DOI: 10.5817/CZ.MUNI.P210-9896-2021-50

PROVISION OF PUBLIC SERVICES BY SLOVAK LOCAL GOVERNMENTS - CASE STUDY SOCIAL PROTECTION – OLD AGE: A SUPPLY DEMAND MISMATCH?

Poskytovanie verejných služieb slovenskými samosprávami – Prípadová štúdia sociálne zabezpečenie - staroba: nesúlad medzi ponukou a dopytom?

TOMÁŠ ČERNĚNKO [1, 2]

KLAUDIA GLITTOVÁ [1]

[1] *Katedra verejnej správy a regionálneho rozvoja*
Národohospodárska fakulta
Ekonomická univerzita v Bratislave
[1] *Depart.t of Public Administration and Reg. Develop.*
Faculty of National Economy
University of Economics in Bratislava
✉ Dolnozemská cesta 1, 852 35 Bratislava, Slovak Republic
E-mail: tomas.cernenko@euba.sk, klaudia.glittova@euba.sk

[2] *Inštitút správnych a bezpečnostných analýz*
Ministerstvo vnútra SR
[2] *Institute of Administrative and Security Analysis*
Ministry of Interior of the Slovak Republic
✉ Pribinova 2, 812 72 Bratislava, Slovak Republic
E-mail: tomas.cernenko@minv.sk

Annotation
The aim of the paper is to describe the supply of public services in the field of social protection - old age (represented by expenditures in group 10, class 2 of COFOG classification) in relation to the demand for these services represented by the population in the age group 62+ related to the size and region of the local government unit. The analysis of supply and demand takes place at the level of individual local governments and the results are then presented in relation to the size of the municipality and the region. Two approaches were used for the analysis. The first focuses on the description of the current situation through the categorization of local governments according to the approach to the provision of services, and the second consists in regression analysis. The results of the regression analysis suggest that the size of the municipality and the region do not play as important a role in terms of access to the provision of the examined services as indicated by the first, descriptive analysis. To find a "pattern" for local authorities to decide on access to services for the elderly, further research will be needed that takes into account several socio-economic indicators.

Key words
social protection - old age, local government, COFOG, public services

Anotácia
Cieľom príspevku je popísať ponuku verejných služieb v oblasti sociálneho zabezpečenia - staroby (reprezentovanými výdavkami v skupinách 10, triede 2 COFOG klasifikácie) zo strany miestnych samospráv vo vzťahu k dopytu po týchto službách reprezentovaným obyvateľstvom vo vekovej skupine 62+ vo vzťahu k veľkosti obce a regiónu kde sa obec nachádza. Analýza "ponuky a dopytu" prebieha na úrovni jednotlivých samospráv a výsledky sú následne prezentované vo vzťahu k veľkosti samosprávy a kraju. Pre analýzu boli použité dva prístupy. Prvý sa zameriava na opis súčasného stavu prostredníctvom kategorizácie samospráv podľa prístupu k poskytovaniu služieb a druhý spočíva v regresnej analýze. Výsledky regresnej analýzy naznačujú, že veľkosť obce ani región nehrajú z pohľadu prístupu k poskytovaniu skúmaných služieb až tak významnú rolu ako to naznačuje prvá, deskriptívna analýza. Pre nájdenie "vzorca", podľa ktorého sa miestne samosprávy rozhodujú o prístupe k poskytovaniu služieb pre seniorov bude potrebné vykonať ďalší výskum, ktorý zoberie do úvahy viaceré socioekonomické ukazovatele.

Kľúčové slová
sociálneho zabezpečenia - staroba, samospráva, COFOG, verejné služby

JEL classification*: H76, H41*

1. Introduction

Persistently low birth rates and higher life expectancy are changing the shape of the age pyramid throughout the EU. The evident development of recent decades has shifted the originally strong population years into higher age categories and Slovakia will be the country with the fastest change from the EU countries (MF SR, 2020). Although Europeans live longer, they face many chronic diseases in old age, which require appropriate health and social conditions (Eurostat, 2019). Demographic projections of the population show a continuation of the aging trend of the population. Due to the focus of the article, we paid particular attention to the population in the post-productive age (i.e. 62 years and older)[1]. Forecasts in Slovakia assume by 2040 the predominance of the senior component in all districts except 4 (Gelnica, Námestovo, Sabinov and Kežmarok). The worst situation should be in 18 districts, especially in western and central Slovakia (together with the districts of Košice I and IV), where the economic burden index should exceed the limit of 50 seniors per 100 people of working age. The relatively favourable situation should remain in several districts of northern and eastern Slovakia. Mostly in the urban districts of Košice and Bratislava, together with spatial units in central and western Slovakia, the index of economic burden should reach the limit of 80 or more persons (Šprocha et al., 2019). The deteriorating demographic situation is thus gradually creating more and more pressure on the growth of the volume of public services provided to the elderly.

The provision of services for the elderly[2] is one of the main tasks of self-government. This competence was included among the original competencies of local governments in the process of decentralization. That it is a really important part of local public services is also proved by the direct linking of a part of the share of personal income tax to the number of inhabitants older than 62 years living in a given local government unit[3] (see Černěnko, Neubauerová & Zubaľová, 2021). It is therefore surprising that, despite this fact, services for the elderly were not perceived by a large number of local governments as an original competence, but as part of the delegated competencies of state administration (ZMOS, 2020).

However, in the case of Slovakia, when providing public services at the local level, we cannot ignore the fact that more than 60% of municipalities have less than 1.000 inhabitants, which may negatively affect the production and availability of these services due to the low capacity of small local governments.

The aim of our paper is to find out to what extent these funds dedicated to the provision of services for the elderly are reflected in local government expenditures (specifically in class 10.2 old age of the COFOG classification) and to try to find factors which affect the way how local governments decide on the amount of such allocated expenditures. We've decided to investigate this phenomenon through descriptive analysis and categorization and regression analysis in the context of the size and region of the local government unit.

The main motive is to identify possible non-exhaustive performance of local governments, which results in lagging regions. Thus, the aim of the paper is to analyse the supply of public services in the field of social protection - old age (represented by expenditures in group 10, class 2 of COFOG classification by local governments) in relation to the demand for these services represented by the population in the age group 62+ related to the size and region of the local government unit. The long-term mismatch between supply (in our case, the supply is presented by local government spending) and demand (we assume that dedicated funds for services for the elderly represent a minimum level of demand) for public services, especially when it comes to insufficient supply (in the sense of ensuring justified demand) leads to a reduction in the quality of life and thus the level of development. Rodríguez-Pose (2018) says that insufficiently efficient regions (regional/local governments) respectively life in underdeveloped regions leads to an increase in support for anti-system parties, which leads to a reduction in the performance of the economy and the state as a whole, which is again reflected in a slowdown or deterioration in the level of development. Low performance in provision of public services by local government units, caused by their low capacity, can be improved by intermunicipal cooperation (see Klimovský 2014, Swianiewicz 2010 or Dujava, Černěnko, Rafaj, 2019), but according to Černěnko – Rafaj (2020) this not always the case by Slovak local governments.

[1] The age limit of 62 years was chosen due to its use in the redistribution of personal income tax revenue to local governments
[2] In the context of services provided by the local governments, according to the methodology of the Statistical Office of the Slovak Republic, this includes "*provision of care services to citizens who have reached the age decisive for granting an old-age pension and need another person's help in providing necessary life and necessary household chores. In addition, there are expenditures on the provision of care in care facilities for the above-mentioned group of citizens in retirement homes*" through a public or private provider.
[3] In addition to the population older than 62 years and the total population, the numbers of pupils attending school facilities established by the local government and the altitude of the local government unit are also included in the formula for personal income tax distribution.

The categorization of municipalities based on their position to baseline was inspired by Martin, Sunley, Tyler and Gardiner (2016), based on Blanchard and Katz (1992), who investigated the development of cities in Britain through annual percentage growth differences from the UK's national growth rate, cumulated through time. Through regression analysis, we want to determine the influence of factors such as size and region on the ability to provide public services in sufficient volume. These builds the findings on the low efficiency of small municipalities in the provision of public services (Swianiewicz 2010, Černěnko 2017) and also their ability to deal with their income (Černěnko, Neubauerová & Zubaľová, 2021).

2. Methods and data

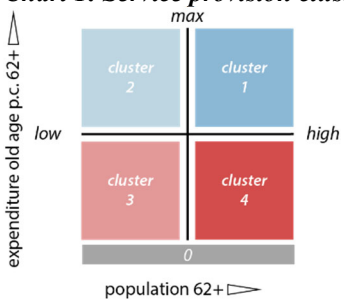
2.1 Methods

Service provision clusters – supply demand analysis
Local governments will be clustered according to data on the expenditure on old age p.c. 62+ and the share of the local government population over the age of 62. Local governments where spending on old age was € 0 were included in the "0" cluster. We classified the remaining local governments into a 2x2 matrix according to the above criteria, while the dividing line in the case of the x-axis - the share of the population older than 62 years was the average of the whole population of local governments (value 19.38 %).

In the case of the y-axis - expenditure p.c. 62+ was the breaking point the value of € 102, what is the "contribution" (for 2019) on the services for elderly than can be linked to the formula on distribution of the share on personal income tax to local governments. This separates the local governments units into those, who spend additional resources on services for elderly (old age) and those, who spend the money dedicated to being spent on elderly (old age) on other services.

Same method is used to explore the expenditure aggregated to district level.

Chart 1: Service provision clusters - Scheme



Source: authors

Cluster 1 - represents those local governments that have an above-average share of the population over 62 years of age and expenditures p.c. 62+ higher than the contribution of elderly to the share on personal income tax
Cluster 2 - represents those local governments that have a below-average share of the population over 62 years of age and expenditures p.c. 62+ higher than the contribution of elderly to the share on personal income tax
Cluster 3 - represents those local governments that have a below-average share of the population over 62 years of age and expenditures p.c. 62+ lower than the contribution of elderly to the share on personal income tax
Cluster 4 - represents those local governments that have an above-average share of the population over 62 years of age and expenditures p.c. 62+ lower than the contribution of elderly to the share on personal income tax
Cluster "0" - represents those local governments that have p.c. 62+ at the level of 0 €.

Regression model
Model 1

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \varepsilon$$

Where y was represented by expenditure on elderly care p.c., β_0 represented the constant value, x_1 represented the region of the local government and x_2 represented the size category of the local government.

2.2 Data

Data on individual local government expenditure (real expenditure of 2019) and their structure (up to class level) in COFOG classification come from DataCentrum of the Ministry of Finance of the Slovak Republic. For the purpose of this paper, the individual data on local government expenditure on group 10.2 "old age" were used. Data on the population (as of 31. 12. 2019) come from the Statistical Office of the Slovak Republic, the DataCube database.

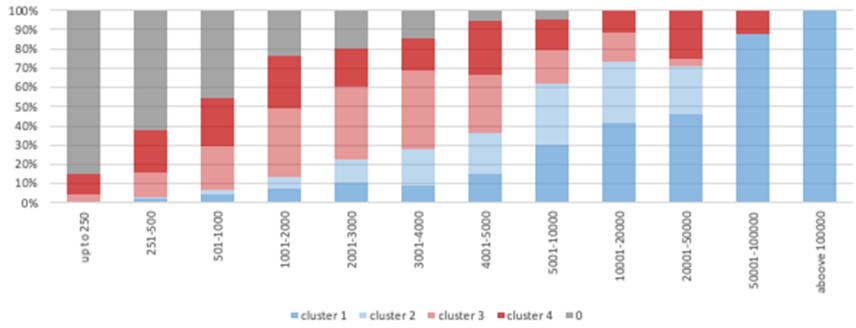
Data on personal income tax transfer to the local governments (for the year 2019) and also the population of 62+ used to calculate the personal income tax transfer come from Ministry of Finance of the Slovak Republic. Our research is conducted on 2881 local governments and 72 districts. In case of local government units, the data for 17 city boroughs of Bratislava and the City of Bratislava and 22 boroughs of Košice and the City of of Košice were aggregated at the city level. In case of districts, the 5 Bratislava districts and 4 Košice districts are aggregated at city level and presented as one territorial unit.

3. Results

3.1 Service provision clusters – supply demand analysis

As mentioned above, local governments also receive part of the money through a direct link to the population over the age of 62 (1,060,665 inhabitants). The part dedicated to services for the elderly in this way in 2019 represented the volume of funds in the amount of € 108,273,795 or € 102 p.c. 62+. The results of the first analysis showed that out of the total number of 2,881 observed municipalities, 1,353 have zero expenses for old age, i.e. from our point of view it does not provide any "dedicated" services for seniors. Of the total number of 2,881 municipalities, however, only 318 municipalities (in clusters 1 and 2) provide "above-standard" services to their elderly citizens. In general, we can say that more than 88% of municipalities (cluster 3, 4 and "0") provide services for the elderly at a "below financed" level, if at all. If we look at these results through the size categories of municipalities, we will see (see Chart 2) that the largest share of municipalities that do not "provide" any services for the elderly are the smallest municipalities (with a size of up to 250 inhabitants). This share decreases with the size of the municipality and in the category from 10,000 inhabitants there is no longer a municipality that would not "provide" any services for the elderly.

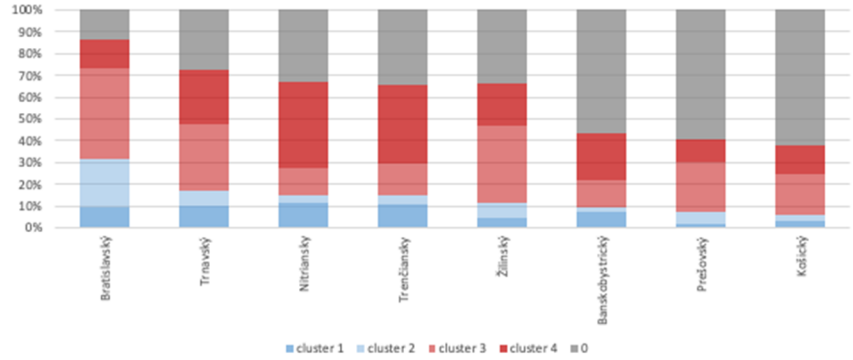
Chart 2: Service provision clusters share in local government size categories



Source: authors

From a regional point of view, the largest share of municipalities that do not "provide" any services for seniors in the Košice region, just behind it is the Prešov region followed by the Banská Bystrica region (see Chart 3). If we look at the results in absolute numbers, most municipalities that do not "provide" any services for seniors are in the Prešov region, in second place is the Banská Bystrica region, followed by the Košice region. More details in Appendix, tables A1-A4.

Chart 3: Service provision clusters share in regions

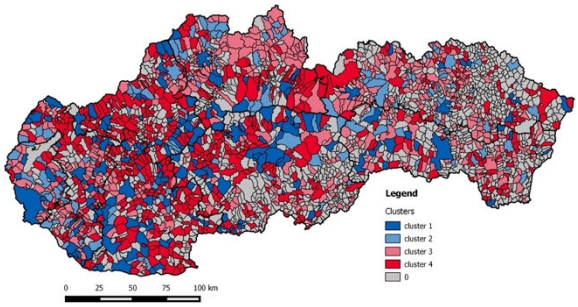


Source: authors

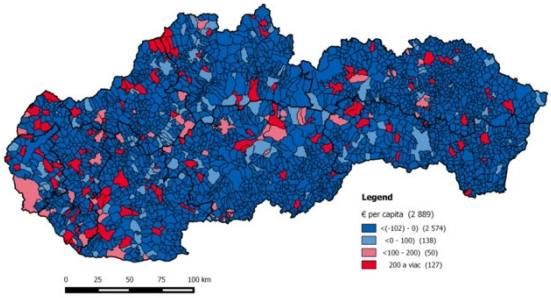
The cartogram below (Chart 4a) shows the affiliation of individual municipalities to defined clusters. Dark colours depict local government units that have more inhabitants older than 62 years compared to the Slovak average. The shades of blue show those local government units that spend more than € 102 p.c. on services for the old age (dedicated in the share of personal income tax). As we can see, the most "affected" (grey colour) are the southern areas of the Banská Bystrica Region, a large part of the Košice Region and almost the entire Prešov Region.

Chart 4: Service provision - map of local governments

a) Service provision clusters



b) Spending on old age p.c. 62+ (in €)



Source: authors

If we plot the expenditures of individual local governments on services for the elderly (Chart 4b), we see that the vast majority of local government units (2563; dark blue) in Slovakia spend less on services for the elderly than they received within the redistribution of personal income tax to local governments.

Tab. 1: Old age expenditure - overview

local government units	received (€)	spent (€)	difference (€)	population 62+	AVG spending p.c. 62+ (€)
spend less (2563)	50,960,018.70	12,867,757.10	-38,092,261.60	499,570	25.76
spend more (318)	57,229,925.92	162,248,217.80	+105,018,291.88	561,095	289.16

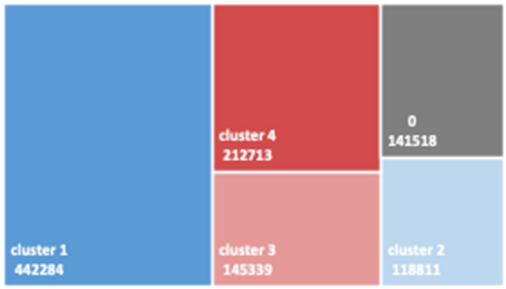
Source: authors

Thus, a total of 2563 municipalities consume € 38,092,261.60 or 74.75% of the total € 50,960,018.70, which were provided to these local governments to provide services for the elderly. On the other hand, the remaining 318 municipalities spend € 105,018,291 (which is 183.50%) more on services for the elderly than primarily dedicated. The positive news in this case is that if we look at the results in terms of the size of the affected population, the results are more optimistic. As chart 5b shows, 52.9 % of the population over 62 years of age live in local governments with “above-standard” old-age expenditures (clusters 1 and 2) and “only” 13.34% of the population in local governments “without” services for the elderly.

Chart 5: Service provision comparison – local governments vs. population

a) Service provision clusters – local government units

b) Service provision clusters - population

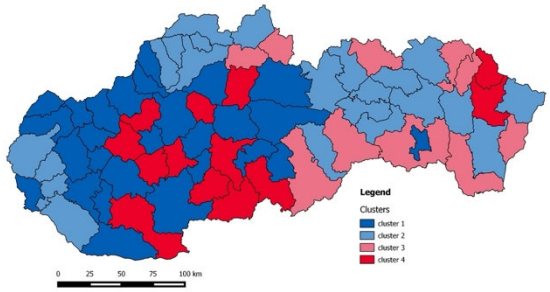


Source: authors

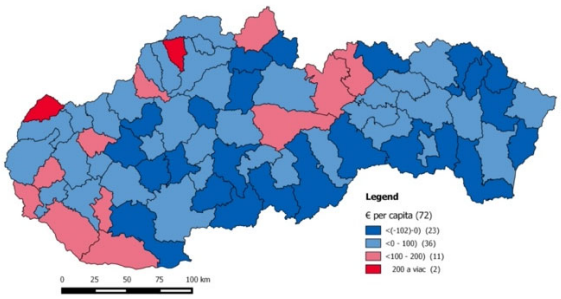
If we change the scale and look at the provision of services for seniors at the district level, we will see the following (see Chart 6a). Compared to the detailed results of local government units (Chart 4a), the situation with the services provided does not seem to be so bad. Most of western and central Slovakia has an above-average population older than 62 years (dark colours), but more than "dedicated" funds (blue colour) is spent only in economically stronger districts (western Slovakia, and then the northern development axis). Looking at Chart 6b, we see that the situation has also "improved". Predominant are becoming districts that spend more than € 102 per capita over the age of 62 on services for the elderly. If we omit the fact that most local governments do not behave in this way and the result is "pulled" by larger local governments, we will see that out of the total number of 23 dark blue districts, 9 belong to the group of less developed districts[4] (Lučenec, Medzilaborce, Rimavská Sobota, Rožňava, Sobrance, Stropkov, Svidník, Trebišov, Veľký Krtíš).

Chart 6: Service provision – aggregation on district level

a) Service provision clusters



b) Spending on old age p.c. 62+ (in €)



Source: authors

3.2 Regression analysis

The second method by which we examined the number of services provided for seniors was regression analysis. The model's results (shown in Table 2) reached the value of R^2 only at the level of 4.34%.

[4] For the needs of policies, the criteria for the definition of less developed districts are set by law in Slovakia. Their list is updated on a quarterly basis by the Central Office of Labour, Social Affairs and Family.

Tab. 2: Regression results Model 3 - Expenditure on old age and region and local government size category

Source	SS	df	MS	Number of obs	=	2,881
				F(18, 2862)	=	7.22
Model	7627422.14	18	423745.674	Prob > F	=	0.0000
Residual	168072677	2,862	58725.6033	R-squared	=	0.0434
				Adj R-squared	=	0.0374
Total	175700099	2,880	61006.9787	Root MSE	=	242.33

old_age_pc_62	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size_cat						
2	18.719	14.63171	1.28	0.201	-9.970747	47.40875
3	49.45802	14.08158	3.51	0.000	21.84697	77.06908
4	55.55456	15.24672	3.64	0.000	25.65889	85.45023
5	87.41474	21.08769	4.15	0.000	46.06615	128.7633
6	107.8997	30.17972	3.58	0.000	48.72346	167.0758
7	113.5379	40.5629	2.80	0.005	34.00248	193.0734
8	199.1037	32.70573	6.09	0.000	134.9745	263.2329
9	228.5131	43.09108	5.30	0.000	144.0204	313.0059
10	204.1887	47.22652	4.32	0.000	111.5873	296.7902
11	229.0673	86.42519	2.65	0.008	59.60542	398.5293
12	214.5323	172.4287	1.24	0.214	-123.5648	552.6295
region						
Trnavský	19.71501	32.7463	0.60	0.547	-44.49372	83.92374
Nitriansky	10.68179	31.80436	0.34	0.737	-51.67997	73.04356
Trenčiansky	-6.119335	32.56416	-0.19	0.851	-69.97093	57.73226
Žilinský	-8.878331	32.02373	-0.28	0.782	-71.67025	53.91359
Banskobystrický	-6.012698	31.32044	-0.19	0.848	-67.4256	55.4002
Prešovský	-25.18453	30.87916	-0.82	0.415	-85.73218	35.36312
Košický	-37.91309	31.43372	-1.21	0.228	-99.54812	23.72193
_cons	19.15325	31.49825	0.61	0.543	-42.6083	80.91481

Source: authors

However, the results show that the influence of the size category is statistically significant for local governments in categories[5] 3 to 11 (local governments with a size of 501 – 100,000 inhabitants). However, the influence of regions was not statistically significant in this model in any of 8 cases. "Unfortunately" the results of the regression analysis by means of a low value of R^2 indicate that the local government's size and location have a relatively small effect as factors which affect how local governments allocate old age expenditures.

4. Conclusion

Our results show that the ability of local governments to provide services for the elderly differs. According to the statement of expenditures in the COFOG classification, more than 46% of local governments does not provide services for the elderly (they do not report any expenditures in COFOG class 10.2). These local governments are concentrated mainly in the Banská Bystrica, Prešov and Košice regions, i.e. regions where the least-developed developed districts of Slovakia are concentrated. A small and weak patch is the finding that this significant shortfall affects "only" 13.3% of the population, but another almost 33.75% of the population lives in local government units in clusters 3 and 4, which represent local governments with expenditures lower than the dedicated amount of share on personal income tax transferred to local governments. Such a behaviour of local governments thus makes the connection of part of the share of personal income tax to the number of seniors living in the local government unit quite questionable.

However, if we also look at the results from the point of view of the spatial distribution of these local governments, most of them are located in the vicinity of equally affected and equally small municipalities. This means that not only do residents have limited access to services for the elderly but due to the low level of cooperation (Černěnko, Rafaj 2020, Dujava, Černěnko, Rafaj, 2019), probably also to other types of public services related to health or social care.

To take a step back and look at the results of local governments through district lvel has shown another dimension of the daily reality of life (not only) in the least developed districts. In addition to economic disadvantage (high unemployment), the inhabitants of these regions have to deal with less access to public services, despite the fact that the local government has been provided with funds to provide them.

[5] Indexes of local government size categories according to population: (1) up to 250, (2) 251 – 500, (3) 501 – 1000, (4) 1001 – 2000, (5) 2001 – 3000, (6)3001 – 4000, (7) 4001 – 5000, (8) 5001 – 10000, (9) 10001 – 20000, (10) 20001 – 50000, (11) 50001 – 100000, (12) more than 100001

From the point of view of the regression analysis, the size of the local government proved to be statistically significant. The results confirmed that the ability of the local government to provide services for the elderly is growing in size. This case also confirms that the way of transferring competencies according to the principle of "everyone equally" without taking into account the real capacity of the local governments to handle the assigned tasks is negatively supported by the quality of life of citizens living in such local government units (regions). This, in the context of Rodríguez-Pose (2018) creates a circle of distrust in government policies on the part of the population, which weakens any remaining capacity of local governments to implement development policies to enhance the quality of life in the local government (district/region). In combination with the spatial distribution of poorly performing local governments, the need for structural reform of public administration in Slovakia is reaffirmed.

Based on our results, we would like to focus in the future research on the availability of other public services in local governments and regions. The results of such research would contribute to the debate on the redistribution of competencies between local governments on the basis of their capacity or the adjustment of the method of redistribution of shared taxes.

Literature

[1] BLANCHARD, O. J., KATZ, L. F., (1992). Regional Evolutions. *Brookings Papers on Economic Activity*, no. 1, pp. 1-75. [online]. [cit. 17.7.2019]. Reachable at https://scholar.harvard.edu/files/lkatz/files/regional_evolutions.pdf.

[2] ČERNĚNKO, T., (2017) Effectiveness of administrative services in Slovakia. In: *Engines of urban and regional development: conference proceedings: 6th Central European conference in regional science*, pp. 226-234. ISBN 978-80-557-1335-9.

[3] ČERNĚNKO, T., RAFAJ, O., (2020) The Impact of Administrative Fragmentation on Providing Public Services in Functioning Urban Regions - A Case Study of Slovakia. In *Proceedings of the 13th International Scientific Conference Public Administration 2020: Three Decades of Challenges, Reforms, and Uncertain Results*. Pardubice: Univerzita Pardubice, pp. 19-29. ISBN 978-80-7560-338-8.

[4] ČERNĚNKO, T., NEUBAUEROVÁ, E., ZUBAĽOVÁ, A., (2021). Impact of the COVID-19 Pandemic on the Budget of Slovak Local Governments: Much Cry and Little Wool? *Scientific Papers of the University of Pardubice, Series D*, vol. 29, no. 1, Article 1249. ISSN 1804-8048. DOI: 10.46585/sp29011249.

[5] DUJAVA, D., ČERNĚNKO, T., RAFAJ, O., (2019). Pools or Schools or Both? Diversification and Specialisation in Public Services. *Department of Economic Policy Working papers,* no. 20, pp. 1-9. Bratislava: University of Economics in Bratislava. ISSN 1339-0430, 2019. Reachable at https://nhf.euba.sk/www_write/files/katedry/khp/working-papers/dep_wp020.pdf.

[6] EUROSTAT, (2019). *Ageing Europe*. Looking at the lives of older people in the EU. Luxembourg: European Union, Statistical books, 162 p. ISBN 978-92-76-09815-7.

[7] KLIMOVSKÝ, D., (2014). *Inter-municipal cooperation in Slovakia: The case of regions with highly fragmented municipal structure.* Novo mesto: Faculty of Organization Studies. ISBN 978-961-93688-3-1.

[8] MARTIN, R., SUNLEY, P., TYLER, P., GARDINER, B., (2016). Divergent cities in post-industrial Britain. *Cambridge Journal of Regions, Economy and Societ*y, vol. 9, no. 2, pp. 269–299. DOI: 10.1093/cjres/rsw005.

[9] MINISTERSTVO FINANCIÍ SR, (2020). Národný program reforiem. [online]. [cit. 16.5.2021]. Reachable at https://www.mfsr.sk/files/sk/financie/institut-financnej-politiky/strategicke-materialy/narodny-program-reforiem/npr-2020.pdf.

[10] RODRÍGUEZ-POSE, A., (2018) The revenge of the places that don't matter (and what to do about it), *Cambridge Journal of Regions, Economy and Society*, vol. 11, no. 1, pp. 189–209. ISSN 1752-1378. DOI: 10.1093/cjres/rsx024.

[11] SWIANIEWICZ, P., (2010). If Territorial Fragmentation is a Problem, is Amalgamation a Solution? An East European Perspective. *Local Government Studies*, vol. 36, no. 2, pp. 183-203. ISSN 0300-3930. DOI: 10.1080/03003930903560547.

[12] ŠPROCHA, B., VAŇO, B., BLEHA, B., (2019). K*raje a okresy v demografickej perspektíve. Populačná prognóza do roku 2040.* INFOSTAT – Výskumné demografické centrum, Bratislava, 82 p., ISBN 978-80-89398-42-3.

[13] ŠTATISTICKÝ ÚRAD, (2014). *Vysvetlivky k štatistickej klasifikácii výdavkov verejnej správy (COFOG) zo dňa 22. 9. 2014.* [online]. [cit. 16.5.2021]. Reachable at https://slovak.statistics.sk/wps/wcm/connect/0b6b9213-e443-4208-8d19-afbdeb9d6052/COFOG_vysvetlivky_22_09_2014.pdf?MOD=AJPERES&CVID=kysEf.r.

[14] ZMOS, (2020). *Výkon a financovanie originálnych kompetencií. Národný projekt modernizácia miestnej územnej samosprávy*. Bratislava, 134 p. [online] [cit. 16.5.2021] Reachable at https://npmodmus.zmos.sk/download_file_f.php?id=1406364.

The paper was supported by VEGA grant No. 1/0683/21 Generational exchange and provision of public services and administration.

Appendix

Tab. A1: Local government unit clusters – regional view

region/cluster	cluster 1	cluster 2	cluster 3	cluster 4	0	sum
Bratislavský	7	16	30	9	10	72
Trnavský	25	17	77	62	68	249
Nitriansky	40	12	45	139	116	352
Trenčiansky	29	12	41	99	94	275
Žilinský	15	22	111	60	107	315
Banskobystrický	38	11	63	110	293	515
Prešovský	13	34	154	70	392	663
Košický	13	14	83	57	273	440
sum	180	138	604	606	1353	2881

Source: authors

Tab. A2: Local government unit clusters – size category view

size category/cluster	cluster 1	cluster 2	cluster 3	cluster 4	0	sum
up to 250		1	22	56	453	532
251-500	13	6	76	129	369	593
501-1000	36	16	171	185	341	749
1001-2000	43	32	203	153	136	567
2001-3000	20	23	72	37	38	190
3001-4000	7	14	31	13	11	76
4001-5000	6	8	12	11	2	39
5001-10000	19	20	11	10	3	63
10001-20000	14	11	5	4		34
20001-50000	13	7	1	7		28
50001-100000	7			1		8
above 100000	2					2
sum	180	138	604	606	1353	2881

Source: authors

Tab. A3: Local government unit clusters – population 62+ regional view

region/cluster	cluster 1	cluster 2	cluster 3	cluster 4	0	sum
Bratislavský	102710	13761	12668	2326	2160	133625
Trnavský	49665	8486	21905	19892	13513	113461
Nitriansky	55915	4100	10535	54253	19231	144034
Trenčiansky	46520	16002	8604	42423	11750	125299
Žilinský	41390	23939	28523	22981	11475	128308
Banskobystrický	43922	4346	10244	51257	22953	132722
Prešovský	37668	31690	30844	9978	29093	139273
Košický	64494	16487	22016	9603	31343	143943
sum	442284	118811	145339	212713	141518	1060665

Source: authors

Tab. A4: Local government unit clusters – population 62+ size category view

size category/cluster	cluster 1	cluster 2	cluster 3	cluster 4	0	sum
up to 250		30	713	2429	15022	18194
251-500	1258	400	4988	11297	26827	44770
501-1000	5549	1780	20742	29321	43899	101291
1001-2000	13835	7770	45120	46571	32797	146093
2001-3000	10655	9388	27261	18869	14579	80752
3001-4000	5278	8115	14437	9564	4517	41911
4001-5000	5994	5262	7787	10579	1357	30979
5001-10000	29279	21159	10732	13307	2520	76997
10001-20000	41874	27998	9999	12462		92333
20001-50000	79887	36909	3560	45010		165366
50001-100000	104464			13304		117768
above 100000	144211					144211
sum	442284	118811	145339	212713	141518	1060665

Source: authors