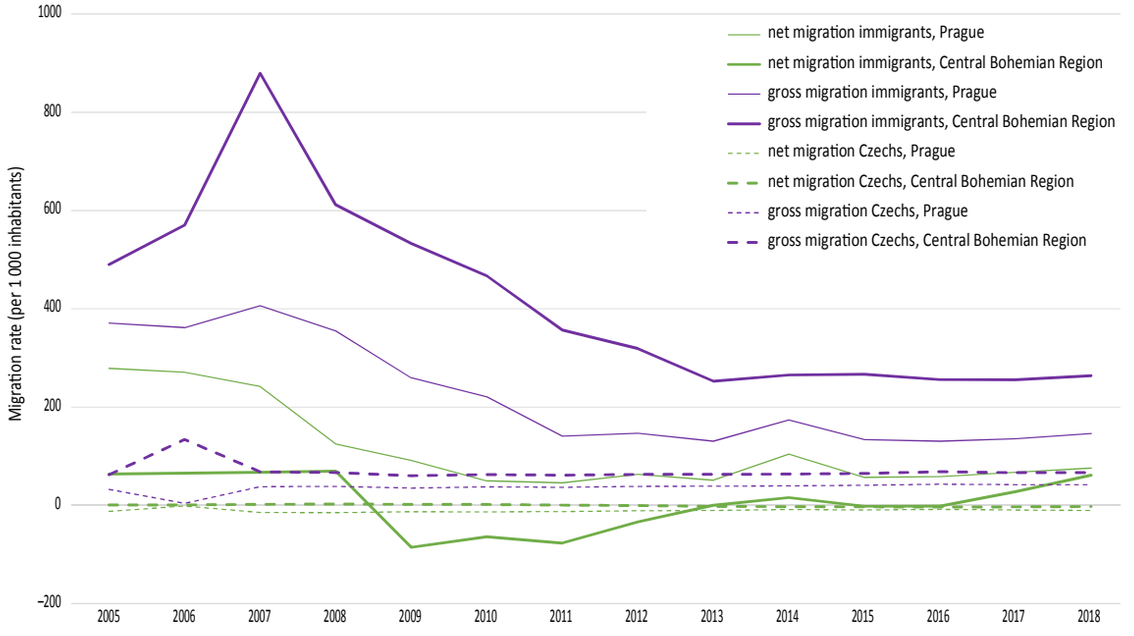

Figure 4.2: Net and gross migration rates of Czech and foreign citizens in Prague and the Central Bohemian Region, 2005–2018.
Data source: *CZSO (2019), MICR (2019a, b), own calculation.*

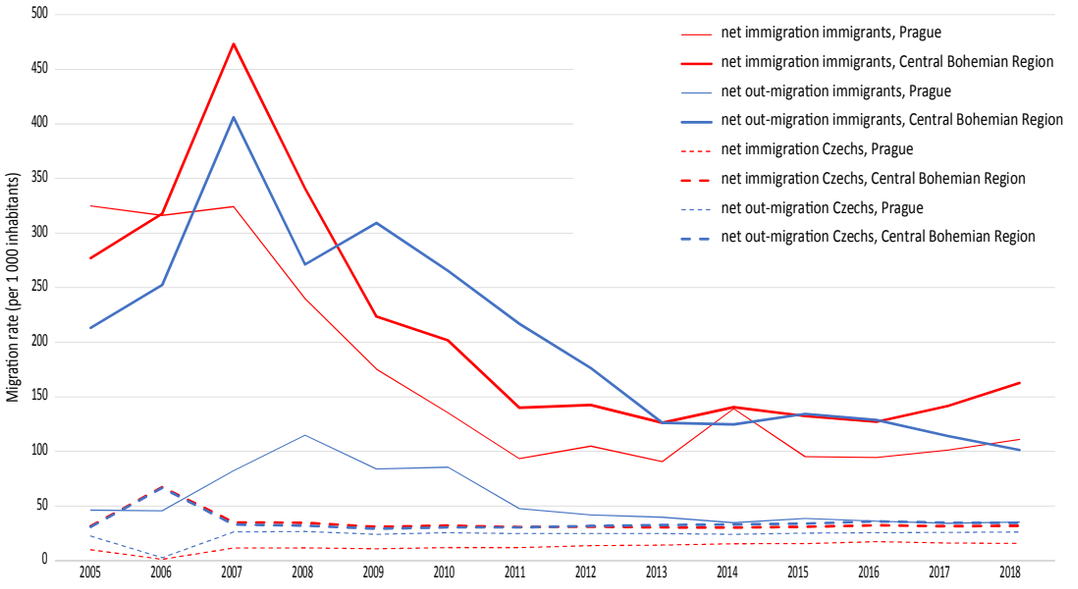

Figure 4.3: In- and out-migration rates of Czech and foreign citizens in Prague and the Central Bohemian Region, (CBR) 2005–2018. ***Data source:*** *CZSO (2019), MICR (2019a, b), own calculation.*

moves, rather than individual persons[16]. Circular migration of international migrants can thus inflate their numbers. The difference between the number of residents and the number of in-migrations might not be the same as the actual change in the number of residents.

4.4 SPATIAL PATTERNS OF IMMIGRANTS' MIGRATION IN THE CENTRAL BOHEMIAN REGION

The net migration rates among immigrants are higher in municipalities of the Central Bohemian Region, compared to that of Prague (Figure 4.4). This can likely be attributed to the overall low number of permanent foreign residents, used as the denominator in calculating net migration rate, in the municipalities beyond Prague. In absolute terms, however, the net migration is much higher in the capital city than in its hinterland. A spatial pattern can be traced when it comes to the foreigners' net migration rate in Central Bohemia. Highest values of net migration were found in the closest proximity to Prague as well as in more distant areas. By contrast, negative net migration rates were found in municipalities across the Central Bohemian Region.

The evidence suggests that the impact on most municipalities of the CBR of foreign citizens' net migration is of a similar extent to the impact on the city districts of Prague, when migrations within the city parts are not considered (Figure 4.5). In these circumstances, the greatest net migration rate within Prague can be found in its inner city. When considering the intra-city moves, the net migration of the immigrant population is clearly higher in Prague when compared to the CBR. Furthermore, when migrations within city parts are included in the analysis, the greatest net migration is observable on the periphery. The differentiating impact on Prague's zones of foreign citizens' migration is largely due to its scale. Additionally, this difference may be attributed to the location of (some) guest-worker dormitories as well as to an emergence of new housing projects on the urban periphery, where new residents, including immigrants, relocated to but had little time for any further residential mobility. Outside of Prague, suburbs and rural municipalities with population gain seem to be equally attractive to international migrants. In addition, the size of municipalities, within these types, appears not to play a vital role (Figure 4.5).

Spatial differences in foreign citizens' gross migration rate are moderate in Central Bohemia (Figure 4.6). Due to the map's omission of within-city-part migration, the city parts of Prague exhibit an average gross migration. If within-city-part migration is to be considered, the largest gross migration can be observed in the inner city. Contrary to this, when within-city-part migration is omitted, largest gross migration appears to be on the city's periphery (Figure 4.7). In the Central Bohemian Region, gross migration of foreign population is greatest in areas with abundant job opportunities. In particular, Mladá Boleslav in the North and Kolín in the East, host large automotive companies (see also

16 In 2018, 254 thousand foreign citizens resided in the Central Bohemian Region and Prague, 45 per cent of them holding a long-term resident permit. Although this type of resident permit is issued to people who intend to stay in the country longer than one year, the limited validity of their resident status makes long-term foreign residents more prone to move between their country of origin and Czechia and thus to change residence in Czechia more frequently than it makes holders of permanent resident permit.

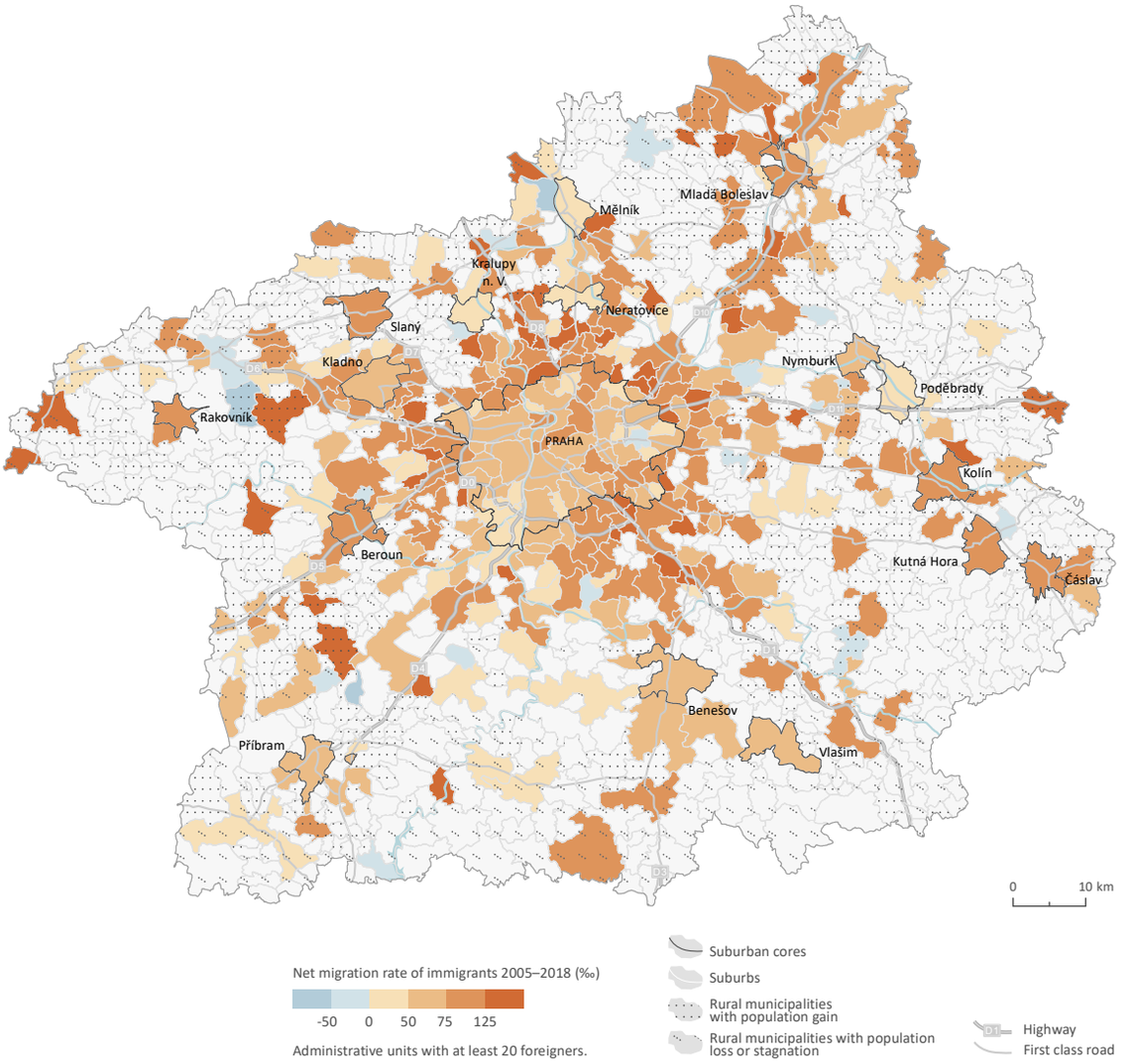

Figure 4.4: Net migration rate of immigrants in city parts of Prague and municipalities of the Central Bohemian Region, average 2005–2018.
Data source: *CZSO (2019), MICR (2019c), own calculation.*
Note: Net migration is calculated as the difference between in-migrants and out-migrants related to the number of registered foreign residents in municipalities and city parts of Prague.

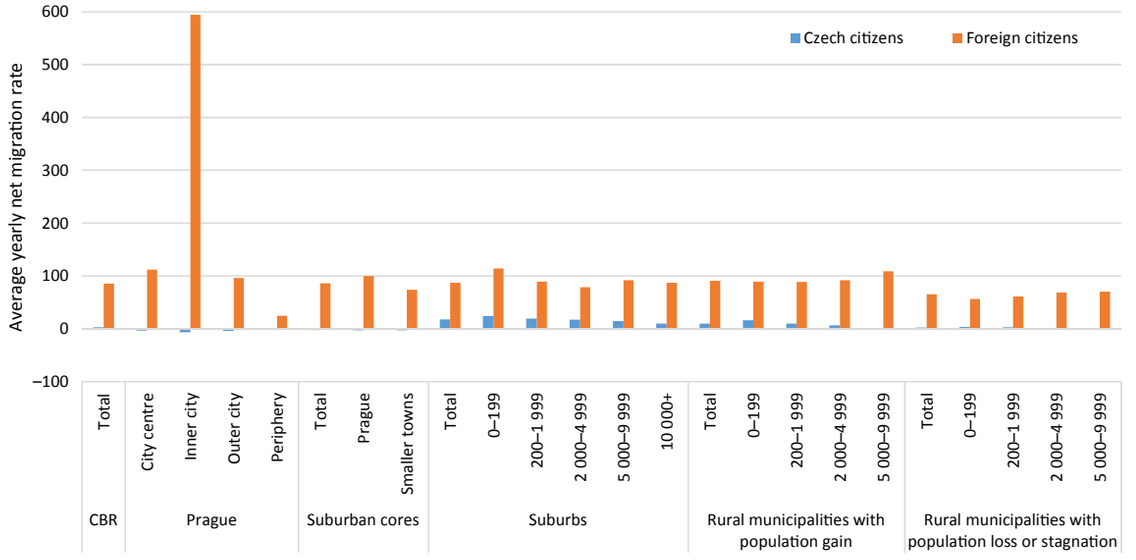

Figure 4.5: Average yearly net migration rates for Czech and foreign population in zones of Prague and types of municipalities of the Central Bohemian Region (CBR), 2005–2018.
Data source: *CZSO (2019), MICR (2019c), own calculation.*

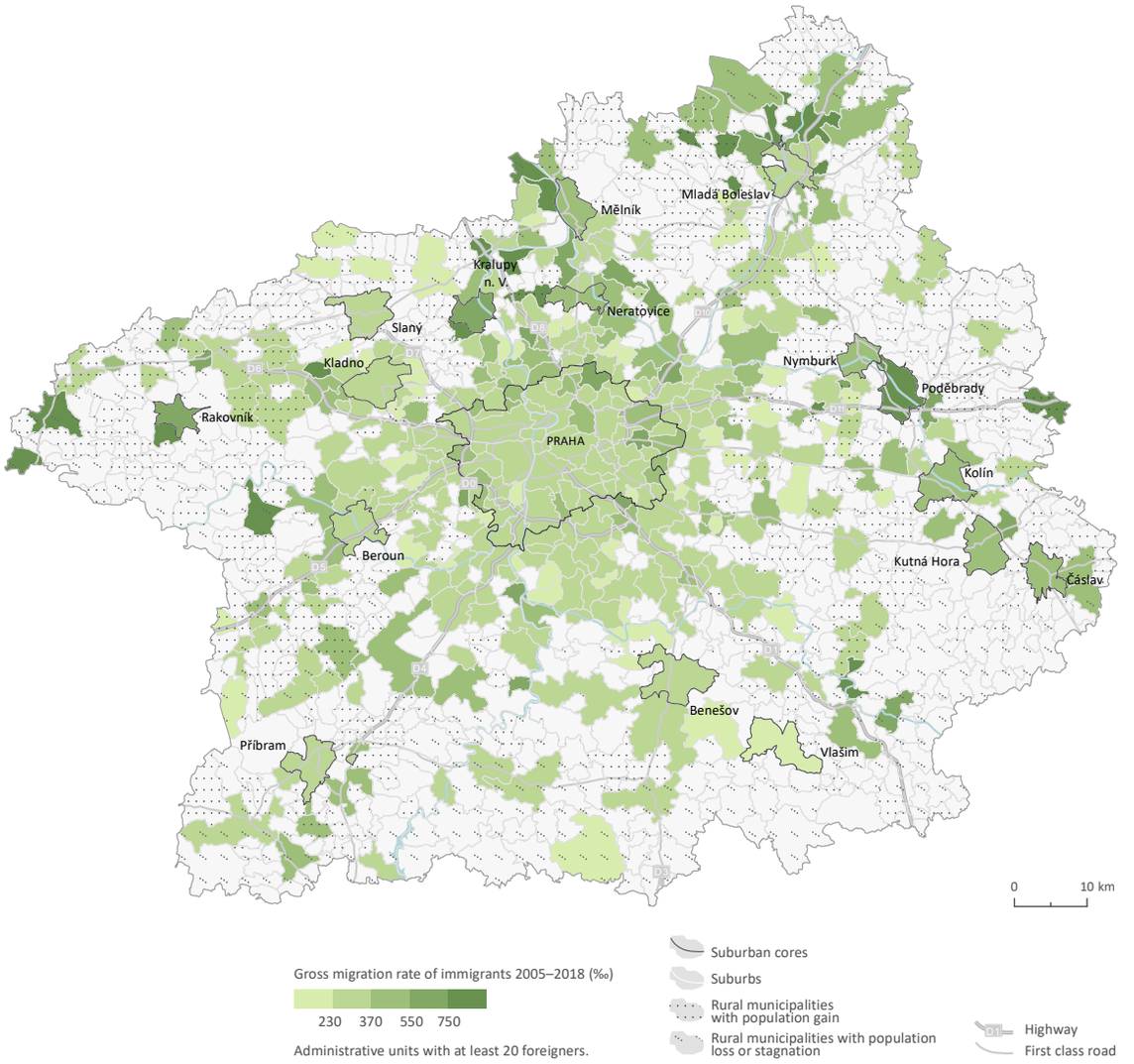

Figure 4.6: Gross migration rate of immigrants in city parts of Prague and municipalities of the Central Bohemian Region, average 2005–2018. ***Data source:*** *CZSO (2019), MICR (2019c), own calculation.* **Note:** Gross migration is calculated as the sum of in-migrants and out-migrants related to the number of registered foreign residents in municipalities and city parts of Prague.

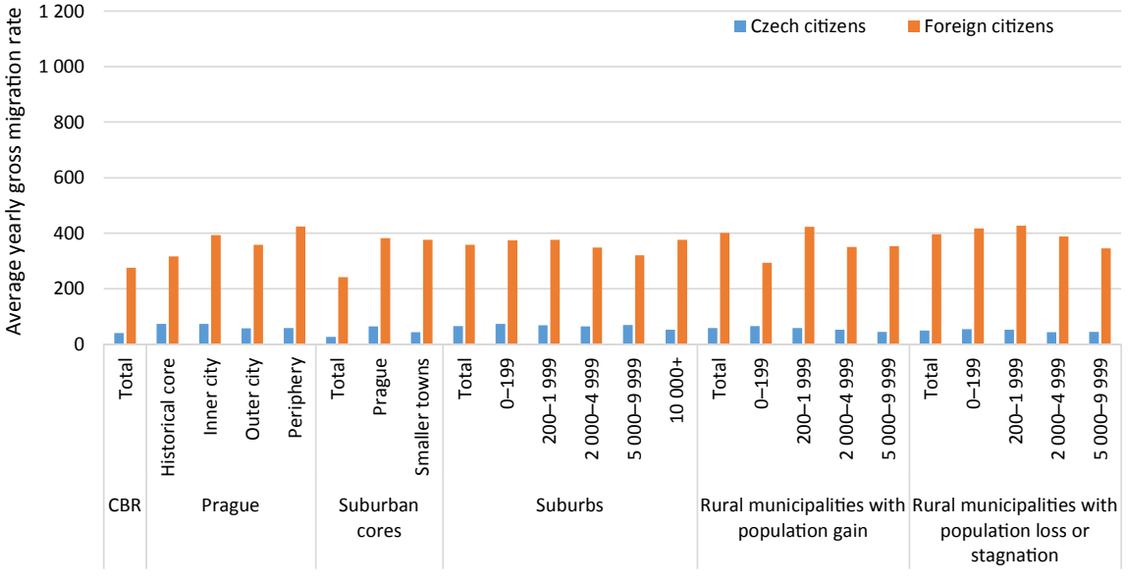

Figure 4.7: Average yearly gross migration rates for Czech and foreign population in Prague and types of municipalities of the Central Bohemian Region, 2005–2018. ***Data source:*** *CZSO (2019), MICR (2019c), own calculation.*

Klsák, Křížková, 2019; Klsák, Křížková, 2022 in this book), while retail and logistics are centered in transport corridors around Prague. Similarly to the net migration rates, there are only limited differences in gross migration of foreign citizens between municipalities of different sizes. Moreover, different types of municipalities in the CBR exhibit comparable rates of gross migration.

The gross migration rate being around seven times greater in the Central Bohemian Region and nine times greater in Prague, demonstrates that foreign citizens are more geographically mobile than the native population of Central Bohemia (Figure 4.7). This is in line with the findings of more established immigrant destinations, where immigrants are more likely to move within the country when compared to the native population – in Germany, this is twice the likelihood and in Spain this is three or four times the amount (Reher, Silvestre, 2009; Vidal, Windzio, 2012). However, these figures are not directly comparable for two reasons. Firstly, the cited studies focus on the countries as a whole, whereas our analysis is only concerned with the metropolitan region. Secondly, the rates of migration are affected by the country's stage in the migration cycle. In comparison to more established immigrant destinations, new immigrant destinations are likely to have a greater proportion of incoming younger immigrants making residential choices. Within the CBR, Russian citizens had the greatest gross internal migration rate, ahead of Ukrainians and Vietnamese (Figure 4.8). The same pattern applies to the population's rates of gross international migration, though the numbers are up to twice as high as for internal migration, indicating a persistent trend of in-migration from abroad.

We next turn our attention to the spatial patterns of the three selected immigrant groups' internal and international net migration rates in the period between 2012 and 2018 (Figure 4.8). The three groups arrive in Central Bohemia through gateways which serve as a departure point for subsequent internal migration. For Ukrainians and Russians, such gateways include Mladá Boleslav and Poděbrady. The city of Mladá Boleslav features an automotive plant, while in Poděbrady, there is a spa and an education centre for future Czech language students. For Vietnamese, an important entry-point is Kolín with its automotive industry.

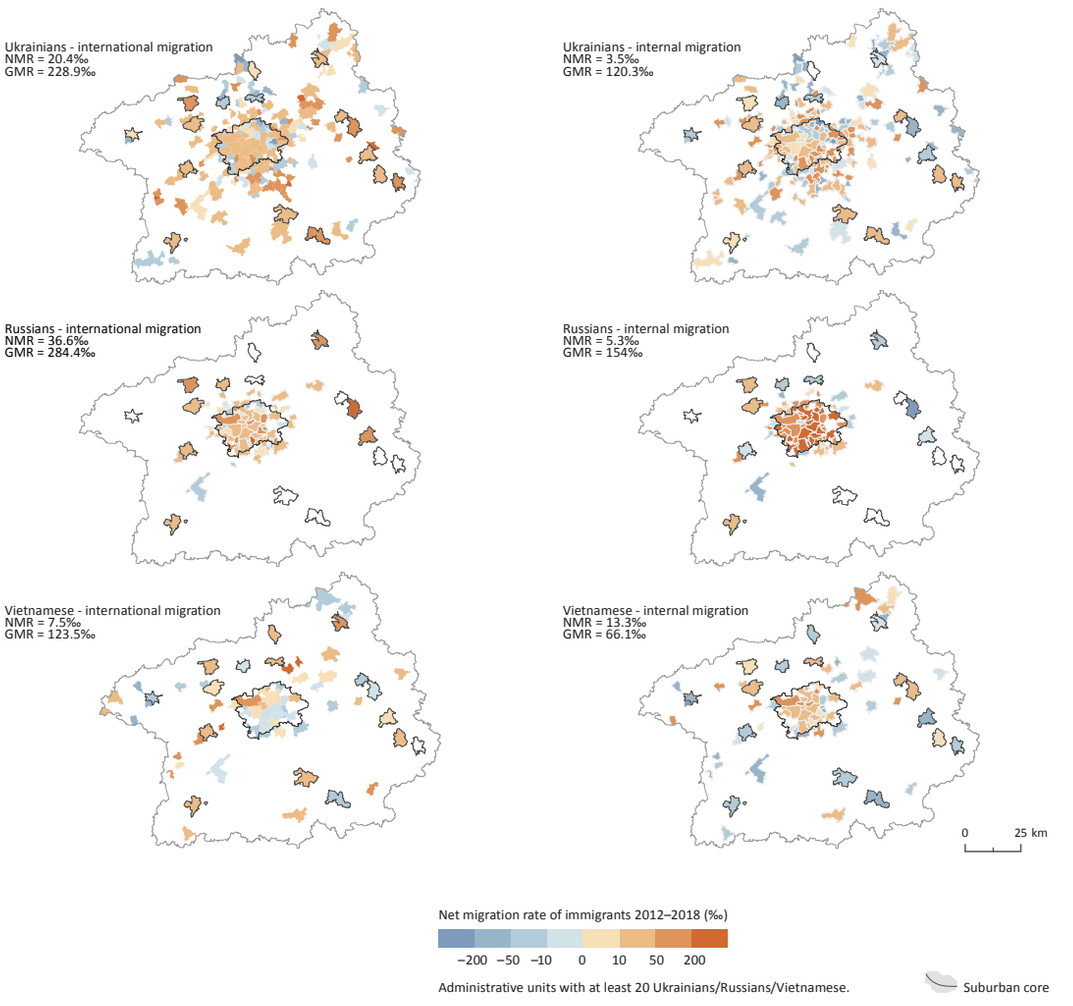

Figure 4.8: Net internal and international migration rates of Ukrainians, Russians and Vietnamese in Prague and the Central Bohemian Region, average 2012–2018. ***Data source:*** *CZSO (2019), MICR (2019c), own calculation.* **Note:** Net migration rate (NMR) and gross migration rate (GMR) are given for Central Bohemia as a whole, excluding migration within administrative borders of Prague.

Beyond these important entry-points, municipalities like Kladno and Slaný attract both international and internal migration, likely due to the combination of affordable housing and a reasonable commuting distance to Prague. In terms of residential location, there are important differences between the three groups. Whereas Ukrainians move extensively across the CBR, Russian and Vietnamese citizens are more spatially selective when it comes to both internal and international migration. Russian immigrants have a clear preference for Prague and certain suburbs. For Russians, Prague's appeal is documented through a very high net internal migration of Russian citizens in a large proportion of Prague's city parts. In contrast, Vietnamese immigrants also move to more peripheral parts of the CBR.

4.5 DETERMINANTS OF IMMIGRANTS' RESIDENTIAL MOBILITY IN CENTRAL BOHEMIA

Between 2012 and 2018, over 23 percent of the 644 thousand internal migration moves across municipality borders within Central Bohemia (including moves within Prague), were made by immigrants. This figure highly surpasses the proportion in the population of Central Bohemia (10 percent in 2018), revealing the key role immigrants play in housing change within the region. While the initial settlement choices of immigrants' international and internal migration in Czechia have been explored (Novotný, Janská, Čermáková, 2007; Čermák, Janská, 2011), little is known about the determinants of their subsequent residential mobility. To address this research gap, we model their residential mobility using binomial logistic regression. In this analysis, those who changed residence within Central Bohemia between 2013 and 2018 are referred to as 'movers' (55 000 or 37.7 percent of all immigrants aged 15 and older in 2013 who also resided in Central Bohemia in 2018) and those who have not as 'stayers' (90 000 or 62.3 percent). Those who were not present in the Central Bohemian region in both years – particularly in-movers after 2013 and out-movers before 2018 – are not considered[17]. The analysis is based on a comparison of stock data from the 1st January 2013 and 2018.

In order to understand structural and contextual factors of residential mobility of immigrant population in Central Bohemia, we calculated a logistic regression analysis (Table 4.2). The model explains 20 percent of the variance in foreign citizens' residential mobility[18]. Based on the tested variables, the likelihood of moving between 2013 and 2018 for third-country citizens, was more than three times greater than for EU-citizens. However, this was because different conditions apply to the registration of EU-citizens and third-country citizens (see Data and methods). Looking at citizenships of individual countries, the Vietnamese are most residentially mobile of the selected groups, followed by the Ukrainians and Russians. Moreover, all of them were more likely to be movers than members of the heterogeneous "Other" group. Conversely, Slovaks proved to be less likely to change residence within Central Bohemia. The likelihood of changing residence within Central Bohemia was greater for persons with long-term visas, as opposed to those holding permanent residence permits as well as for younger and recent immigrants, especially those aged 15–34 and residing in the country for less than two years at the time of moving. Citizens living in any type of housing in Prague, or other suburban cores, were twice as likely to move in comparison to those living in other (rural) municipalities. The role of house size in correlation with the residential mobility variable, confirmed that unstable housing conditions relate to a greater propensity to change residence within the region, as buildings without apartments are most likely to represent guest-worker, student and tourist accommodation. However, in 2013, there was no clearly observable pattern in the propensity to move between the other house sizes. In addition, the likelihood for immigrant residential mobility was greater for those living in areas with fewer immigrants in the vicinity of their residences, than for those living in areas belonging to the decile of neighbourhoods with the most concentrated immigrant population. This may indicate that immigrants prefer to live in areas which are somewhat ethnically heterogeneous. Our subsequent analyses illustrate differences between immigrant groups in regards to this indication.

Spatial patterns of international and internal migration differ depending on the selected immigrant groups and immigrant groups are unequally likely to move within the region. To unpack the possible differences in determinants of residential mobility within Central Bohemia, between the selected immigrant groups, we repeated the regression analysis for three main groups: Ukrainians, Russians and Vietnamese (Table 4.3). Despite the known differences in socio-demographic profile and spatial distribution between these immigrant groups (Hasman, Novotný, 2017; Přidalová, Hasman, 2018), certain determinants of residential mobility apply for all, in a similar manner. For these three groups, residential mobility is more likely for persons with long-term residence permits, as opposed to those hold-

17 There were 18 thousand children with foreign citizenship in Central Bohemia as of 1st January 2013. Population aged 15 and older that is neither further discussed here comprises of i) 68 000 foreign citizens residing in Central Bohemia in 2018 who moved in after 2013 and of ii) 4 000 who resided there in 2013 but moved out before 2018. Furthermore, iii) some 800 cases did not have a valid address in 2013.

18 The proportion of the variance in the dependent variable predictable from the independent variables is expressed by the coefficient of determination (R Square).

ing permits for permanent stays. The length of stay in the country decreases the odds for residential mobility of the majority of groups, except for the Vietnamese, who are most likely to relocate somewhat later, within 3–5 years of the initial year of validity of their residence permits. In addition, the three groups are more likely to move from areas with a lower proportion of immigrants of their population, to areas with greater concentration of immigrants. Furthermore, for Russians, the odds of moving out decrease when living in an area with over-representation of co-ethnics, which isn't

Table 4.2: Binomial logistic regression models of residential mobility in Central Bohemia for immigrants (odds ratios) in 2013–2018.

Indicator		Odds ratio
Nagelkerke R Square		0.197
Gender	Male	1.000
	Female	1.040
Residence permit type	Permanent	1.000
	Long-term	1.842
Length of stay in Czechia	0–2 years	2.279
	3–5 years	1.639
	6–9 years	1.312
	10 years and longer	1.000
Citizenship groups	EU	1.000
	Third country	3.307
Selected country citizenship	Ukraine	1.288
	Russia	1.184
	Slovakia	0.897
	Vietnam	1.562
	Other	1.000
Age group	15–24	2.600
	25–34	2.467
	35–44	1.856
	45–54	1.489
	55 and older	1.000
House size	0 apartments	2.194
	1 apartment	0.960
	2–10 apartments	1.026
	11–20 apartments	1.011
	21–40 apartments	0.987
	41+ apartments	1.000
Residential type	Prague city centre	1.740
	Prague inner city	2.027
	Prague outer city	1.907
	Prague periphery	1.816
	other suburban cores	1.647
	suburbs	1.189
	other municipalities	1.000
Share of migrants in neighbourhood	1st to 5th decile	2.335
	6th and 7th decile	1.601
	8th decile	1.372
	9th decile	1.247
	10th decile	1.000

Table 4.3: Binomial logistic regression models of residential mobility in Central Bohemia for selected immigrant groups (odds ratios) in 2013–2018.

Indicator		Ukrainians	Russians	Vietnamese
Nagelkerke R Square		0.126	0.168	0.160
Gender	Male	1.000	1.000	1.000
	Female	1.014	1.071	0.949
Residence permit type	Permanent	1.000	1.000	1.000
	Long-term	2.191	2.045	2.404
Length of stay in Czechia	0–2 years	2.335	2.580	1.438
	3–5 years	1.916	1.623	1.572
	6–9 years	1.485	1.386	1.385
	10 years and longer	1.000	1.000	1.000
Age group	15–24	2.026	2.717	2.014
	25–34	2.140	2.286	2.156
	35–44	1.686	1.636	1.472
	45–54	1.461	1.384	1.240
	55 and older	1.000	1.000	1.000
House size	0 apartments	1.045	1.788	0.972
	1 apartment	1.129	1.024	1.028
	2–10 apartments	0.974	1.548	1.044
	11–20 apartments	0.952	1.207	1.045
	21–40 apartments	1.000	1.229	0.830
	41+ apartments	1.000	1.000	1.000
Residential type	Prague city centre	2.687	0.776	3.783
	Prague inner city	2.640	0.874	2.670
	Prague outer city	2.495	0.934	2.223
	Prague periphery	1.835	0.748	2.380
	other suburban cores	1.847	0.634	2.085
	suburbs	1.220	0.614	1.562
	other municipalities	1.000	1.000	1.000
Share of migrants in neighbourhood	1st to 5th decile	2.802	2.205	3.949
	6th and 7th decile	1.769	1.497	1.868
	8th decile	1.548	1.364	1.336
	9th decile	1.267	1.514	1.146
	10th decile	1.000	1.000	1.000
Representation of co-ethnics	LQ ≤ 1	1.000	1.000	1.000
	LQ > 1	1.230	0.973	1.022

Note: The difference in size of individual variable categories between the three groups, notably the smallest group of Vietnamese, limits the explanatory power of some results of the binomial logistic regression model.

the case for Ukrainians and Vietnamese. This outcome is in line with previous research based on various data sources (Janská, Bernard, 2015; 2018; Přidalová, Klsák, 2017) and suggests that whereas Ukrainians and Vietnamese are more inclined towards deconcentration, Russians tend to spatially concentrate. This preliminary statement, however, requires confirmation by further thorough research.

Moreover, notable differences can be observed within the three immigrant groups' residential mobility. For Ukrainians and Russians, the odds of moving are higher for females, meanwhile the opposite is the case for Vietnamese. Despite the difference not being particularly high, in comparison with other age groups, Ukrainians and Vietnamese are most likely to relocate when aged 25–34 and Russians when aged 15–24, which suggests a student component of the population. The observed likelihood of residential mobility depended on the type of residential area occupied prior to moving, with Ukrainians being much more prone to move out from all types of housing located in Prague, from other suburban cores and to a lesser extent also from suburbs, when compared to moving out from rural areas. Vietnamese were most likely to relocate from urban and suburban areas and are less likely to move from rural parts of the CBR. Russians, on the other hand, were much more likely to relocate from rural areas in the CBR than from suburban cores and suburbs. Although the research would benefit from more evidence, this outcome may be perceived as a result of the overall socio-economic differences between the different immigrant groups, with Russians generally holding the most favourable position of the three analysed groups. This would explain why Russians are more likely to relocate from rural areas. The probability of Ukrainians and Vietnamese to move out of rural areas, which have more affordable housing, is likely to be lower because of their limited chances of finding suitable housing in Prague's and its suburbs' restrictive housing market.

House size also contributed to variation, with Ukrainians being most prone to relocate from single-apartment-buildings, rather than from the reference category of houses with over 40 apartments. Russians, on the other hand, were most likely to relocate from houses with zero and between 2 and 10 apartments. Again, this might point to the difference in the two groups' socio-economic position, demonstrating that Russians, compared to Ukrainians, might have greater resources to move out from non-residential buildings, intended for temporary accommodation, to more stable conditions. For the Vietnamese population, there was no clear correlation observable between the likelihood of moving and the house size. These results, however, paint only a partial picture, as some categories had too small of a sample to make strong conclusions.

Overall, the residential mobility of the three immigrant groups can be attributed to the characteristics of the respective group. Compared to the other groups, the residential mobility of the Ukrainian population is influenced by the overall more circular character of their stay and the less stable housing conditions in Czechia. Russians showed to contain a non-negligible student segment (see also Ignatyeva, 2020) and were more likely to stay in urban and suburban areas than the other two mentioned groups. Due to the extent of cultural differences experienced more greatly than by the two other immigrant populations, the Vietnamese population might have been more likely to change residence somewhat later, in comparison to the other two groups, in order to acclimate to the Czech society. Nevertheless, the insufficient data in some independent variable categories only allowed us to draw preliminary conclusions that must be verified through further analyses. Finally, our analyses explained some 13–17 percent of the three groups' determinants of residential mobility within Central Bohemia (Table 4.3). This points to the great importance of other factors that could not be tested here, such as the finer differences between parts of the housing market, the majority population's residential behaviour and immigrant individuals' and households' preferences for different areas within the CBR related to, amongst other things, their lifestyle and social networks. This also applies to socio-economic status, typically measured by income or education – aspects not available in our data set.

4.6 CONCLUSIONS AND DISCUSSION

This chapter aimed to generate an overview and provide basic explanations for different types of migration to and within Prague and the Central Bohemian Region between 2005 and 2018. Based on the migration register and stock data, trends in development of foreign citizens' migration and residential mobility, using cartographic analysis and a set of binomial logistic regressions, were demonstrated. Despite being an increasingly important part of Prague's metropolitan area, the Central Bohemian Region continued playing a smaller role in the geographical breakdown of immigrant populations, when compared to Prague. Furthermore, the spatial patterns of migration and its determinants differed for subgroups of immigrant population, registered to reside in Central Bohemia.

Going back to the research hypotheses, it was documented that to a considerable extent, the rates of foreigner migration relates to age. Those in their 20s had an increased propensity to change residence within the region – this is in line with current knowledge in the field (Finney, Catney, 2012). Our second hypothesis – assuming a different role of co-ethnic presence for moving – was supported by the data for all three of the tested groups. Ukrainians, Russians and Vietnamese alike were prone to move from least eth-

nically heterogeneous areas. Furthermore, Ukrainians and Vietnamese were also prone to move from areas where their co-ethnics were over-represented. This would suggest that even though generally, everyone is in search of a moderately diverse residential environment where they would not stand out, only some may prefer to stay close to their co-ethnics. This result corroborates earlier findings of Drbohlav and Dzúrová (2007). Our third hypothesis seems to be acceptable, as immigrants indeed tended to relocate most from buildings without apartments, representing temporary worker, student and tourist accommodation, as well as newly built residential properties. However, as the proportion of immigrants living in unstable accommodation was very low, this statement should be taken as indicative and subject to further research.

Despite presenting important findings, this paper has its own limitations. Firstly, it was noted that the reliability of our data may be questionable. On the other hand, due to the fact that immigrants, especially those from outside of the EU, are legally obliged to register their residence and any changes thereof, the data is likely to be more reliable compared to the data for the majority population. Secondly, most of the data used in our analyses related to administrative units, which may be susceptible to Modifiable Area Unit Problem (Šimon, Křížková, Klsák, 2022 in this book). Although the central information on residential mobility – the address – was geocoded in our case, many other variables are not yet detailed enough to avoid the risk of ecological fallacy. Thirdly, this quantitative analysis could not reach beyond the content of the data, meaning that some important aspects of migration and residential mobility determinants were left under-researched.

The results of our analyses have several implications for the socio-spatial differentiation of Central Bohemia. Firstly, foreign citizens represent an important component in migration within the region, contributing to the increase of their proportion in total population of that location (Klsák, Křížková, 2022 in this book). Secondly, along Prague being the main immigrant gateway to Czechia (Janská, Čermák, Wright, 2014), the Central Bohemian Region also provides some secondary gateways through which foreigners arrive in the region. These regional gateways are likely to show greater dynamics of immigration than other parts of Central Bohemia and are likely to become places of new immigrant concentrations. As such, they would be interesting cases for future examination of socio-spatial differentiation beyond the capital city. Thirdly, immigrants were shown to prefer living in moderately ethnically heterogeneous areas rather than creating space-based ethnic communities. This suggests that ethnic segregation is not likely to increase in Central Bohemia in the near future, a conclusion which could also be drawn from a multi-scalar segregation measurement study (Šimon, Křížková, 2022 in this book).

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