Divided by Crisis: Spatial Analysis of the First Round of the Czech Presidential Election 2023 in the Context of the War in Ukraine[1]

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Abstract

This article presents the results of a geographical analysis of the first round of the presidential election 2023 in Czechia, focusing on the two most successful candidates: Petr Pavel and Andrej Babiš. The results are analysed in the context of cleavage theory, namely in the context of Ukrainian refugees, whom Czechia has accepted the most in Europe. After the worst phase of the COVID-19 pandemic subsided, the country entered another crisis that fuelled populist sentiment. Using geographically weighted regression and the OLS model, the analysis shows a significant spatial non-stationarity of this variable. In accordance with previous research, significantly diverse patterns and an unstable direction of action of this variable in relation to ideologically heterogeneous candidates were also revealed. In addition, the overlap of electoral support for candidates with the electoral results of supporting political parties was also confirmed, as well as the influence of traditional socioeconomic factors. On the contrary, except for the entrepreneur variable, these are rather spatially stationary, and their influence does not change significantly across the country.

Keywords: cleavages; Czechia; electoral geography; migration; presidential election; Ukrainian refugees

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1. Introduction

In the last few years, the world has faced a number of crises that are shaking not only international relations but are also undoubtedly affecting electoral results. Czechia is no exception to this, even though it can be said that some of them have affected it more than other European countries. While the country weathered the first wave of the COVID-19 pandemic in the spring of 2020 without a significant problem, the situation changed radically in the following months. The number of infected and dead began to rise rapidly, and Czechia became one of the most affected countries (ČTK, 2021; Willoughby, 2021). Immediately after the pandemic situation partially calmed down, Russian president Vladimir Putin unleashed war in Europe when he attacked Ukraine in February 2022. At this point, a massive refugee wave set in motion. Czechia became the country that received the largest share of Ukrainian refugees (Dobiašovský, 2022). It is logical that this crisis was discussed not only before the election.

The Czech presidential election in January 2023 was completely unique, giving rise to a significant discussion about crises. This was mainly because in the second round were Petr Pavel, the former chairman of the NATO Military Committee with experience in international crises, and Andrej Babiš, the leader of populist *Action of Dissatisfied Citizens* (ANO), former prime minister from the pandemic era, often criticised for his chaotic approach to dealing with this crisis (Kaniok, 2023). He made several purely populist statements during the campaign. First, he consistently described his opponent as a supporter of war and himself as the one who would ensure peace. Furthermore, in one of the debates, he rejected the possibility that he would come to the aid of Poland in case of a hypothetical attack (Fodor, 2023). Of course, the war in Ukraine was not the only aspect that had an influence on electoral results. The problem of the economic and energy crisis was also widely discussed. The question of the candidates' communist membership also resonated in the public space, because both Pavel and Babiš were members of the Communist Party of Czechoslovakia before 1989. Party support undoubtedly played a role, as all the then-governing parties clearly supported Pavel before the second round. While the far-right *Freedom and Direct Democracy* (SPD), which was the same as ANO in opposition, did not directly support Babiš (Stuchlíková, 2023).

The aim of this paper is to provide spatial patterns of two major presidential candidates in the context of the Ukrainian war. The analysis uses a combination of statistical and geographical approaches, which provide a unique opportunity for researching the problem of migration not only on the global level, but mainly Czech regions. As will be illustrated, the effect of migration on electoral support can manifest itself in various ways.

2. Theoretical background

Cleavage theory was chosen as a theoretical approach. Different voting patterns relate to sociology when we analyse socioeconomic and demographic factors, or history when analysing the continuity of voting patterns. It is important to mention that these cleavages are not static. Their changes influence the form of party systems (Bartolini & Mair, 1990; Ford & Jennings, 2020; Hooghe & Marks, 2018). Geographical overhang relates to the spatial distribution of electoral results and their display on maps. The problem of differences between voters' preferences in towns and villages connects all these approaches. The research on the cleavage phenomenon starts with the approach of Lipset and Rokkan (1967), with four cleavages constructed during the processes of national and industrial revolution. This approach was followed by other authors who reflected changes in party systems in the context of the rise of the relevance of postmaterial values (Inglehart, 1977) and transnational cleavage *Green-Alternative-Libertarian/Traditional-Authoritarian-Nationalist* (GAL/TAN) in connection to the European integration process and international migration (Hooghe, Marks, & Wilson, 2002; Hooghe and Marks, 2018). GAL/TAN cleavage can represent the difference in electoral support in relation to Ukrainian refugees.

Comparing very well-mapped Western Europe (e.g. Thomassen, 2005), the origins of political parties and cleavages foundations are different in Central and Eastern Europe (Kitschelt, 1995). Still, the communist regimes were not able to resolve conflicts, and any party systems are very similar to democracies in Central Europe, which were not behind the 'iron curtain' (Redžić & Everett, 2020; Whitefield, 2002). As a result, some historical, religious, national, economic, or social conflict lines are still visible in Central and Eastern European countries (e.g. Barlai, 2022; Blahož, Brokl, & Mansfeldová, 1999; Clem & Craumer, 2008; Dolenec, 2012; Grabowski, 2019; Kovalcsik & Bódi, 2023; Madleňák, 2012; Matiuta, 2018; Mikuš & Gurňák, 2019; Plešivčák, 2017; Zarycki & Nowak, 2000).

Czechia is no exception. In connection with the strong tradition of the first Czechoslovak Republic, we can also find here a series of divisions that persisted despite more than 40 years of the communist regime. Some characters of the cleavage structure were identified. The Czech society and its electoral behaviour are highly connected with socioeconomic cleavages and regional differences (Kostelecký, 2009; Maškarinec, 2019). Cleavage based on the conflict between urban and rural areas is weak (Hloušek & Kopeček, 2008, p. 528). The agricultural party, which succeeded in the 1990s, could not maintain stable electoral support, although there were attempts to generalise electoral support in this way (see Svoboda, 2023). It is important to say that Czechia has one of the most fragmented municipal structures in Europe (Balík, 2009, pp. 18–19), which might be very heterogeneous (Musil & Müller, 2008). Babiš's statements positioned him in many ways as a populist candidate, adopting the rhetoric of the far-right in connection

with the Ukrainian war. At the same time, the significant effect of this variable on the result of radical political streams (Gordon, 2018) was shown, similar to the factor of immigration (Dustmann, Vasiljeva, & Damm, 2019; Suchánek & Michal, 2024). Petr Voda (2015) compared patterns of electoral support of political parties in Czechia and Austria in the context of the different evolutions of both countries in the 20th century. It confirmed the effect of any factors of socioeconomic and postmaterial cleavages in Czechia, especially in cases of conservative parties, partly also by social democratic and liberal parties. Christian Democrats (KDU–ČSL) is a classical representative of religious cleavage. Since the fall of communism, areas with historical overlaps or cleavages are still visible (Bakke & Sitter, 2013; Bernard & Kostelecký, 2014; Koubek, 2007; Lysek & Macků, 2022; Voda, 2012).

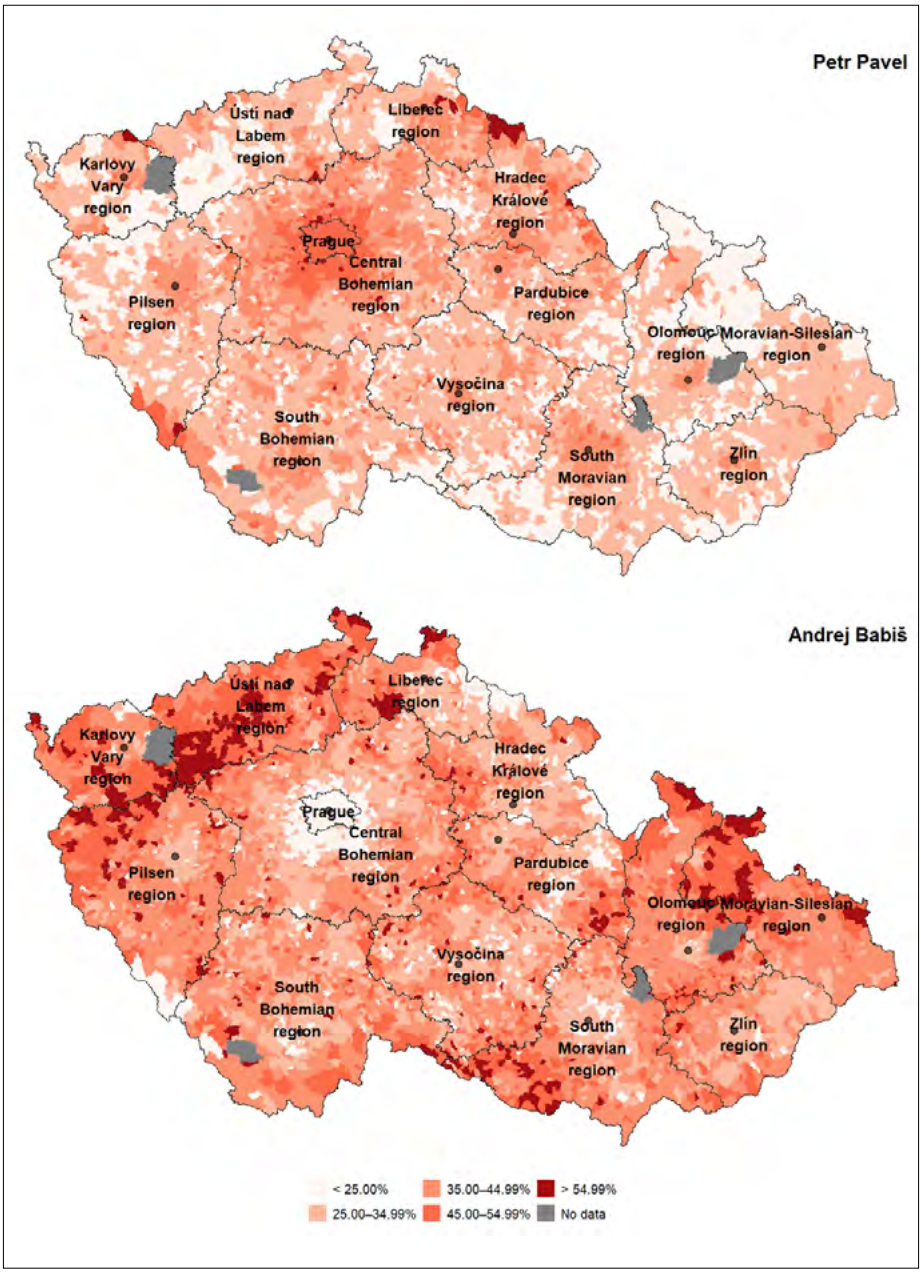
According to the Constitution of the Czech Republic (CCR), the head of state might be elected for a maximum of two terms in a row (Art. 57 CCR), so the president Miloš Zeman could not run again. Nine candidates wanted to succeed him. One of whom, the leader of the Czech-Moravian Confederation of Trade Unions, Josef Středula, withdrew a few days before the first round (ČTK, 2023). As was mentioned, Pavel and Babiš advanced to the second round with an almost identical electoral result of around 35%. The first of them then dominated the second round two weeks later. Table 1 presents the complete electoral results. The second column shows the support by political parties represented in the Czech parliament, which will be important for the analysis in the context of the support for these subjects. Parties in parentheses mark unofficial support, which is based on the statements of party representatives and partisan polls (e.g. Mach, 2023). Figure 1 shows the spatial support of both candidates.

Table 1:
Results of the Czech presidential election in 2023

Candidate	Partisan support	Profession	1st round	2nd round
Petr Pavel	SPOLU (PirSTAN)	Former NATO Military Committee chairman	35.40	58.32
Andrej Babiš	ANO	Former prime minister, deputy (leader of ANO)	34.99	41.67
Danuše Nerudová	SPOLU (PirSTAN)	Former rector of Mendel University in Brno	13.92	–
Pavel Fischer	SPOLU	Senator (non-partisan)	6.75	–
Jaroslav Bašta	SPD	Deputy (member of SPD)	4.45	–
Marek Hilšer	(PirSTAN)	Senator (leader of MHS)	2.56	–
Karel Diviš	None	Businessman	1.35	–
Tomáš Zima	None	Former rector of Charles University	0.55	–

Source: The Author based on data from CSO 2023.

Figure 1:
Support for Pavel and Babiš at the municipal level



Source: The author based on data from CSO 2023.
Note: Points in maps highlight regional capitals.

As can be seen in Figure 1, the distribution of electoral support of both candidates is not the same and shows a certain indication of division between regions with different levels of development. Electoral support for Pavel is concentrated in Prague and its immediate surroundings, with Prague satellites in Central Bohemia. In these places, the support for Pavel was the highest. Very similar small localities with above-average support can also be found in the border areas of mountains, which are dependent on the tertiary sector of the economy. At the same time, the composition of voters in these areas is also influenced by the winter season, when many tourists spend their holidays there (Šimon, 2015, pp. 144–145). This effect is also visible in the voter turnout (Pospíšilová, 2023). The support for Babiš had its core in the border areas with a lower standard of living and higher unemployment. They are usually characterised by high electoral support for radical and populist parties and candidates (Cigánková, 2023; Lysek, Pánek, & Lebeda, 2021; Suchánek & Hasman, 2024), as well as ANO (Pink & Voda, 2014; Voda, 2019). As can be seen, the electoral support for both participants is very different.

Regarding the above postulates, research hypotheses will now be formulated. The first of them will be connected to the crisis, which certainly influenced the situation before the presidential election. As was mentioned above, Babiš profiled himself as a populist candidate following growing sentiment against Ukrainian refugees and the continuation of the war conflict. Literature focused on the relationship between electoral support for populist candidates or parties and the issue of migration is not consistent in its conclusions. Research on this topic, particularly relevant in the context of the migration crisis starting in 2014/2015, shows two opposing tendencies. First, there is a clearly positive relationship between the influx of migrants and support for right-wing populist parties (Vasilakis, 2018), possibly depending on the size of the municipality (Dustmann et al., 2019). Many studies suggest that the effect of the share of refugees may be related to distance and previous experience with foreigners and migrants. The authors argue that distance from the place where refugees are located, which has increasing value, also brings an increase in electoral gains for right-wing populists. Given the fact that migrants are usually placed in refugee camps, where residents are used to and have experience with them, support for anti-immigration parties weakens in these areas (Achard, Albrecht, Ghidoni, Cettolin, & Suetens, 2025; Rickardsson, 2025; Steinmayr, 2021).

Following this, we can formulate the first hypothesis, which will consist of two sub-hypotheses. The first of them will verify the influence of crises on election results. The second will be a control and will concern the influence of cleavages typical of Czech elections.

H1a: The results of the Czech presidential election 2023 were spatially influenced by the consequences of the refugee wave from Ukraine.

H1b: The results of the Czech presidential election 2023 were spatially influenced by the long-term influence of cleavages on Czech elections.

The second hypothesis is linked to the first and will concern the overlap of electoral support with the political party of which the candidate is a member or the party that supported him. Cleavages are usually associated with the electoral support of parties in parliamentary elections. Nevertheless, if any political party nominates its presidential candidate, his result highly correlates with the electoral results of his political party (Pink & Voda, 2013; Sax, 2018). This fact is confirmed by papers focused on other European states (Cześnik, 2014; Zvada, Petlach, & Ondruška, 2020). Thanks to this, we can verify the influence of fragmentation and identify hot spots and cold spots of electoral support. Babiš is the chairman of ANO. Pavel was supported by political parties of the government – *Together* (SPOLU) coalition, which consists of three centre-right parties, *Civic Democratic Party* (ODS), *TOP 09* and *KDU–ČSL*. He was also indirectly supported by the *Pir-STAN* coalition, composed of centrist *Mayors and Independents* (STAN) and the *Czech Pirate Party* (Piráti).

H2: Pavel and Babiš have better electoral results in areas with a significant electoral result of the political party of which they are members or which supported them.

3. Methodology and data

The article is focused on the spatial analysis of electoral support in the Czech presidential election in 2023. Analysis uses mainly approaches which are usual in electoral geography, but it will be supplemented by statistical analysis in case of verification of the influence of a variable if the spatial effect is not proven. First, we will map the spatial distribution of electoral results. In this step, clusters of high and low electoral support of the presidential candidate and the supporting political party will be compared. This approach can explain the support of presidential candidates in the geographical aspects of the election (Derek, Johnston, Pratt, Watts, & Whatmore, 2009, p. 187). Here, the spatial autocorrelation through the local indicator of spatial association (LISA) will be used for visualising patterns of spatial clustering on the map (Anselin, 1995, p. 94), in this case of higher and lower electoral support in the concrete area.

After that, the basic method used in this article is geographically weighted regression (GWR), which is an approach that supplements traditional regression analysis with the spatial variable of the geographical distribution of the variable. Thanks to that, it is possible to identify areas with a different influence of the factor (Brundson, Fotheringham, & Charlton, 1996). GWR will also be supplemented by a classical linear regression in the form of an ordinary least squares (OLS) regression model. This approach will help us to verify the influence of variables in case GWR does not find spatial patterns. After that, the results of the GWR will be visualised on maps for identifying concrete areas and spatial patterns (Matthews & Yang, 2012). The visualisation will be provided based on the evaluation

of spatial non-stationarity, which marks the heterogeneity of the presence of the phenomenon in the area. For this purpose, we will use two approaches that together provide a comprehensive picture of spatial heterogeneity and determine which variables are appropriate to visualise. The first one is based on comparing the OLS and GWR coefficients. The suitability of using GWR will also be assessed in terms of global indicators that determine the quality of the model. Not only the coefficient of determination (R^2 and adjusted R^2) will be evaluated, but also the corrected Akaike Information Criterion (AICc). Map template was provided by CÚZK (n.d.). The author declares using ChatGPT to create a basic code skeleton for map visualisation in RStudio, as well as to solve potential problems and errors.

The dependent variable will be defined as the electoral result of each candidate in the municipality. As a source of data, the electoral website of the Czech Statistical Office (CSO) summarises the results of all Czechoslovak and Czech elections after 1989 in a very detailed form from the national level to the level of the electoral district in each municipality. The electoral results of candidates will be analysed in the context of a few independent variables that will represent the demographic, socioeconomic, or party-political structure of Czechia. The data for analysing independent variables will be gained from the public database on the CSO's unique website and the CSO's electoral website. Data will cover monthly statistical reports and the official Census in 2021. Other data will be gained from official ministerial statistics. The following table presents the list of analysed variables.

Table 2:
Independent variables for OLS and GWR models

Variable	Explanation
Population	Total number of inhabitants in the municipality. Due to the very uneven size of the municipalities, these data will be logarithmically transformed so that the factor has a better explanatory value. It will be used for analysing the urban/rural cleavage. Based on the 2021 Census of the CSO.
Unemployment	The share of unemployed inhabitants in the municipality. It is a classical variable used in electoral analyses. Its main goal is to explain the effect of socioeconomic structure on electoral results and right-left structure. Based on the data of the Ministry of Labour and Social Affairs in December 2022.
Tertiary education	Share of inhabitants of the municipality with completed college education. It is one of the most essential variables illustrating the urban/rural cleavage. Based on the 2021 Census of the CSO.
Roman Catholics	Share of people professing to be Roman Catholic in the municipality. The variable will help us to reveal the influence of the religious cleavage (state/church). Based on the 2021 Census of the CSO.
Entrepreneurs	Entrepreneurs per 10 inhabitants in the municipality. The variable will help us to map the influence of the owners/workers cleavage. Based on the 2021 Census of the CSO.

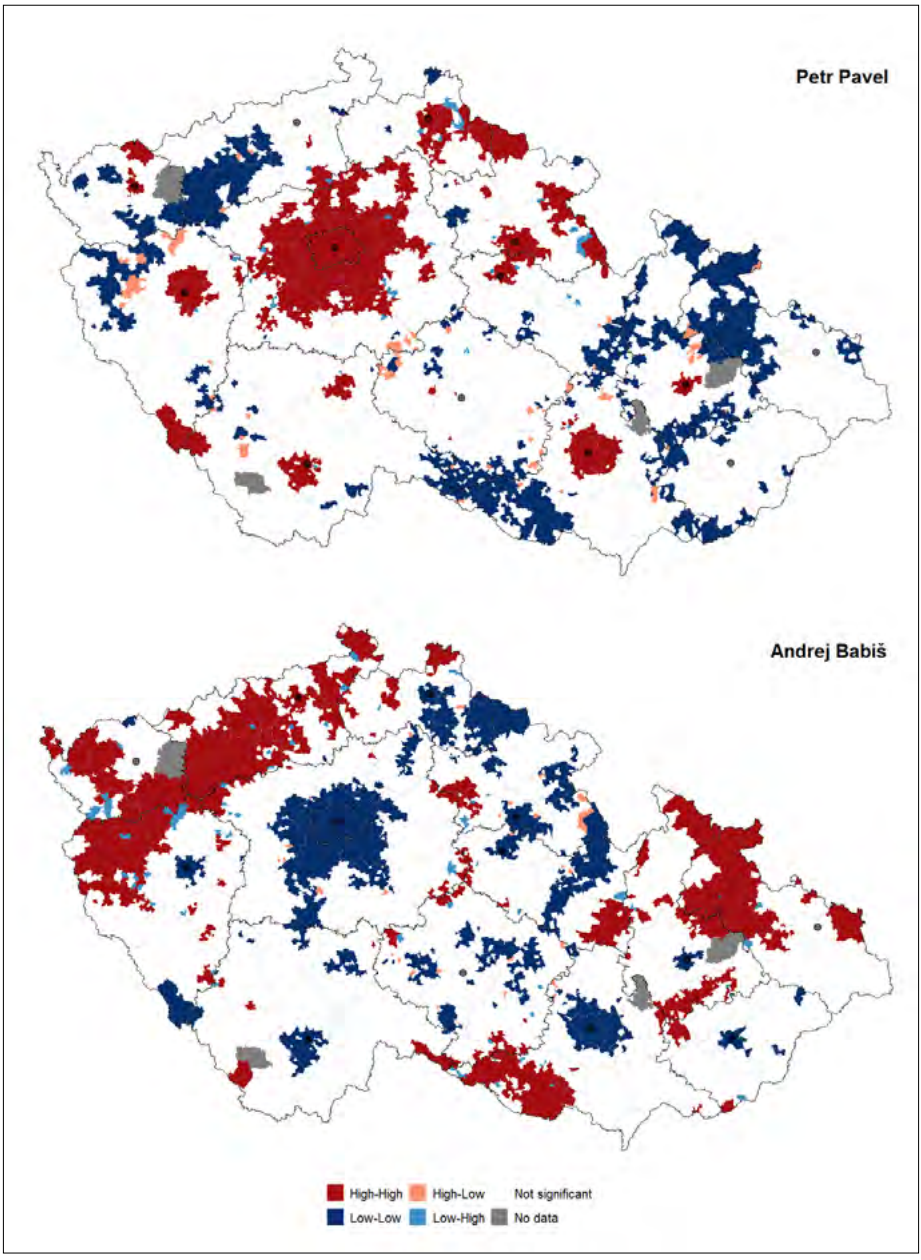
Variable	Explanation
Turnout	The share of voters who participated in the first round of the election. Based on the CSO.
Ukrainian refugees	Number of Ukrainian refugees per 10 inhabitants in the municipality at the time of the first round of the election. Based on the data of the Ministry of Interior. Czechia was the target of a large share of Ukrainian refugees, so this is a factor that very well represents the GAL/TAN cleavage.
SPOLU ANO	Electoral results of political subjects in the parliamentary election 2021, which directly supported these two presidential candidates. This variable will be analysed for the needs of the second hypothesis, which will focus on the relationship between presidential and parliamentary elections. Based on the CSO.

Source: The author.

4. Results of the analysis

This part of the article will introduce the results of the geographical analysis of electoral support. Here, the results of the LISA analysis will be summarised, which will allow us to reveal municipalities with high or low electoral support in regions of Czechia. We will compare the support for both presidential candidates and try to identify the most significant regions of high and low electoral support. It will help us to analyse the influence of independent variables in the next part of this chapter. The following figure illustrates the distribution of electoral support. In the next paragraph, the results will be analysed in more detail.

Figure 2:
LISA analysis of support for Pavel and Babiš at the municipal level



Source: The Author based on data from CSO 2023.
Note: Points in maps highlight regional capitals.

As can be seen in Figure 2, areas of electoral support for both candidates show different clusters in the Czech regions. This fact confirms that the support is conditioned spatially in general, and it indicates strong polarisation of regions as well. In the case of Pavel, it can be seen that support for him is concentrated especially in the central part of the country. These clusters are visible in Prague and the neighbouring parts of the Central Bohemia region. At the same time, the high support can be visible in areas of other regional centres, except the northern and eastern part of Moravia, and northwestern Bohemia. This fact may indicate an unusual division between urban and rural parts of the country. Nevertheless, it will only be confirmed with certainty by a deeper analysis and the next part of this chapter. High support is concentrated only exceptionally in border areas. These exceptions will be discussed below. On the contrary, in these areas can be identified clusters with relatively low support, which can be linked to the general behaviour of Czech voters. In the case of Babiš, there can be seen an almost mirror effect, with areas showing extreme swings in electoral support being far more common. The significant places of support can be visible in border areas, especially in northwestern Bohemia and the northern and the southwestern parts of Moravia. These regions, which have long struggled with socioeconomic problems, are in direct contrast to the developed areas around the biggest cities, which confirms the polarisation of the Czech regions in the presidential election. In these areas, on the contrary, support for the former prime minister is low. Babiš also enjoyed a significantly high support in some areas of South Moravia. On the other hand, in which Pavel, on the other hand, did not score. We will further interpret and contextualise these basic findings and results after a more detailed analysis in the following section of this analytical chapter.

In the following, we will provide a regression analysis of the electoral support of presidential candidates. In the first step, the summarising regression table for candidates for the first round will be created. The following table summarises the results of the GWR in relation to defined independent variables. The second two columns for each presidential candidate present the results of the OLS regression, which is a supportive approach for revealing global trends in the electoral support, in case GWR does not find any spatial pattern. This part is followed by visualisation on maps based on the spatial non-stationarity.

Table 3:
OLS and GWR models of support for Pavel

	OLS		GWR		
	Beta	p-value	b_{min}	b_{median}	b_{max}
Ukrainian refugees	0.581	0.000	-5.049	0.274	4.158
Population	1.523	0.000	-1.461	1.387	4.711
Unemployment	-0.182	0.000	-0.791	-0.110	0.871
Tertiary education	0.418	0.000	-0.026	0.411	0.876
Roman Catholics	-0.275	0.000	-0.645	-0.130	0.941
Entrepreneurs	2.512	0.000	-3.533	1.718	6.376
Turnout	0.116	0.000	-0.328	0.065	0.578
SPOLU	0.255	0.000	-0.125	0.222	0.574
ANO	-0.243	0.000	-0.475	-0.223	0.075
N	6,254		6,254		
R^2	0.568		0.704		
Adjusted R^2	0.567		0.658		
AICc	39,297		38,209		

Source: The author based on data from CSO 2023, CSO (n.d.); Ministry of Labour and Social Affairs of the Czech Republic, & Ministry of Interior of the Czech Republic.

Table 4:
OLS and GWR models of support for Babiš

	OLS		GWR		
	Beta	p-value	b_{min}	b_{median}	b_{max}
Ukrainian refugees	-0.464	0.001	-5.107	-0.155	4.424
Population	-0.728	0.000	-4.266	-0.471	3.070
Unemployment	0.352	0.000	-0.975	0.192	1.580
Tertiary education	-0.265	0.000	-0.911	-0.347	0.150
Roman Catholics	0.034	0.000	-0.898	-0.027	0.670
Entrepreneurs	-2.024	0.000	-8.606	-1.483	3.400
Turnout	-0.215	0.000	-0.423	-0.137	0.367
SPOLU	-0.275	0.000	-0.551	-0.256	0.288
ANO	0.649	0.000	0.281	0.597	0.982
N	6,254		6,254		
R^2	0.715		0.801		
Adjusted R^2	0.714		0.768		
AICc	39,114		38,231		

Source: The author based on data from CSO 2023, CSO (n.d.); Ministry of Labour and Social Affairs of the Czech Republic, & Ministry of Interior of the Czech Republic

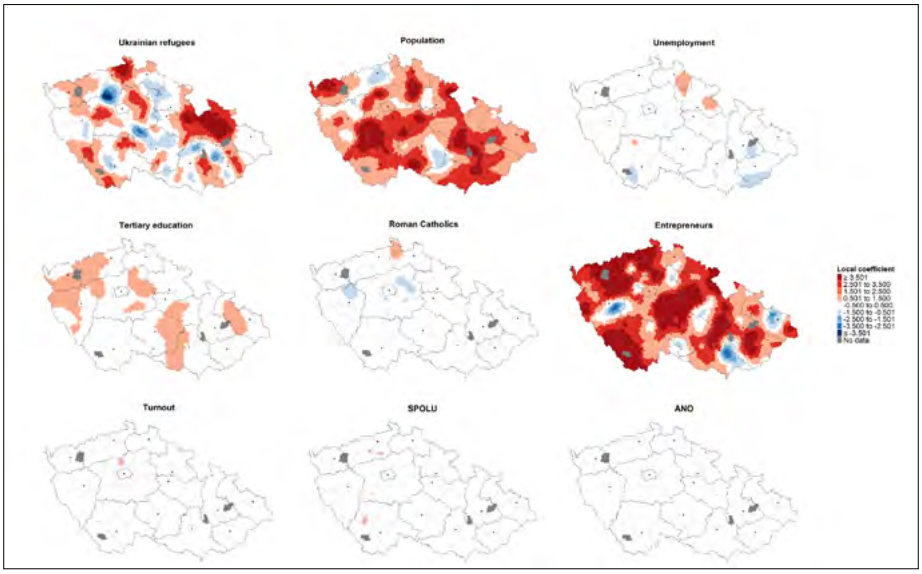
If we first look at a comprehensive evaluation of the models for both presidential candidates, we can see one common feature. From a global perspective, the suitability of using a spatial regression model is obvious. This phenomenon is visible both in the increase in the coefficient of determination, both in the basic form and in the adjusted index. At the same time, in both cases, the AICc decreases, which confirms the trend visible in the coefficient of determination. These phenomena suggest that the electoral support for both presidential candidates was spatially conditioned, and we can detect spatial variability here. Before analysing spatial non-stationarity, let's briefly discuss the individual variables and their influence on electoral support.

The first candidate is the later winner of the elections, Petr Pavel. In the global regression model, it can be seen that all variables are statistically significant. Among the factors that increased Pavel's electoral support according to the OLS model, in addition to the share of Ukrainian refugees, are also the size of the municipality in terms of population, the increasing share of tertiary educated population and especially the number of entrepreneurs, which comes out as the strongest predictor. The positive effect of the variable in the form of an overlap with the electoral gains of the SPOLU coalition can also be described as expected. Looking at the results of the global OLS model in the case of its opponent, we can see the exact opposite effect in most variables. Like Petr Pavel, there can be seen a very strong influence of the variable of the number of entrepreneurs, but in the case of Babiš, it is negatively related to electoral support. Substantially the same effect occurs in the case of the presence of Ukrainian refugees. Unsurprisingly, we can see a large overlap of support with the electoral gains of the ANO movement, which Babiš chairs. As in the first model, a positive relationship was detected with the population in the municipality variable, which is the only variable that is not in contrast with support for Pavel. According to the OLS model, Babiš succeeded in regions with higher unemployment. In case of the representation of Roman Catholics, there is also a positive effect, but statistically insignificant. At the same time, we can detect a difference in the electoral support of both candidates in terms of the statistical significance of the variables. At the same time, we can see a difference in the electoral support of both candidates in terms of the statistical significance of the variables. In the case of the electoral support of Babiš, one statistically insignificant variable was identified at a significance level of $\alpha = 0.05$, namely the share of Roman Catholics in the population of the municipality.

In the case of geographical non-stationarity, there is a difference in the behaviour of variables in GWR models. In the case of Pavel, the median trends that were indicated in the global model for all variables were confirmed, but the spatial differentiation is heterogeneous. On the one hand, we can see a relatively stable spatial distribution of support in relation to the electoral results of the SPOLU, as well as in inverse relation to the gains of the ANO. For both variables, the relationship appears to be evenly distributed across the country. On the other

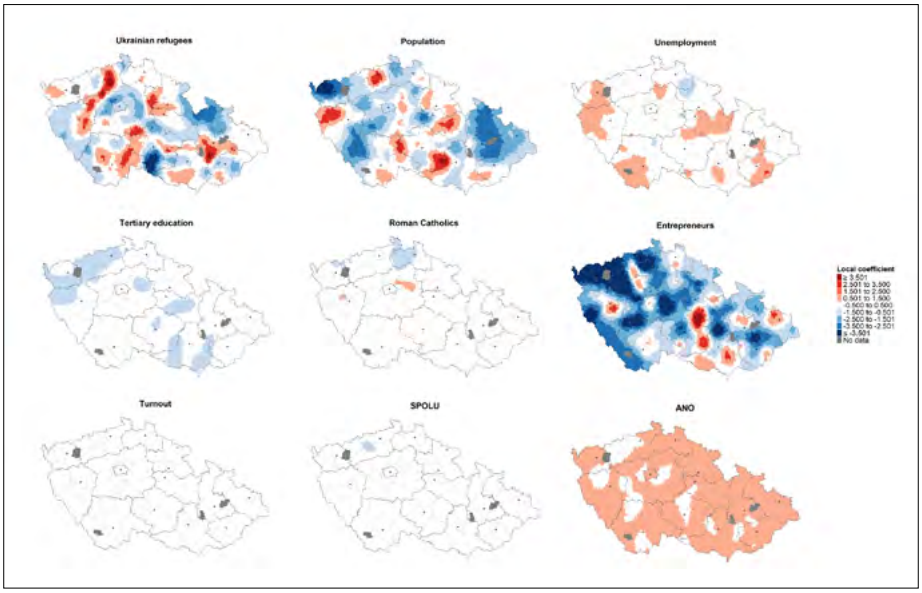
hand, extreme fluctuations are visible in the case of Ukrainian refugees, where the GWR model detects significant spatial differences. The global trend was also confirmed, among other things, in the case of the variable of entrepreneurs, where areas of stronger influence of this variable on electoral results were detected. As with Pavel, a clear connection between Babiš and the supporting political party and spatial stability within the entire Czechia was confirmed. Extreme spatial variability appeared, in addition to the variable of Ukrainian refugees, also in the case of entrepreneurs, where the GWR model shows areas with a significant positive and negative relationship to election results. In the case of the Roman Catholic variable, a negative median value was detected in the geographically weighted regression compared to the OLS model. However, this may be related to the declared statistical non-significance of this variable in the global model. For a closer analysis of areas with different behaviour and spatial non-stationarity, we will visualise the GWR results on a map in the next part of the article.

Figure 3:
GWR coefficients of the relationship between support for Pavel and independent variables



Source: Author based on data from CSO 2023, CSO (n.d.); Ministry of Labour and Social Affairs of the Czech Republic, and Ministry of Interior of the Czech Republic. Note: Points in maps highlight regional capitals.

Figure 4:
GWR coefficients of the relationship between support for Babiš and independent variables



Source: The author based on data from CSO 2023, CSO (n.d.); Ministry of Labour and Social Affairs of the Czech Republic, and Ministry of Interior of the Czech Republic. Note: Points in maps highlight regional capitals.

If we look at both map figures, two types of effect between variables and electoral support can be identified. On one hand, there are factors which have minimal or no influence on the results for presidential candidates. Alternatively, a situation occurs where the effect is unified, and there is no significant spatial variability in the nature of the relationship between the variables. In our case, it is mainly the variable of electoral support for political parties, which is stable in the whole area, and does not reveal significant spatial fluctuations. This effect is already indicated by the global regression model, which shows a significant connection between the candidate's results and the supporting political party. A slight deviation from this trend can be seen in the case of the relationship between support for ANO in 2021 and Andrej Babiš, where a positive relationship is consistently seen in most parts of the country. In the case of the unemployment variable, there can be seen several clusters in which the nature of the relationship fluctuates but is consistent with global trends in electoral support for candidates in individual regions. The same situation can be seen in the case of the share of the population with tertiary education, or the share of Roman Catholics. The electoral turnout had almost no spatial effect on the electoral support.

The second group of variables are where one can see a significant spatial differentiation and non-stationarity of the spatial effect of a concrete variable.

The situation is most visible in the case of the variable of entrepreneurs, where significant spatial non-stationarity can be observed for both candidates, which nevertheless largely copies global trends. We will try to interpret visible deviations in the following section. The situation is similar in the case of the size of the municipality. Finally, spatial non-stationarity was also identified in the case of the key object of our interest, which is the occurrence of Ukrainian refugees. In the context of this variable, there can be found clearly crystallised areas that were determined by this variable. However, in many cases, there is the opposite. This phenomenon proves the significant spatial influence of the variable of the number of migrants in accordance with the previously defined hypothesis. We will try to explain the contextual reasons in the following part of the article.

5. Discussion and conclusions

The influence of the variable of Ukrainian refugees has been proven, taking into account the characteristics of the concrete area. In the case of electoral support for both candidates, the nature of the relationship across the country is highly variable. If we look at the clusters of positive relations with Babiš, who profiled himself as a populist candidate in his public statements in these elections, we can identify areas with a strongly negative relationship on the map. As was indicated above, it is not surprising that this is especially the case in areas that have some experience with migrants. Although this phenomenon is not nearly as strong in Czechia as in Western Europe, many areas with dark blue clusters are areas where refugee facilities can be found. The significant area where this phenomenon is identified is clearly North Moravia and Silesia (Olomouc and Moravian-Silesian regions). Although these areas are not directly centres of refugee shelters, they are geographically not too far from the facilities in Havířov or Vyšní Lhoty. This strip of significance also extends into the region of East Bohemia (Pardubice and Hradec Králové regions), including Kostelec nad Orlicí, another significant place with a refugee facility. Given that Northern Moravia was one of those marked by the massive displacement of the German population after World War II, this phenomenon may also be caused by historical connections. In this context, it is certainly necessary to mention the arrival of a strong Greek minority, which concentrated in this area after the arrival of the refugee wave at the end of the 1940s (Otčenášek, 1998, p. 150). It is therefore possible that the inhabitants of this area, although the witnesses of this event will form only a very small part of the electorate, may have a more conciliatory attitude towards members of other nations, in accordance with the literature focused on migration (Achard et al., 2025; Rickardsson, 2025; Steinmayr, 2021). The second significant part of the country in the negative relationship to this variable is South Moravia. In this case, we cannot speak about any important area with refugee facilities. However, we

could perhaps talk about the global effect of the variable, because in this area, we find municipalities where support for Babiš was significantly high (see Figure 1).

Nevertheless, there are some areas which identify the opposite effect of the variable of Ukrainian refugees, when the effect is positive for Babiš. In this case, events are indicated that may indicate a more negative attitude towards foreigners, which may be reflected in electoral support for a populist candidate. These are areas in northwestern Bohemia, which in some regions are characterised by a higher proportion of members of the Roma community. In the area on the border of Central Bohemia and West Bohemia, there is the Balková refugee facility, which became publicly known for some incidents in the period before (Paseková, 2017), but also shortly after (Kinšt, 2023) the presidential election. The significant positive effect on the border of the South Moravian and Olomouc regions may be to some extent related to the resistance of local politicians against the accommodation of Roma refugees from Ukraine, in Boskovice or Vyškov, for example (Šťastný & Benáčková, 2022). In general, it can be stated that hypothesis H1a was confirmed. However, the empirical conclusions correspond to the existing literature even in the context of their heterogeneity. On the one hand, we can see a clear overlap between electoral support for the populist candidate and the occurrence of refugee facilities (Vasilakis, 2018), but in many cases, it is the other way around (Achard et al., 2025; Rickardsson, 2025; Steinmayr, 2021). The reasons for this situation may be the historical experience with migration described above, the occurrence of security incidents, and the fact that Czechia has not been affected by refugee waves in the past anywhere near as significantly as Western Europe.

The size of the municipality is the second factor which has a significant variability. The situation with Pavel is completely clear. Here, except for a few small areas, we can identify mainly positive local coefficients. This effect is most noticeable in the border areas of Central Bohemia. These areas are gradually becoming metropolitan areas due to urbanisation. This is mainly due to good transport services and the short distance to Prague, where many residents of these regions commute for work or school. In the case of Babiš, we can find areas with a positive relationship between these variables. Most of them are areas with generally high support for this candidate. The southern part of Czechia is also an important area, which has a rather agricultural character, which is a factor that also indicates this type of candidate. In case of Pavel, the orange areas in the northeast are not so surprising. These mountainous border areas are composed of many relatively small settlement units with a significantly different population structure. Due to the ski season in January, some residents from other parts of the country voted here using a voter card. The settlements in the metropolitan area east of Prague can also be named similarly, where we can find lower support for Babiš. The dark blue area in the western corner may seem a bit surprising because, according to LISA analysis, this is one of the hotspots of support for

Babiš. However, even here, we encounter a somewhat atypical character of the area in the form of highly developed tourism and spas.

The influence of the number of entrepreneurs is then profiled very clearly. The visualisation confirms the results of the global OLS model, where this variable is one of the strongest predictors. In areas of significant deviation of electoral support, the influence of this variable is even more profound. However, even here we can find a few exceptions, which again have a certain connection with the economic structure. Areas that deviate from the global trend are largely connected to agriculture, which may be reflected in the structure of entrepreneurs. Agriculture was one of the key issues for Babiš as prime minister, also because his business was significantly focused on the primary sector. Many of these areas are traditionally connected to the higher support for social democracy, whose support was gradually taken over by populist parties, including ANO and its chairman Babiš (Lysek et al., 2021; Suchánek & Hasman, 2024). Thanks to this, he can then receive more significant support from entrepreneurs in winemaking in South Moravia, hop growing in the Pilsen region, or, for example, potato growing in the central part of the country.

In connection with socioeconomic variables, it is very interesting to look at the spatial influence of the Roman Catholic population. In case of Babiš, there can be seen small clusters of positive impact of this variable in the western part of the country. Surprisingly, these areas are around the municipalities near the bishoprics in Pilsen. In the case of Pavel, there can be seen a negative relationship in a small area around the bishoprics in Litoměřice, in the Ústí and Labem region. It underlines the global influence of this variable on electoral support. There is no such church centre in the area east of Prague, which is probably due to another socioeconomic variable. On the contrary, the effect was not evident in South Moravia, the most religious part of the country. Here, this can be attributed to the relatively strong support for Pavel Fischer, a conservative presidential candidate, profiled by many Christian Democratic positions (Cigánková, 2023).

From a general point of view, it can be stated that all the hypotheses defined above were confirmed. In the case of H1a, significant spatial variability in relation to Ukrainian refugees was confirmed, while the ambiguous direction of action was also confirmed. As the literature shows, the effect towards populist candidates can have both positive and negative effects in relation to the distance from refugee facilities (Achard et al., 2025; Rickardsson, 2025). We can also observe this effect in the Czech presidential elections in 2023, while the influence of a longer historical experience with the arrival of migrants is also shown. H1b was partially confirmed. While the global OLS model shows a very high significance of socioeconomic factors, the GWR model revealed significant spatial non-stationarity only in the variable of entrepreneurs, which is also the strongest predictor in the OLS regression. H2 was also confirmed unambiguously within the OLS model, thus confirming previous findings regarding the overlap of the candidate's

electoral support with the home or supporting political party (Pink & Voda, 2013; Sax, 2018). The high correlation was confirmed by previous statistical analysis as well (Cigánková, 2023). At the same time, it turns out that the local variability of this variable is almost negligible. Support is almost homogeneous across the territory, which is especially true for the electoral support for Pavel. Generally, it can be said that the influence of classical and GAL/TAN cleavages is still visible in the Czech elections.

This article analysed the electoral support of two presidential candidates in the first round of the presidential election in Czechia in 2023, who subsequently advanced to the second round. In addition to the influence of classic socioeconomic variables that traditionally influence electoral support in Czechia, other cleavages were revealed. The contradictory influence of the presence of migrants on electoral support, which depends on the specific territory, was shown. Therefore, it can be stated that the use of GWR is significantly more suitable compared to OLS regression. The topic certainly has much greater potential, both in terms of focusing on specific areas in Czechia and in other countries where the number of Ukrainian refugees is significantly smaller. For example, an analysis of the second round of the election, which was discarded due to the chosen methodology and its logic, would be offered. This could clarify the spillover of voters from unsuccessful candidates from the first round, or a comparison with the support for ANO in the parliamentary election in 2025, in which Babiš triumphed as the leader of this party.

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