

Sex, age and education of citizens – factors affecting preferential voting? Territorial analysis of the 2023 parliamentary elections in Slovakia

Martin PLEŠIVČÁK

Abstract: *Preferential voting is becoming an increasingly popular tool through which voters can prioritize their preferred candidate within the candidate list of a given political party, thereby influencing the intra-party struggle for public office to some extent. Candidate information is known, but which voters tend to use their preferential vote? Are they men or women, younger or older people, voters with lower or higher educational attainment? The presented study aims to evaluate the relationship between preferential voting and selected socio-demographic variables at the level of Slovakia, its regions and districts. We are analysing the results of the 2023 elections to the National Council of the Slovak Republic alongside socio-demographic data from the 2021 census. In order to identify a possible statistical relationship between the investigated variables, the method of linear correlation analysis was applied, using the Pearson correlation coefficient. The results indicate that at the national level, considering data from more than 2,900 municipalities in Slovakia, no relationship between preferential voting and selected socio-demographic characteristics of the population was demonstrated. Certain patterns were observed within specific population groups at a lower spatial-hierarchical level (in the case of the Bratislava and Žilina regions, and in selected districts of the Bratislava, Trnava, Žilina and Banská Bystrica regions), but the informative value of several of them is limited by the low number of cases entering the correlation analysis.*

Keywords: *preferential voting, sex, age, education, regions, districts, Slovakia*

Introduction

Voters in the elections to the National Council of the Slovak Republic have "as if" two votes. They vote for a given political party and can cast a maximum of four preferential (*also known as preference*) votes for four preferred candidates from the party's candidate list. Compilation of the list of candidates can be strongly concentrated in the hands of a narrow group of leading party representatives or largely decentralized. Electoral systems and subsequently election results not only generate mandates for the representative body for successful political parties (inter-party competition), but also ensure their redistribution within the political parties themselves (intra-party competition). It is here that the effect of preferential voting on the final election results can be examined (Colomer 2011, Spáč 2013).

Spáč (2013) considers the number of preferential votes, the size of the electoral district and the threshold for counting preferential votes to be three key factors affecting preferential voting. As already mentioned, in the case of elections to the National Council of the Slovak Republic, the voter has four preferential votes. The territory of Slovakia consists of one 150-mandate district and therefore a single candidate list for each party across the entire country. The threshold for counting preferential votes is set at the level of 3% of valid votes for a given political party. From the perspective of supporting the institution of preferential voting,

DOI: <https://doi.org/10.33542/GC2024-1-05>

and thus supporting the democratization of the choice of candidates by voters and the possibility of success for smaller parties, favourable conditions can be considered if the voter has a greater number of preferential votes, the electoral district is large in terms of territory and population (the territory of the country is not divided into several and therefore smaller constituencies), the list of candidates is not too extensive, and the threshold for counting preferential votes is not set too high. Otherwise, candidates in less favourable (usually lower or middle) positions have a lower chance of entering the representative body.

The possibility of using preferential votes in elections was introduced shortly after political changes in 1989 (Act No. 80/1990 Coll.). This gave the voter the right to use four preferential votes, but initially established a 50% threshold and shortly afterward a 10% threshold for counting preferential votes (Act No. 104/1992 Coll.) and the existence of four constituencies (electoral regions). The situation changed with an amendment to the electoral law in 1998, when the four electoral regions were replaced by a single all-Slovak electoral district. The last important change related to the institution of preferential voting was the adjustment of the threshold for counting preferential votes from 10% to 3% within the framework of the newly adopted electoral law No. 333/2004 Coll. Since 1994, the share of voters who used the option of preferential voting has increased from 51.99% to the current 83.25% (for the elections in 2023). As already mentioned, a significant change in this direction was the adoption of the new electoral law in 2004 and related amendments. Until then, the share of voters using preferential voting was in the range of 50-70%, since 2006 this number has oscillated between approximately 75-85%. Despite this high interest in using preferential voting, the fact remains that due to the characteristics of the electoral system in Slovakia, significant power remains in the hands of the elites of political parties in compiling candidate lists and in the inter-party fight, compared to the possibilities of preferential voting to influence the intra-party competition. The aim of this contribution is to assess the statistical relationship between the factors of sex, age and education of citizens and the territorial aspects of casting preferential votes. We are trying to find out whether there are certain territorial specifics within Slovakia, both at the regional and district levels, in this relationship. We see a gap in research here, as authors from Central Europe do not cover the issue of preferential voting potentially influenced by the socio-structural background of voters at all. Attention is paid exclusively to the influence and relevance of the socio-structural characteristics of the candidates themselves (Spáč 2013, 2016, Spáč et al. 2016, Jusko et al. 2019).

Theoretical framework

In the issue of explaining preferential voting in the context of explanatory factors, the Belgian and Dutch school of electoral research has traditionally had a very strong position. Wauters et al. (2020) state in their work that preferential voting has a multi-thematic nature, as it connects with other sub-issues that are currently discussed within political science in its context. These are, for example, personalization of politics (Karvonen 2010, Wauters et al. 2018), party identification decline (Cross et al. 2018), electoral campaigning (Maddens and Put 2013, van Erkel et al. 2017) or impact of socio-economic characteristics (Erzeel and Caluwaerts 2015, Marien et al. 2016).

As declared by André et al. (2012), the phenomenon of preferential voting can be characterized by several facts. In general, a higher interest in preferential voting can be assumed in the case of voters who are more interested in politics. Also, the voter's motivation to cast a preferential vote increases if he or she feels "connection" with the candidate in a certain way, either on the basis of personal contact, place of residence, or in terms of the content and form of the campaign that the candidate implements in the public space in the case of the given election. We also cannot forget the organizational and technical characteristics of elections, which either support or limit the motivation to cast preferential votes. In this case, we can

mention the limit of the maximum number of preferential votes in particular, the limit for preferential votes counting, as well as the number and size of constituencies.

In Western literature (e.g. André et al. 2012, Thijssen et al. 2018, Wauters et al. 2020), four explanatory theoretical concepts are presented in relation to factors influencing preferential voting. The first one (and for our paper the most important) reports about the so-called “*The Resource Model*”, which says that the probability of granting a preferential vote depends on the political overview of the voter himself (herself), on the degree of his (her) interest in politics and orientation in its events. In this context, it is possible to expect a link to socio-economic characteristics of citizens, such as sex, age, education, or class affiliation. It is assumed that less educated voters, with a lower socio-economic status, use the option of preferential voting much less often than educated voters from the higher class of society (van der Kolk 2003). For less educated voters, it is more demanding in terms of time and content to assess the professional qualifications of all candidates. It is easier for them to vote for the party as such (list voting), without granting preferential votes. This assumption also applies in the context of willingness to participate in elections at all (van der Kolk 2003, Gallego 2010). In the same way, voters with a lower socio-economic status are more inclined to the phenomenon of party identification than to actively choosing from the options offered within the internal party competition. Age and sex of voters are mentioned as other potentially influencing factors. Interest in politics is thought to be higher among older people and among men. Several authors claim (Rubenson et al. 2004, Goerres 2007, Dalton 2008) that younger people are more active in using their right to candidate, or alternative forms of political engagement (protests, demonstrations), while older people prefer traditional forms of political participation (right to vote). However, van der Kolk (2003) draws attention to the fact that we see a greater tendency to preferential voting in the age category of 30-50 years old, compared to younger, but also older age groups. In general, one might assume that the tendency to use preferential voting should be less common among women than among men, who are traditionally more politically engaged and historically show a higher interest in politics. However, let's not forget the feminist features of voting behaviour, when many female voters are impressed by female candidates who could potentially represent their group interests to a much higher degree (McDermott 2009, Holli and Wass 2010).

“*The Identity model*” explicitly states that the voter prefers a candidate who is close to him due to his (her) socio-economic characteristics that is also very important for our paper. The voter assumes that people belonging to the same group will profess and promote identical or similar values and preferences. By voting in favour of such a candidate, the presence of the group to which the voter is a member is strengthened at the political level. Indeed, research on group voting behaviour has shown that women are slightly more likely than men to vote for women (Erzeel and Caluwaerts 2015, Marien et al. 2016, van Erkel 2019) and that the ethnic origin of the voter and candidate is also important in this context (Teney et al. 2010, Jacobs et al. 2013).

Another approach to evaluating the relationship between preferential voting and socio-economic characteristics of the electorate is referred to as “*The Proximity Model*” (Fenno 1978, Coleman 2005, Grill 2007, Hardin 2008). This type of explanation builds on the fact that people tend to prefer candidates they know personally or are members of the same party or volunteer organizations. In this context, personal contact is also important, e.g. in the form of organizing pre-election rallies or groups on social networks. Voters also tend to support candidates who come from their locality or region (friends and neighbours' effect), regardless of their other personal (socio-economic) characteristics.

The set of explanatory models of preferential voting is completed by “*The Instrumental Model*”. In this case, the effect of the voter's socio-economic affiliation is put into the background and the electoral context, rules and characteristics of the electoral competition within which the candidates compete are emphasized, which ultimately affects the decision of the voter himself (instrumental rationality). It is demotivating for voters if the electoral rules are set

in such a way (low limit on the number of preferential votes, size of electoral districts – as the size of the district decreases, the position of smaller parties worsens and, conversely, a high limit on the inclusion of preferential votes) that preferential voting will only affect the final line-up of elected candidates in a minimal way. Therefore, the benefit for a rational voter (when setting strict rules against preferential voting) is very limited (Downs 1957, Stroh 1995, André and Depauw 2017).

However, when evaluating influencing factors, a distinction must be made between local and national elections, within which their explanatory effect is different (Thijssen et al. 2018).

Methodological issues

The aim of this article is to test the statistical relationship between the territorial distribution of preferential votes and selected socio-demographic characteristics of the population. We ask the research question whether the territorial redistribution of preferential votes is related to the sex, age and educational composition of the population in Slovakia. Are men or women, younger or older voters, with higher or lower education more likely to vote preferentially, and what is this relationship like in individual parts of Slovakia? For this purpose, we carried out a correlation analysis, while the input variables were the preferential votes cast to all 25 political entities that participated in the elections to the National Council of the Slovak Republic on September 30, 2023, and data on the number of men and women in the age category of 18 and over, persons of younger productive age category 18-39 years, of older productive age category 40-59, of post-productive age category 60 and over, adults with primary education, secondary education and university education. We analysed these connections at the national, regional and district level (we tested the Bratislava city districts as one district due to their limited territorial size, as well as the city of Košice and its city districts). The data included in the correlation analysis were data at the level of 2923 municipalities and 72 districts of Slovakia. For the purpose of this paper, we consider eight self-governing regions as the regional level. Socio-demographic data were used from the database of the census carried out in 2021. We monitored the existence of a linear statistical dependence of the analysed variables through the Pearson correlation coefficient. Calculations were made in the SPSS Statistics 22 and map outputs were made in the MapInfo Professional 9.5.

Dependent variable:

preferential votes for political parties – calculated as a % of preferential votes cast from their maximum (theoretically) possible number (since a maximum of four preferential votes could be granted by the voter, i.e. as 4 times the number of valid votes)

Independent variables:

Sex structure of the population:

men in the age category of 18 and over – calculated as a % of all persons

women in the age category of 18 and over – calculated as a % of all persons

Age structure of the population:

persons in the age category of 18-39 years - calculated as a % of all persons

persons in the age category of 40-59 years - calculated as a % of all persons

persons in the age category of 60 and over – calculated as a % of all persons

Educational structure of the population:

persons in the age category of 18 and over with the highest primary education achieved - calculated as a % of all persons

persons in the age category of 18 and over with the highest secondary education achieved (without high school diploma, with high school diploma, higher vocational) – calculated as a % of all persons

persons in the age category of 18 and over with the highest tertiary education achieved - calculated as a % of all persons

To analyse selected socio-demographic characteristics in connection with preferential voting, we chose a correlation tool - Pearson's correlation coefficient (r) expressing the linear statistical dependence of the investigated variables. The determined values subsequently express the existence or the absence of a relationship between two variables. Pearson's correlation coefficient is expressed mathematically by the formula:

$$r = \frac{\sum(x - \bar{x})(y - \bar{y})}{\sqrt{\sum(x - \bar{x})^2 \sum(y - \bar{y})^2}}$$

The correlation coefficient is a dimensionless number and its values range from $\langle -1; 1 \rangle$.

The achieved values can express (Fillová and Gregorová 2004):

strong positive linear dependence, r is from the interval $\langle 0.7; 1 \rangle$

strong negative linear dependence, r is from the interval $\langle -1; -0.7 \rangle$

moderately strong positive linear dependence, r is from the interval $\langle 0.5; 0.7 \rangle$

moderately strong negative linear dependence, r is from the interval $\langle -0.7; -0.5 \rangle$

weak positive linear dependence, r is from the interval $\langle 0.3; 0.5 \rangle$

weak negative linear dependence, r is from the interval $\langle -0.5; -0.3 \rangle$

values are independent if $r \in \langle -0.3; 0.3 \rangle$

In the final stage of our research, we paid attention to a comprehensive evaluation of the issue at the level of three monitored factors (sex, age, education). We no longer observe the correlation between the territorial variability regarding the number of preferential votes and individual partially analysed population groups, but evaluate this relationship as a factor as such. For this purpose, we converted the values of correlation coefficients for individual variables to absolute values (so that negative values do not erase the positive values) and calculated the average for individual factors:

- *sex* (values of correlation coefficients: preferential votes vs. men 18+, respectively vs. women 18+ – calculation of the average of absolute values),
- *age* (values of correlation coefficients: preferential votes vs. population 18-39, vs. population 40-59, respectively vs. population 60 and over – calculation of the average of absolute values),
- *education* (values of correlation coefficients: preferential votes vs. population with primary education, vs. population with secondary education, respectively vs. population with tertiary education – calculation of the average of absolute values)

Results

As confirmed by previous studies (Spáč 2013, 2016, Spáč et al. 2016, Jusko et al. 2019), voters' interest in using the possibility of casting a preferential vote grows from election to election in Slovakia. But what is this interest in the case of individual parties and especially at the territorially disaggregated level? And is the phenomenon of preferential voting influenced by the socio-economic characteristics of the population, at the national, regional and district level?

Interesting findings are presented in Table 1. Of the 25 political entities that took part in the 2023 parliamentary elections, we paid attention to the 12 preferentially strongest within this table. They are sorted according to the relative number of preferential votes, calculated as a % of preferential votes awarded out of the maximum (theoretically) possible number of preferential votes within the valid votes cast to political parties. The difference between the 12 strongest parties in this indicator is approximately 15 percentage points. The most preferential votes were given by the voters of the party of the Hungarian minority living in Slovakia SZÖVETSÉG – ALIANCIA (75.55% of the theoretically possible preferential votes, in other words 3.02 preferential votes out of four possible per voter with a valid vote cast). A value

above 70% was also shown by the nationalist SNS, the right-wing Democrats and the far-right ĽSNS. On the contrary, the conservative SME RODINA party (59.21%) and the liberal PS movement (59.20%) did not even reach 60%. As for the number of voters who used the option of preferential voting (in any number of preferential votes), it ranged from 8-9 out of 10 for the most important parties in current Slovak politics. In this regard, only the liberal PS lags slightly behind, in the case of which 7-8 voters out of 10 used the option of preferential voting. Based on these results, we can conclude that the differences in the use of preferential voting by voters of the largest parties are not large in Slovakia. However, we also looked at the possible statistical connection between electoral support and preferential voting by voters of these political parties, based on data at the district level. Moderately strong indirect (negative) dependence was found for the two most liberal parties – SaS and PS. At the district level, in their case, it is true that they received more preferential votes in those districts in which their support was lower, and vice versa – In those districts in which they had higher support, preferential voting was used less by their voters. Similar statements can be made about the Democrats and ĽSNS, but in their case it was only a weak indirect statistical dependence. On the contrary, a certain positive link of electoral support in relation to preferential votes awarded (higher support, more preferential votes and vice versa) was confirmed only in the case of the Christian-conservative KDH and the electoral coalition OĽANO A PRIATELIA, KÚ and ZA ĽUDÍ.

Tab. 1. *The 2023 parliamentary election results and preferential votes of main political parties*

Election party / coalition	Election result %	Preferential voters %	Preferential votes* %	Intensity** %	Election result vs preferential votes***
SZÖVETSÉG – ALIANCIA	4.38	87.60	75.55	86.24	0.188
SNS	5.62	89.00	73.57	82.66	-0.129
Demokrati	2.93	86.16	72.78	84.47	-0.424
ĽSNS	0.84	87.05	70.88	81.43	-0.448
SMER – SD	22.94	85.43	69.89	81.81	-0.082
REPUBLIKA	4.75	87.84	68.77	78.29	-0.148
OĽANO A PRIATELIA, KÚ a ZA ĽUDÍ	8.89	88.99	68.31	76.76	0.480
SaS	6.32	82.47	65.97	79.99	-0.512
HLAS – SD	14.70	84.61	64.48	76.20	-0.074
KDH	6.82	80.54	61.38	76.21	0.472
SME RODINA	2.21	84.50	59.21	70.07	-0.039
PS	17.96	73.95	59.20	80.06	-0.630
Statistical dependence					
none					
weak					
medium					
strong					

* calculated as % of preferential votes cast compared to maximum possible number of preferential votes enable for participated voters

** calculated as % of preferential votes compared to preferential voters

*** correlation coefficient, based on district level data

Source: Statistical Office of the Slovak Republic (2024), author's calculations

As shown in Figure 1, the most compact part of Slovakia with a high share of preferential votes is lower Zemplín and especially the southern part of the Trebišov district. Other spatial concentrations, but with a more fragmented territorial structure of higher values, are located in the south-west of Slovakia (Danube region), south-central Slovakia, Orava and north-eastern Slovakia. Lower values are registered especially in the extreme west of Slovakia. At the district level (Figure 2, Table 2), the highest intensity of preferential voting (above the level of 70%) is achieved in the districts of Orava, the northeast and the east of Slovakia, namely the districts of Trebišov (73.08%), Vranov nad Topľou, Stará Ľubovňa, Námestovo, Michalovce, Svidník, Tvrdošín, Humenné, Sabinov, Kežmarok, Sobrance and Prešov. On the contrary, the lowest values (below 62%) are typical for districts in the far west of Slovakia, in order from the lowest value to Myjava (59.20%), Senica, Skalica, Malacky, Trenčín, Hlohovec and Nové Mesto nad Váhom.

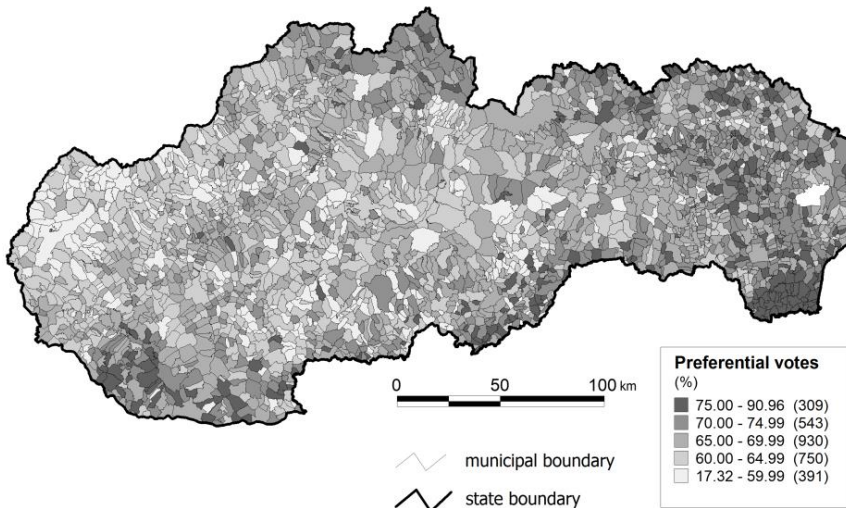


Fig. 1. Preferential votes in the 2023 parliamentary elections at local level
 Source: Statistical Office of the Slovak Republic (2024), author's map

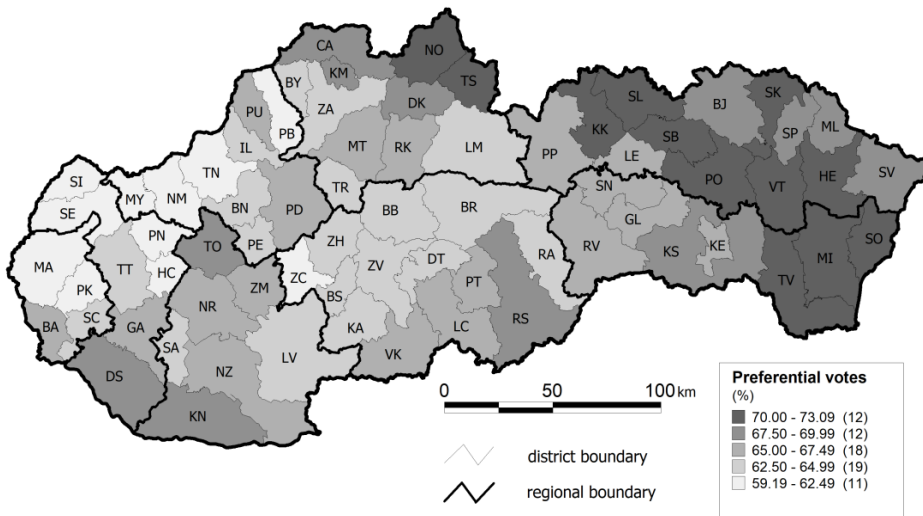


Fig. 2. Preferential votes in the 2023 parliamentary elections at district level
 Source: Statistical Office of the Slovak Republic (2024), author's map

Tab. 2. Districts of Slovakia and their abbreviations

Bratislava region		Trnava region		Trenčín region		Nitra region	
District	Abbr.	District	Abbr.	District	Abbr.	District	Abbr.
Bratislava	BA	Dunajská Streda	DS	Bánovce nad Bebravou	BN	Komárno	KN
Malacky	MA	Galanta	GA	Ilava	IL	Levice	LV
Pezinok	PK	Hlohovec	HC	Myjava	MY	Nitra	NR
Senec	SC	Piešťany	PE	Nové Mesto nad Váhom	NM	Nové Zámky	NZ
		Senica	SE	Partizánske	PE	Šaľa	SA
		Skalica	SI	Považská Bystrica	PB	Topoľčany	TO
		Trnava	TT	Prievidza	PD	Zlaté Moravce	ZM
				Púchov	PU		
				Trenčín	TN		
Žilina region		Banská Bystrica region		Prešov region		Košice region	
District	Abbr.	District	Abbr.	District	Abbr.	District	Abbr.
Bytča	BY	Banská Bystrica	BB	Bardejov	BJ	Gelnica	GL
Čadca	CA	Banská Štiavnica	BS	Humenné	HE	Košice	KE
Dolný Kubín	DK	Brezno	BR	Kežmarok	KK	Košice-okolie	KS
Kysucké Nové Mesto	KM	Detva	DT	Levoča	LE	Michalovce	MI
Liptovský Mikuláš	LM	Krupina	KA	Medzilaborce	ML	Rožňava	RV
Martin	MT	Lučenec	LC	Poprad	PP	Sobrance	SO
Námestovo	NO	Poltár	PT	Prešov	PO	Spišská Nová Ves	SN
Ružomberok	RK	Revúca	RA	Sabinov	SB	Trebišov	TV
Turčianske Teplice	TR	Rimavská Sobota	RS	Snina	SV		
Tvrdošín	TS	Veľký Krtíš	VK	Stará Ľubovňa	SL		
Žilina	ZA	Zvolen	ZV	Stropkov	SP		
		Žarnovica	ZC	Svidník	SK		
		Žiar nad Hronom	ZH	Vranov nad Topľou	VT		

In the next, key part of this study, we will focus in more detail on the territorial context concerning the relationship between preferential voting and selected socio-demographic characteristics. In this case, we are interested in a possible link towards the sex, age and educational structure of the population. At the outset, however, it is necessary to state a methodological note that the difference in the values of the Pearson correlation coefficient (r) at different territorial hierarchical levels was to a significant extent influenced by the number of cases entering the analysis, of which there were the most at the national level (2923, i.e. individual municipalities of Slovakia), less at the regional level (in the case of individual self-governing regions, several hundred municipalities) and at least at the district level (a few dozen municipalities). Thus, it is logical that with the highest variability of values (correlation result for the national level) a lower probability of the existence of dependence can be expected, i.e. the highest

level of irregularity. On the contrary, at the district level, the probability of the existence of statistical dependence regarding the investigated variables increases that is due to the lower number of cases (entering territorial units), i.e. the expected lower variability of values and thus a higher chance concerning the existence of a statistical connection between the analysed indicators.

At the most rigorously evaluated, nationwide level, the connection of preferential voting to any analysed socio-demographic characteristic was not confirmed. In all cases, the resulting values were close to the 0.100 level. At the regional level (Tab. 3), however, the regions of Bratislava and Žilina caught the attention. In the case of our capital region, a moderately strong positive statistical association was found between preferential voting and higher education. On the contrary, a negative link was identified towards the territorial concentration of the population with secondary education. It seems that in the case of the Bratislava region, a higher share of the population with higher education means a higher share of preferential votes. Certain, but already weak, negative link was identified in relation to the territorial variability of the male population. In the case of the Žilina region, the relationship of preferential voting towards the age structure of the population took a certain, limited way. In the case of the younger productive population, this is a positive relationship, in the case of the older productive population and post-productive generation, a negative statistical relationship. However, it is necessary to mention that in these cases it is only a connection of a weak intensity. The same applies to the connection towards the territorial concentration of the male population. At the regional level, only a weak positive statistical relationship between the spatial variability of the number regarding preferential votes and the share of the older productive population attracted attention in the Trnava region.

Tab. 3. Correlation between preferential votes in the 2023 parliamentary elections and selected socio-demographic characteristics at national and regional level

Territorial unit	SEX		AGE			EDUCATION		
	Male 18+	Female 18+	18-39	40-59	60+	Primary	Secondary	Tertiary
SLOVAKIA	-0.091	-0.007	0.179	-0.115	-0.096	0.109	-0.072	-0.084
Bratislava region	-0.449	-0.082	-0.064	-0.154	-0.205	-0.260	-0.596	0.518
Trnava region	0.060	0.163	0.176	0.397	-0.198	0.161	-0.002	-0.122
Trenčín region	-0.089	0.035	0.185	-0.194	-0.046	0.095	-0.025	-0.066
Nitra region	-0.031	0.107	-0.015	0.141	-0.035	0.111	0.025	-0.096
Žilina region	-0.305	-0.299	0.362	-0.341	-0.379	0.225	-0.231	-0.143
Banská Bystrica region	-0.055	0.140	-0.011	0.073	0.013	0.002	0.021	-0.006
Prešov region	-0.098	-0.028	0.086	-0.086	-0.080	0.126	-0.124	-0.056
Košice region	0.057	0.141	0.097	0.052	0.050	0.031	0.133	-0.203

Source: The Census 2021 (2021), Statistical Office of the Slovak Republic (2024), author's calculations

Several interesting facts can be noticed at the district level. No or only a weak statistical dependence between the territorial variability regarding the number of preferential votes and the observed socio-demographic characteristics was identified in the case of the districts of three regions in Slovakia – Nitra, Prešov and Košice. They are de facto joined by the Trenčín region, where we observe a moderately strong negative relationship between preferential voting and the population aged 40-59 only in the case of the Bánovce nad Bebravou district. On the contrary, several interesting statistical links were registered at the district level in the case of the remaining four regions of Slovakia – Bratislava, Trnava, Žilina and Banská Bystrica.

Similar to the regional level, in the case of the capital itself, a moderately strong negative relationship between preferential voting and the population with a secondary education and, conversely, a strong positive relationship towards the population with a university education takes place. In the case of the neighbouring district of Malacky, a moderately strong negative link can be seen on the territorial variability of the male and female population, the productive population, and the population with secondary education. Within the Trnava region, a moderately strong positive statistical link of preferential voting to the population with primary education and, conversely, a negative relationship to the territorial variability of the university-educated population in the Galanta district was found. In the district of Senica, on the other hand, a moderately strong positive relationship between preferential voting and the age group of 40-59 was interesting. Námestovo is a specific district within the Žilina region. In its case, a moderately strong negative link was identified towards the sex structure of the population, age category 60+ and population with secondary education. In the case of the 40-59 age group, there was even a strong negative statistical dependence. In the district of Kysucké Nové Mesto, a moderately intense negative link of preferential voting to the territorial concentration of the population with higher education (as well as in relation to the post-productive component of the population) and, conversely, a moderately strong positive link towards the population with primary education were found. In Bytča district, preferential voting is negatively linked to the male population (moderately strong negative link). The Banská Bystrica region is interesting in the context of preferential voting and its connection to the monitored socio-demographic characteristics, especially by the districts of Detva and Brezno. In the first mentioned district, we observe a very strong positive link of preferential voting to the population with higher education and, conversely, a very strong negative link to the population with primary education. Within this district, preferential voting is positively oriented in the form of a moderately strong positive association with the younger productive population and a negative one with the post-productive population (as well as with the territorial variability of the male population). In the district of Brezno, we observe a positive, moderately strong statistical dependence between preferential voting and the population with primary education and, on the contrary, a moderately strong negative dependence towards the population with secondary education.

In the final part of the analysis, we focused on a comprehensive assessment of the issue in relation to the three monitored factors (sex, age, education). The results are depicted in Figures 3, 4 and 5. Figure 3 shows the situation concerning correlation relationship between preferential voting and the sex factor at the district level. When we considered the absolutized values of the input variables (we did not consider their positive or negative orientation) and calculated the average value from them, we found that a moderately strong statistical dependence was identified only in districts of districts of Malacky and Námestovo. Another 11 districts showed only weak statistical dependence, in the order of Bytča, Myjava, Sabinov, Veľký Krtíš, Kysucké Nové Mesto, Gelnica, Pezinok, Kežmarok, Dolný Kubín, Detva and Zvolen. The remaining 59 districts did not show any statistical dependence in relation to the sex factor. A very similar situation was also recorded when evaluating the age factor (Figure 4). A moderately strong correlation dependence was identified again only in the case of two districts – Námestovo and Detva. Another eight districts registered only a weak correlation towards the age structure of the population. These are the districts of Pezinok, Kysucké Nové Mesto, Senica, Čadca, Bánovce nad Bebravou, Malacky, Kežmarok and Gelnica. As many as 62 districts did not show any statistical connection with respect to the age factor. Similar findings can also be expressed in the context of the evaluation regarding the education factor (map 5). Only three districts, namely Detva, Bratislava and Kysucké Nové Mesto, showed a moderately strong statistical dependence between preferential voting and the educational structure of the population. The other nine districts, specifically Galanta, Brezno, Veľký Krtíš, Kežmarok, Bytča, Námestovo, Malacky, Púchov and Sabinov, were characterized by a weak statistical link in relation to the education factor.

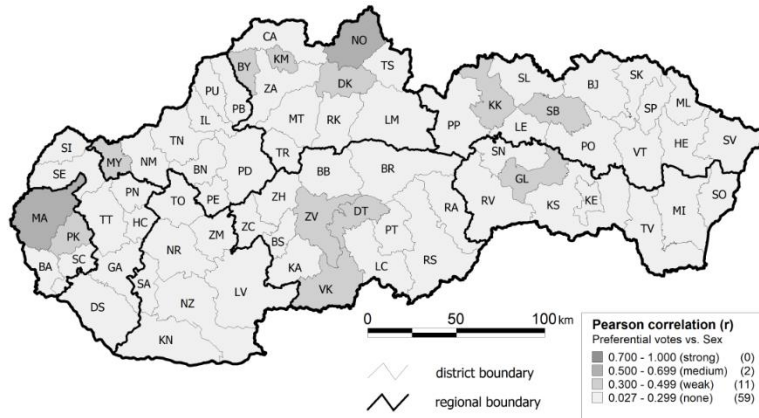


Fig. 3. Correlation between preferential votes in the 2023 parliamentary elections and sex structure at district level; Source: The Census 2021 (2021), Statistical Office of the Slovak Republic (2024), author's map and calculations

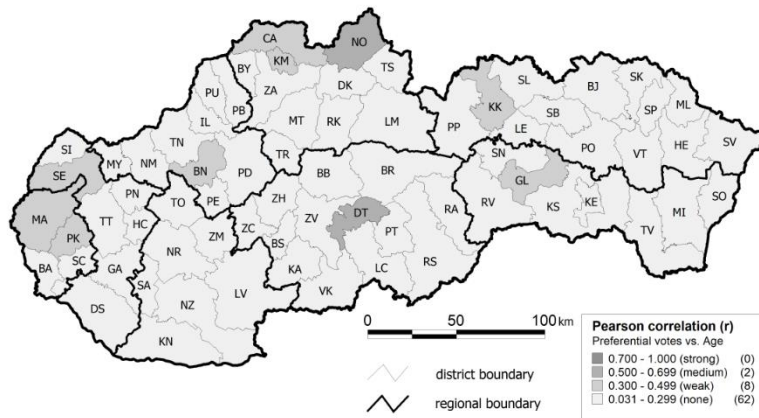


Fig. 4. Correlation between preferential votes in the 2023 parliamentary elections and age structure at district level; Source: The Census 2021 (2021), Statistical Office of the Slovak Republic (2024), author's map and calculations

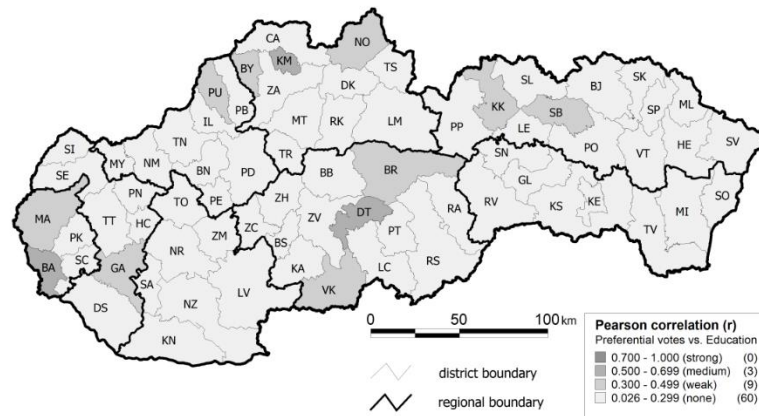


Fig. 5. Correlation between preferential votes in the 2023 parliamentary elections and educational structure at district level; Source: The Census 2021 (2021), Statistical Office of the Slovak Republic (2024), author's map and calculations

Discussion

In the post-socialist and especially Czech-Slovak literature, Spáč deals with the issue of preferential voting the most systematically. However, along with other authors, he has primarily investigated factors mainly from the view of the instrumental model theory, or the issue concerning the probability of the election of candidates with regard to the order on the candidate list (Spáč 2013, 2016, Spáč et al. 2016, Jusko et al. 2019). Concerning socio-economic characteristics, he tested them towards the candidates themselves and not to the electorate.

As mentioned by several authors (e.g. Popkin 1991, Matson and Fine 2006), a key factor in the casting of the preferential votes is the information about individual candidates that reaches and appeals to a given voter. However, which attributes are crucial for voters when evaluating candidates? Voters certainly consider the competence to hold the office (education, expertise), the activity of the given candidate in the office or in politics in the past, his or her campaigning, but also the sympathies of the leader and the personality as such, who can appeal to the electorate with appearance or language. In his work, Spáč (2013) noted variables such as the order of candidates on the candidate list, but also their socio-demographic characteristics such as sex, age, education and occupation. He followed these attributes for a relatively long period of 1998-2012 and came to the conclusion that the most influencing factor in the case of elections to the National Council of the Slovak Republic is the order of the nominees on the candidate list, especially location at the top of the list. This was also confirmed by other studies (Spáč 2016, Spáč et al. 2016, Jusko et al. 2019). However, if strong candidates decide to run from the last positions, the electorate will register this and by using the preferential vote, the voters will move them to eligible positions. Spáč (2013) registered a certain influence also in the case of candidates' education or their profession. On the contrary, a significant influence cannot be attributed to the age and sex of the candidate based on the conducted research. In the context of preferential voting, the phenomenon of the friends and neighbours' effect was confirmed, at the level of both regions and districts of Slovakia. This does not apply to party leaders to the same extent, as their support, even in the context of casting preferential votes, is less spatially concentrated (more evenly dispersed) within territory of Slovakia. Although Madleňák did not explicitly analyse the phenomenon of preferential voting in his articles (2017, 2019), he did evaluate the relationship between the representation of candidates from individual parts of Slovakia on the candidate lists of political parties running in parliamentary elections and elected deputies based on their place of residence, namely in elections in period 1998-2016. The author also mentions the friends and neighbours' effect as a potential influence of this territorial distribution, which can have a certain influence on the casting of preferential votes.

In the Slovak political and sociological literature dedicated to the evaluation of elections from the position of the results regarding individual political parties, attention is paid exclusively to inter-party competition and the related influence of the socio-demographic characteristics of the population, while studies evaluating intra-party competition (preferential voting) in the context of selected socio-economic characteristics of the voters themselves are lacking. In this context, it would be possible to assume that people with lower education, with a lower socio-economic status, younger people and those with a weaker interest in politics will not so often use the option of preferential voting, because in their case it is easier to vote for a political party as such and not to devote costs to the study of election programs of individual candidates (Thijssen et al. 2018). Studies focused on gender and its influence on preferential voting have produced results that are in contradiction with each other, declaring weaker (Andre et al. 2012) or stronger interest of women in using the option of preferential voting (van Holsteyn and Andeweg 2012, Andre et al. 2013). As previous studies have shown, classic socio-demographic variables that are able to support political participation also led to more preferential voting (André et al. 2012, André et al. 2013). However, everything significantly depends on the applied electoral system, primarily on the number of mandates, the limit for the maximum number of preferential votes, the limit for the preferential votes counting and, of course, the number and size of constituencies.

Conclusion

From the point of view regarding the territorial aspects of preferential voting in the 2023 parliamentary elections, the region of north-eastern Slovakia, and especially lower Zemplín region (Trebišov district) has a unique position. South-western Slovakia and south-central Slovakia also show above-average values. It seems that due to the spatial distribution of the more nationalist and conservative-oriented electorate, this type of voters is more inclined to use preferential voting (in favour of parties with prominent personalities in their leadership).

Assessing the data for the set of all municipalities in Slovakia, the statistical relationship between preferential voting and the analysed socio-economic characteristics of the citizens was not confirmed. Nevertheless, in the case of individual regions, the Bratislava and Žilina regions can be mentioned. In the Bratislava region, we identified a moderately strong statistical dependence between preferential voting and the population with higher education. On the contrary, it reacted negatively to the population with a secondary education, as well as the male component of the population (albeit declaring only a weak relationship). One of the explanations is that a more educated population approaches the granting of preferential votes more actively, as they are more aware of the meaning of influencing public affairs and the political situation in the country. In the context of preferential voting, the Žilina region showed dependence on the age structure of the population, but it was only of moderate intensity. A positive statistical link was identified in the case of the younger productive population (aged 18-39). On the contrary, a negative one was registered towards the older productive (aged 40-59) and post-productive (aged 60+) components of the population, as well as towards the male population. The younger population of this region can take a more responsible and individualistic approach to voting in terms of handling the preferential votes available. On the contrary, in the case of the Trnava region, we can talk about a positive link towards the older productive population, even if this relationship is not of significant intensity. Other regions did not demonstrate statistical dependence towards the observed socio-structural characteristics of the population (sex, age and education). The district level also offers several interesting findings. When assessing the relationship between preferential voting and socio-demographic characteristics of the population, the districts in the Nitra, Prešov and Košice regions did not show any dependence, and the Trenčín region to a minimal extent. On the contrary, quite a lot of statistical links were identified in several districts of the Bratislava, Trnava, Žilina and Banská Bystrica regions. As we stated above, the results of the research at the national (calculated on the basis of a database regarding 2,923 municipalities in Slovakia), as well as district level, along with the very limited findings at the level of regions, are evidence that the relationship between preferential voting and the factors of sex, age and education of the population has not been proven in Slovakia. Although certain results were demonstrated for partial population groups in selected districts, but the informative value of some of them is limited by the relatively low number of cases included in the correlation analysis (in the case of districts with the lowest number of municipalities).

Thus, the explanatory factors continue to be mainly the structure of the candidate list in terms of personal nominations, order on the candidate list, party personalities, the activity of individual candidates in the media and social networks (election campaigning, marketing and strategy) and from the position of voters, especially party identification, personalisation of politics, friends and neighbours' effect, etc.

In the context of the achieved results, however, it should be added in one breath that we investigated a statistical and not a causal relationship of variables under study. For this purpose, it would be appropriate to use a selected method of spatial econometrics, such as Durbin's spatial regression model, which also considers mutual spatial distances between the values of individual socio-demographic variables during the calculation. Another limitation of the con-

ducted research is the relatively low number of municipalities in the smallest districts of Slovakia. In addition, in the future, it is also necessary to conduct qualitative research based on direct questioning within a representative sample of voters and ascertaining individual reasons and motivation for preferential voting, also from the point of view regarding their socio-demographic and socio-economic background.

References

- ANDRÉ, A., DEPAUW, S. 2017: Too much choice, too little impact: A multilevel analysis of the contextual determinants of preference voting. *West European Politics*, 40(3), 598-620, DOI: <https://doi.org/10.1080/01402382.2016.1271596>.
- ANDRÉ, A., PILET, J.-B., DEPAUW, S., VAN AELST, P. 2013: De partij, de leider of een gewonekandidaat? Het gebruik van de voorkeurstem bij de gemeenteraadsverkiezingen van 2012. In Dassonneville, R., Hooghe, M., Marien, S., Pilet, J.-B. eds. *De lokale kiezer: het kiesgedrag bij de Belgische gemeenteraadsverkiezingen van oktober 2012*. Brussels (ASP), pp. 119-142.
- ANDRÉ, A., WAUTERS, B., PILET, J.-B. 2012: It's not only about lists: Explaining preference voting in Belgium. *Journal of Elections, Public Opinion and Parties*, 22(3), 293-313, DOI: <https://doi.org/10.1080/17457289.2012.692374>.
- COLEMAN, S. 2005: The lonely citizen: indirect representation in an age of networks. *Political Communication*, 22(2), 197-214, DOI: <https://doi.org/10.1080/10584600590933197>.
- COLOMER, J. M. 2011: Introduction: Personal and Party Representation. In Colomer, J. M. ed. *Personal Representation. The Neglected Dimension of Electoral Systems*. Colchester (ECPR Press), pp. 1-20.
- CROSS, W. P., KATZ, R. S., PRUYERS, S. 2018: *The personalization of democratic politics and the challenge for political parties*. Lanham (Rowman and Littlefield).
- DALTON, R. J. 2008: *The Good Citizen. How a Younger Generation is Reshaping American Politics*. Washington (CQPress).
- DOWNS, A. 1957: *An Economic Theory of Democracy*. New York (Harper and Row).
- ERZEEL, S., CALUWAERTS, D. 2015: Is it gender, ideology or resources? Individual-level determinants of preferential voting for male or female candidates. *Journal of Elections, Public Opinion and Parties*, 25(3), 265-283, DOI: <https://doi.org/10.1080/17457289.2015.1008495>.
- FENNO, R. F. 1978: *Home Style. House Members in their Districts*. Boston (Little Brown and Co).
- GALLEGO, A. 2010: Understanding unequal turnout: education and voting in comparative perspective. *Electoral Studies*, 29(2), 239-247, DOI: <https://doi.org/10.1016/j.electstud.2009.11.002>.
- GOERRES, A. 2007: Why are older people more likely to vote? The impact of ageing on electoral turnout in Europe. *British Journal of Politics and International Relations*, 9(1), 90-121, DOI: <https://doi.org/10.1111/j.1467-856x.2006.00243.x>.
- GREGOROVÁ, G., FILLOVÁ, V. 2004: *Štatistické metódy v geografii (Statistical methods in geography)*. Bratislava (Geo-grafika).
- GRILL, C. 2007: *The Public Side of Representation*. Albany (State University of New York Press).
- HARDIN, R. 2008: *Trust*. Cambridge (Polity Press).
- HOLLI, A.-M., WASS, H. (2010): Gender-based voting in the parliamentary elections of 2007 in Finland. *European Journal of Political Research*, 49(5), 598-630, DOI: <https://doi.org/10.1111/j.1475-6765.2009.01910.x>.

- JACOBS, D., KELBEL, C., PILET, J.-B. 2013: De politieke voorkeur van kiezers van alloch-tone afkomst tijdens de gemeenteraadsverkiezingen van oktober 2012 in Brussel. In Das-sonneville, R., Hooghe, M., Marien, S., Pilet, J.-B. eds. *De lokale kiezer: het kiesgedrag bij de Belgische gemeenteraadsverkiezingen van oktober 2012*. Brussels (ASP), pp. 171-197.
- JUSKO, J., SPÁČ, P., VODA, P. 2019: Meno ako výhoda? Experimentálny výskum zameraný na efekt poradia na listine. *Sociológia – Slovak Sociological Review*, 51(4), 339-366, DOI: <https://doi.org/10.31577/sociologia.2019.51.4.16>.
- KARVONEN, L. 2010: *The personalisation of politics: A study of parliamentary democracies*. Colchester (ECPR Press).
- LAW NO. 80/1990 COLL. ACT OF THE SLOVAK NATIONAL COUNCIL of March 16, 1990 on elections to the Slovak National Council.
- LAW NO. 104/1992 COLL. ACT OF THE SLOVAK NATIONAL COUNCIL of February 26, 1992 amending Act of the Slovak National Council No. 80/1990 Coll. on elections to the Slovak National Council.
- LAW NO. 187/1998 COLL. ACT OF THE NATIONAL COUNCIL OF THE SLOVAK REPUBLIC of May 20, 1998, which amends Act of the Slovak National Council No. 80/1990 Coll. on elections to the Slovak National Council, as amended, and on amendments to other laws.
- LAW NO. 333/2004 COLL. ACT OF THE NATIONAL COUNCIL OF THE SLOVAK REPUBLIC dated May 13, 2004 on elections to the National Council of the Slovak Republic.
- MADDENS, B., PUT, G.-J. 2013: Office effects and campaign spending in a semi-open list PR system: The Belgian/ Flemish federal and regional elections 1999–2010. *Electoral Studies*, 32(4), 852-863. DOI: <https://doi.org/10.1016/j.electstud.2013.02.008>.
- MADLEŇÁK, T. 2017: Potenciálna a reálna politická reprezentácia regiónov Slovenska. *Geographia Cassoviensis*, 11(2), 153-166.
- MADLEŇÁK, T. 2019: Geografická reprezentativita poslancov NR SR zvolených v podmienkach jedného volebného obvodu. *Sociológia – Slovak Sociological Review*, 51(5), 483-501, DOI: <https://doi.org/10.31577/sociologia.2019.51.5.22>.
- MARIEN, S., SCHOUTEDEN, A., WAUTERS, B. 2016: Voting for women in Belgium's flexible list system. *Politics and Gender*, 13(2), 305-335, DOI: <https://doi:10.1017/S1743923X16000404>.
- MATSON, M., FINE, T. S. 2006: Gender, Ethnicity, and Ballot Information: Ballot Cues in Low-Information Elections, *State Politics and Policy Quarterly*, 6(1), 49-72, DOI: <https://doi.org/10.1177/153244000600600103>.
- MCDERMOTT, M. L. 2009: Voting for myself: candidate and voter group associations over time. *Electoral Studies* 28(4), 606-614, DOI: <https://doi.org/10.1016/j.electstud.2009.05.025>.
- POPKIN, S. L. 1991: *The Reasoning Voter: Communication and Persuasion in Presidential Campaigns*. Chicago (The University of Chicago Press).
- RUBENSON, D., BLAIS, A., FOURNIER, P., GIDENGIL, E., NEVITTE, N. 2004: Accounting for the age gap in turnout. *Acta Politica*, 39(4), 407–421, DOI: <https://doi.org/10.1057/palgrave.ap.5500079>.
- SPÁČ, P. 2013: *Tichý hlas voličov. Preferenčné hlasovanie v slovenských parlamentných voľbách (The silent voice of voters. Preferential voting in Slovak parliamentary elections)*. Brno (Centrum pro studium demokracie a kultury).
- SPÁČ, P. 2016: The Role of Ballot Ranking: Preferential Voting in a Nationwide Constituency in Slovakia. *East European Politics and Societies*, 30(3), 644-663, DOI: <https://doi.org/10.1177/0888325416631802>.

- SPÁČ, P., VODA, P. ZAGRAPAN, J. 2016: Abeceda ako nástroj úspechu. Prípád regionálnych volieb na Slovensku. *Sociológia – Slovak Sociological Review*, 48(1), 71-90.
- STATISTICAL OFFICE OF THE SLOVAK REPUBLIC. 2024: *The 2023 Elections to The National Council of the Slovak Republic*. Bratislava (Statistical Office of the Slovak Republic). Retrieved from: https://volby.statistics.sk/nrsr/nrsr2023/en/vysledky_hlasovania_strany.html.
- STROH, P. K. 1995: Voters as pragmatic cognitive misers: the accuracy-effort trade-off in the candidate evaluation process. In Lodge, M. , McGraw, K. M. eds. *Political Judgment: Structure and Process*. Ann Arbor (University of Michigan Press), pp. 207-228.
- TENEY, C., JACOBS, D., REA, A., DELWIT, P. 2010: Ethnic voting in Brussels: Voting patterns among ethnic minorities in Brussels (Belgium) during the 2006 local elections. *Acta Politica*, 45(3), 273-297, DOI: <https://doi.org/10.1057/ap.2009.25>.
- THE CENSUS 2021. 2021: *The 2021 Population and Housing Census*. Bratislava (Statistical Office of the Slovak Republic). Retrieved from: <https://www.scitanie.sk/en>.
- THIJSEN P., WAUTERS B., VAN ERKEL P. 2018: Preferential voting in local versus national elections: the role of proximity revisited. In Deschouwer, K. ed. *Mind the Gap. Political Participation and Representation in Belgium*. London (Rowman and Littlefield), pp. 275-294.
- VAN DER KOLK, H. 2003: Preferential voting in European local elections. Opportunities, use, justifications and explanations in Denmark, Germany, the Netherlands and Norway. Paper presented at the ECPR General Conference, Marburg, 18-21 September 2003.
- VAN ERKEL, P. F. A. 2019: Sharing is caring: The role of voter-candidate similarities in intra-party electoral competition. *European Political Science Review*, 11(1), 75-89, DOI: <https://doi.org/10.1017/S175577391800022X>.
- VAN ERKEL, P. F. A., THIJSEN, P., VAN AELST, P. 2017: One for all or all for one: The electoral effects of personalized campaign strategies. *Acta Politica*, 52(3), 384-405, DOI: <https://doi.org/10.1057/s41269-016-0034-9>.
- VAN HOLSTEYN, J. J. M., ANDEWEG, R., B. 2012: Tweede orde personalisering: voorkeurstemmen in Nederland. *Res Publica*, 54(2), 163-192. DOI: <https://doi.org/10.5553/RP/048647002012054002002>.
- WAUTERS, B., THIJSEN, P., VAN AELST, P., PILET, J.-B. 2018: Centralized personalization at the expense of decentralized personalization. The decline of preferential voting in Belgium (2003-2014). *Party Politics*, 24(5), 511-523. DOI: <https://doi.org/10.1177/1354068816678882>.
- WAUTERS, B., THIJSEN, P., VAN ERKEL, P. 2020: Preference Voting in the Low Countries. A Research Overview. *Politics of the Low Countries*, 2(1), 77-106, DOI: <https://doi.org/10.5553/PLC/258999292020002001004>.

Acknowledgement: This paper was prepared with support from research grant VEGA No. 1/0252/23 – *Spatial systems resilience – Its factors, differentiation and consequences*.

Author's affiliation

RNDr. Martin Plešivčák, PhD.

Department of Economic and Social Geography, Demography and Territorial Development
Comenius University in Bratislava

Faculty of Natural Sciences

Mlynská dolina, Ilkovičova 6

842 15 Bratislava 4

Slovakia

martin.plesivcak@uniba.sk