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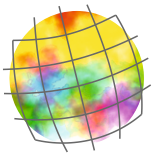

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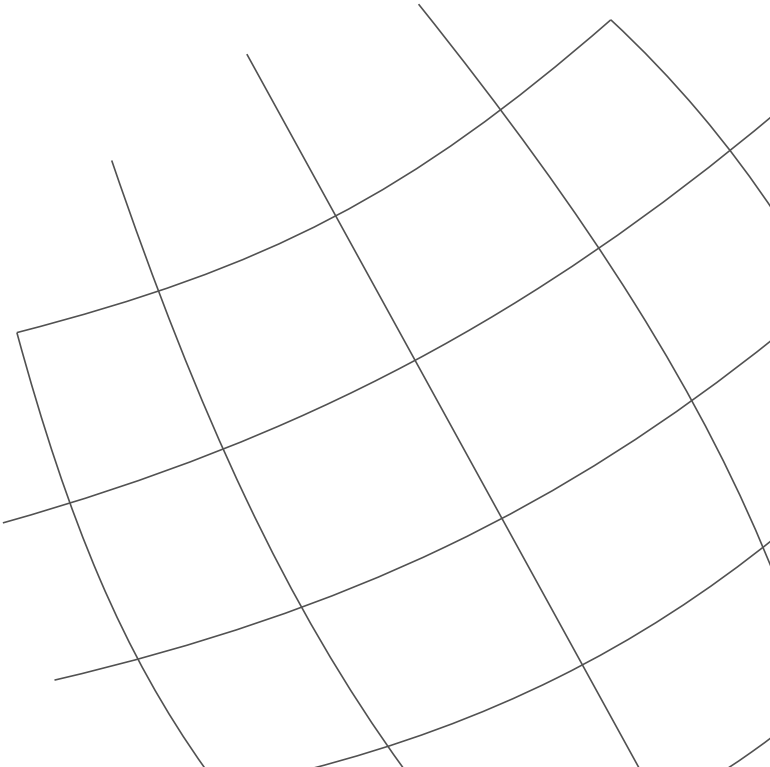

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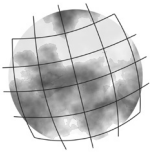

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HOW THE CZECHS AND SPANISH PERCEIVE ISLAM: ISLAMOPHOBIA IN THE EUROPEAN CONTEXT

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Abstract
The paper discusses the transformations of the religious structure of European society manifested, among other ways, in an increased intolerance toward cultures other than Christian and secular, most notably the Muslim culture. The objective is to analyse the causes of the fear of Islam and explain Islamophobia in two socially and geographically distinct contexts: in Czechia and in Spain. The paper is based on a survey carried out in both countries in 2014. The issue of Islamophobia is viewed from the perspective of mainstream society, with a focus on differences in the perception of Islam by people of different nationality, religious belief, gender, age and education. The main objective of the paper is to analyse the differences in the perceived fear of Islam with regard to sources of information about the Muslim culture and personal contact with Muslims in an attempt to uncover the causes of Islamophobia. The analysis of the survey revealed that the phenomenon is generally very complex. In summary, however, Czechia registered a higher level of Islamophobia than Spain, likely due to less frequent contact between Czechs and Muslims and the Islamic culture.

Keywords
geography of religion, Islamophobia, perception of Islam, Czechia, Spain

INTRODUCTION

The modern globalised world is characterised by a blending of cultures and religions. This has resulted in the contemporary problem of some groups of people being unprepared for the diversity of culture and religion, leading to intolerance shaped by traditions, history and other regional specifics, as well as current events in the local and global context. In European secular or Christian societies, this issue generally leads to a fear of a growing presence of Islam in the public space. Since the second half of the twentieth century, the immigration of Muslims to Europe has been on the rise. "In this context, the political issue of international migration started creating a division in the attitude towards Islam. The traditional European society *a priori* equates Islam with fundamentalism or terrorism" (Nešpor and

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Lužný, 2007: 165-166). Religious extremism is recently most often associated with the impact of Islam on political decisions in certain regions, in particular in Southwest Asia (the Taliban, the Islamic State, etc.), resulting in armed conflicts that led to the displacement of hundreds of thousands of people from Southwest Asia and North Africa. The refugees leave mainly for Europe and bring along their culture and religion, which causes various responses in all European countries. In general, the different backgrounds of European societies create various forms of perception of other cultures and religions which are considered different, untraditional, incomprehensible. According to Huntington (1996), religion is the fundamental "mover" of the development of civilisation and a central force motivating human behaviour. The differences in religious values will therefore lead to a collision of societies, which is the basic principle behind his concept of a "clash of civilisations" (Huntington, 1996). Religion is therefore becoming an important topic in social sciences for reasons even beyond the immigration wave from Southwest Asia to Europe. "One of the reasons for studying religion is undoubtedly its social, political, cultural and economic dimension" (Nešpor and Lužný, 2007: 10). The role of religion in European politics is a multi-dimensional one at both levels, the national and international (Steven, 2009), and the relationship between religion and space is therefore a key issue (Pastorelli, 2009). Peach (2006) even believes that religion is a more important transformative element than race or ethnicity. In many countries of Western Europe, conflicts are often flaring up precisely in those places that have a religious dimension. Here we encounter a greater resistance towards the communities and holy places of minority religious groups, primarily those tied to Islam and the Islamic tradition and culture. The issue of a fear of Islam or Islamophobia has long been neglected by research in geographic sciences, unlike in sociology or psychology (e.g. Fekete, 2008; Gottschalk and Greenberg, 2008). Henn (2008) even claims that one of the greatest mistakes of modern social theory in general was excluding religion from the social sphere. Because contemporary society may be considered more religious than ever before (Berger, 1999), some authors even talk of a "bottom-up" re-Christianisation, re-Judaisation or re-Islamisation (Kepel, 1994) or generally of post-secularisation (Williams, 2015; Habermas, 2008). At the beginning of the twenty-first century, socio-geographical research is starting to reflect the plurality of religion to a greater extent, particularly in the relationship between the Islamic minority and the secular/Christian majority in Europe (Knippenberg, 2014; Schmitt, 2013; Hopkins, 2004; Peach, 2006).

The fear of Islam caused by the militant politics of extremist Muslim groups and terrorist attacks in various parts of Western civilisation (e.g. New York City 2001, Madrid 2004, Paris 2015) is often referred to as Islamophobia[1]. The term has been

1 The authors are aware of the problems and criticism arising from the unclear definition of the term "Islamophobia"; for the purposes of this paper, it is understood as a phenomenon

in use since the 1980s and can be defined as a spectrum of various manifestations expressing an elitist disdain or even hateful aversion toward Muslims, particularly Arabs, with whom the xenophobic individuals or groups come into contact (Kropáček, 2002). Islamophobia is a contemporary phenomenon motivated by the war on terror after 9/11, migration and the cultural influence of Muslims on Europe (Soyer, 2013).

Fear of Islam or even Islamophobia also appears today at the political level, but Islamophobic stories in the media are its most visible and strongest form. Fuelled by the media and other channels, the fear of Islam that surfaced in the late 1990s and which is therefore not a direct consequence of the immigration wave caused by the policies of the Islamic State has naturally led to an increase in the interest of the geography of religion in Muslim culture. Geographical research is focused mostly on the manifestations of Muslim culture in public space and on Muslim identities, communities and societies on all geographical levels (e.g. Gökariksel and Secor, 2015; Schmitt, 2013; Kong, 2010; Aitchison, Hopkins and Kwan, 2008; Hopkins, 2004; Peach, 2006; Falah and Nagel, 2005), which is one of the directions of the new geography of religion based on the research of societies and countries with different religious beliefs and the study of religious groups in their social and political context (Kong, 2004, 1990).

This paper addresses the perception of Islam in two different European societies: Czech, traditionally secular without any historical experience with Muslim culture, and Spanish, formed by centuries of Christian tradition as well as a strong historical influence of Islam. The causes and symptoms of the fear of Islam and perception of the Muslim minority by the non-Muslim majority have been analysed on the basis of a survey carried out in both countries. The aim of the paper is to serve as a contribution to the discussion of Islamophobia or fear of Islam in Europe through an analysis and comparison of the manifestations of Islamophobia in two societies (Czech and Spanish) with a different historical experience with Islam. We can then expect that the higher level of awareness of Islam and more direct experience with the religion will be reflected in a lower level of Islamophobia in Spain compared to Czechia. We also expect to see lower rates of Islamophobia among the younger generation under 26 years of age, as the younger generation is generally less traditional and more open to different opinions and cultures than only Christian European values. The analysis will also focus on the causes and manifestations of Islamophobia in relation to the respondents' sources of information about Islamic culture and their religious beliefs.

describing a fear of Muslims and the Islamic religion (Kunst, Sam, Ulleberg 2013) or as a prejudice against Muslims often unsupported by any personal experience with the religion. Islamophobia may take the form of an opposition to the construction of mosques as well as direct violence against Muslims (Parkes et al. 2013).

THE FEAR OF ISLAM IN THE EUROPEAN CONTEXT

Muslims today are the second largest religious group in Europe, without taking into account the non-religious population. Islam has been present in Europe since the seventh century, with a particularly strong representation on the Balkan and Iberian peninsulas. After the Second World War, Europe was characterised mostly by an openness towards immigration (Čermáková and Leontiyeva 2017), resulting in the first large influx of Muslim immigrants (Heřmanová and Faryadová, 2012). Postwar Muslim migrants, however, were not fully integrated into society (Castels, 1973). There are about 20-25 million Muslims living in the European Union today, especially in France and Germany (Janeček, 2011). The geographic distribution of Muslims in Europe is very uneven. Most of them live in rich countries, particularly in cities. Some demographers estimate that by 2020, the Muslim population in the EU will grow so much that one in ten Europeans will be a Muslim; by 2050, the figure could be one in five (Heřmanová and Faryadová, 2012).

Different historical experience of contacts with Muslims and their culture in Czechia and in Spain also strongly influences the contemporary view of Muslims and Islam in each country (Aguilera-Carnerero 2018, Dizdarevič 2018). Probably the most important factor in the distribution of Muslims in Europe is geographic location. The Iberian Peninsula has been home to Muslims for centuries (Meer 2013). Central Europe, on the other hand, has had very few historically recorded contacts with Muslims over the centuries (Parkes et al., 2013).

Due to its geographical location and nature of its historical development, Czechia never came into more permanent and direct contact with Islamic civilisation. The first Muslims came to the Czech lands at the turn of the twentieth century after the occupation and annexation of Bosnia and Herzegovina. This immigration wave continued after the founding of Czechoslovakia (Havlíček 2006). In 1930s, Muslim communities began to emerge in Prague, Brno and Zlín. The Czech Muslim Community was founded between 1934 and 1935 as a group with roughly 700 members. It was not officially recognised until 1941 (Mendel, Ostřanský and Rataj, 2007). After the fall of the communist regime, interest of the Czech population in religious ideas and values was partially reinvigorated (Havlíček 2008) before weakening again. The estimated number of Muslims in Czechia varies from roughly three thousand (Czech Statistical Office, 2011) to twenty thousand (Murad 2009) due to the fact that the question about religion on the official census is optional and because many Muslims are foreigners who are often not included in the census. Czech Muslims are joined together in the Central Muslim Community, which was registered as a religious society in 2004 (Heřmanová and Faryadová, 2012). Most Czech Muslims are educated men well-integrated into the mainstream society in which they have been living since their studies and in which they establish new

families. Muslims have been arriving to study in today's Czechia since the 1960s, when the first students came from Syria (Heřmanová and Faryadová, 2012).

Spain, on the other hand, has extensive historical experience with Islam. It became a centre of Muslim learning in the Middle Ages (Kropáček, 2002). Muslim Spain flourished from the eighth to the thirteenth century, including at the time when the northern Catholic kingdoms (Castile, Aragon and Portugal) conquered the entire Iberian Peninsula. Even under Catholic government, a significant number of Muslims remained in the area (Soyer, 2013). There was, however, a strong disproportion in birth rates between Christian and Muslim families, leading to the adoption of almost "fascist" measures under the reign of King Philip II. A Muslim uprising that occurred in the early seventeenth century was suppressed in 1609 by Philip III; after the event, the king ordered the expulsion of more than three hundred thousand Muslims, particularly to North Africa. The expulsion meant the end of efforts by the Spanish government and the Catholic Church to assimilate the minority by destroying its culture; it also signalled the end of the presence of a Muslim minority for a long time, until the 1980s, when a large Muslim immigration wave arrived in Spain (Soyer, 2013). In the 1990s, Spain's position towards Muslims was noticeably friendlier, resulting, for example, in the establishment of a religious-cultural centre in Madrid and the International Islamic University in Córdoba (Communicatie, informatie, educatie, 2001). A Muslim influence is also apparent in Spain in the third millennium. The 9/11 attacks and those on the train system in Madrid on 11 March 2004 did not produce any significant rise in violence towards Muslims, but there were several protests (Al Hassani, 2005). The attitude of the Spanish towards Muslims is influenced not only by extremist or fundamentalist Islam, but also by immigration, particularly from North Africa. The increase in the number of Muslim immigrants has even led to a revival of the Catalan radical right-wing party Platforma per Catalunya. Today, Spain is trying to integrate the Muslim population into the predominantly Christian society with mixed results (Aguilera-Carnerero 2018). The Muslim community of Spain is very heterogeneous and shows varying degrees of assimilation (Soyer, 2013). Today, almost 3% of the Spanish population is Muslim, representing roughly 32% of all non-Catholic believers in the country (World Christian Database, 2014, Centro de investigaciones sociológicas, 2008). They live mainly in and around large industrial cities such as Barcelona or Madrid, and in the south of Spain.

CAUSES AND MANIFESTATIONS OF ISLAMOPHOBIA

Islamophobia as a research subject remains highly controversial (Ostřanský 2017). The very definition of the term is divisive. Viewing Islamophobia from a psychological perspective, Goottschalk and Greenberg (2008) regard it as a phobia or

an irrational fear of Islam and Muslims. Větrovec (2013) disagrees, believing that "Islamophobia is not a phobia in the psychiatric sense; the term has been transposed to the context of interaction between people" (Větrovec, 2013: 7). However, he considers the use of the term "phobia" to be fully reasonable. Halliday (1999) speaks of hatred towards Muslims and stereotypical views of their behaviour. Similarly, Lee et al. (2009) argue that Islamophobia should be understood as an affected component of the stigmatisation of Islam and Muslims. Islamophobia can also refer to various manifestations (written, spoken, drawn; songs, gestures and other non-verbal means of communication) expressing a deeply negative attitude towards Islam (Janků et al., 2013). In contrast, there are scholars who disagree with the term "Islamophobia" itself, preferring to speak about a "Muslim-phobia" (Erdenir, 2010) or "anti-Muslimism" (Halliday, 1999), or consider the phenomenon to be a specific form of racism (Werbner, 2013; Rattansi, 2007; Modood, 2007; Al Hassani, 2005; Wieviorka, 1995; Balibar, 1991), i.e. a phenomenon characterised as a "new" racism that is not primarily targeting biological heredity, but cultural differences (Meer, 2013).

There is, however, a consensus that it is one of the leading sociological problems of contemporary global society, one that must at the very least be approached with great caution. Fear of Islam, or Islamophobia, began to appear in the United States in the 1970s after the Arab-Israeli war and in response to the Islamic revolution and the capture of American hostages in Tehran. The trigger mechanism of Islamophobia has not always been the same; formerly, the fear of Muslims was mostly based on their perceived self-indulgence and related polygamy. Today, people fear Islam mostly for its puritanism and activism leading to terrorism (Kropáček, 2002). Equally important are the natural social imagination and a deeply rooted fear of diversity, leading to contemporary racism and its historical mutations, e.g. American slavery, colonialism (apartheid) and the Holocaust (Werbner, 2013). The heterogeneity of the causes of Islamophobia is therefore very diverse (Bayrakli, Hafez, 2018). The root cause of Islamophobia is the fact that Islam as a religion has very strong external aspects (as is the case with Judaism, for example). Islam is an orthopractical religion which permeates all aspects of life and, unlike Christianity, has several distinctive features that make it externally visible (e.g. praying at set times of the day, a specific dress style for women, regular rituals, etc.; Kantarová, 2007). The second major factor determining the fear of Islam is awareness of its spread through holy war ("jihad"; Janeček, 2011) or the fatwa, which imposes the duty upon each individual Muslim to kill Americans and their allies (Lewis, 2004). It should be noted, however, that it would be highly misleading to generalise and to consider the statements of radicals to be binding for all members of the Muslim community around the world. The third widespread cause of Islamophobia is the significantly higher birth rates of Muslims living in Western Europe and

elsewhere (Janeček, 2011). Another cause is the synergy between old concepts and stereotypes of Islam that have been passed down and which are based on each society's specific experience with Islam. These concepts are primarily derived from the colonial past and subsequent migration. "The religiosity of immigrants is becoming a major issue of intercultural coexistence in Western Europe" (Nešpor and Lužný, 2007: 148). This aspect is strengthened by various controversies related to the veils worn by Muslim women (known as hijab), e.g. in France. Last but not least, the causes of the fear of Islam also include second-hand experience, which in this context has the opposite effect of personal contact. This includes information spread by the media and politicians, which is often incomplete and to some extent misleading. This situation is also evident in the general opinion of the European public, namely that "with the exception of the French, most Europeans believe that there is a strong conflict between devotion to the Islamic faith and life in modern Europe" (Černý, 2008: 3), even though the French in particular, due to their colonial past and a high number of African immigrants living in the country, have had more direct experience with Muslims than most European states. The latest stimulus of the fear of Islam and Muslims was the terrorist attack of 11 September 2001 in the USA. This event dramatically changed the perception of Islam in Europe and around the world, mostly due to various Islamist movements and the fear of any ties linking the Muslim population to terrorist organisations such as Al-Qaeda. According to Fekete (2008), Muslims were demonised after 9/11 not only as supporters of terrorism, but also as disseminators of drugs, even though Islam forbids their use and Muslim countries punish drug-dealing very severely. In general, however, there are many reasons Islam and Muslims could be perceived as a serious threat (Mendel, Ostřanský and Rataj, 2007).

In Czech society, one of the key causes of the fear of Islam is the fact that the media focus on Muslims only occasionally and primarily at the local political level, partially because the main political parties only rarely deal with this issue on the national level (Janků et al., 2013). Muslims are often equated with terrorism. The media only mention Islam in sensationalist contexts (Dizdarevič 2018). Muslims are portrayed as foreigners, emphasising their differences. Articles and comments in the media have a strongly negative bent, e.g. rallying against the construction of mosques in Brno and Hradec Králové or reporting on the unruly behaviour of Muslim spa guests in the town of Teplice. The media and social networks also often disseminate unconfirmed predictions that provoke fear of a potential increase in Muslim extremism, resulting in xenophobic moods in society and stereotypical thinking (Janků et al., 2013; Křížková, 2007). Unlike in some other European countries, the root cause of contemporary Islamophobia in Czechia is not any personal experience with the Muslim community and its differences, but the populism of a large segment of the media and politicians (Mendel, Ostřanský and Rataj, 2007).

In contrast, Spanish Islamophobia is based on direct experience with the Muslim population. As a consequence of the economic crisis of 2011-2012, unemployment rose sharply in Spain, particularly among immigrants (Lahuerta, 2014); at the same time, the number of illegal migrants, mostly Muslims, also grew. This situation contributed to a radicalisation of political parties and caused a negative campaign in the newspapers and other media, supported by demagogic and extremist statements about Muslims. The media play an important role in Spain as well, as their choice of Islam-related news stories typically favours topics such as extremism, veiling, funerals or ritual circumcision (Al Hassani, 2005).

Islamophobia has many different forms, ranging from everyday discrimination and harassment or protests against the building of mosques to Islamophobic rhetoric in the media and in social media (McGinty, Sziarto and Seymour-Jorn, 2013). It may be manifested as negative, insulting and defamatory statements about Islam and Muslims, or it may also transform into more systematic activities and protests and eventually escalate into physical attacks. This may ultimately lead to attacks on mosques, Muslim schools and cemeteries or minor incidents such as insults, violent removal of headscarves worn by Muslim women, threats, banning entry of veiled women to restaurants, etc. The fear of Muslims may also evolve into an effort to segregate and discriminate a particular group or to assimilate it. Even though the countries of the European Union are bound by the Charter of Fundamental Rights and Freedoms, which guarantees that no state may be tied to any particular ideology or a specific religion (Mendel, Ostřanský and Rataj, 2007), many European Muslims are facing "discrimination in employment, education and housing, especially with regard to their ethnic origin or religious beliefs" (European Union Military Committee, 2013: 1). In Europe, there has been an increase in discrimination and a rise of negative attitudes towards Muslims in public opinion and the media, as well as a growing number of verbal and physical attacks on Muslims (Kunst, Sam and Ulleberg, 2013; Al Hassani, 2005). The most frequent victims of harassment are Muslim women wearing a headscarf and men with turbans and long beards (European Union Military Committee, 2013), which for example in France led to a law prohibiting the wearing of religious symbols at schools adopted in 2004 or a ban on full veiling, e.g. the burqa (Fekete, 2008). Fekete (2008) adds that the most common manifestation of the fear of Islam in most countries is employment-related discrimination, creating the greatest barrier to the successful integration of Muslims into society, particularly women. Other forms include discrimination against Muslims in access to housing, healthcare, social services, schools, restaurants, banking, etc. (Taras, 2013).

Muslims in Czechia are not generally targeted by hateful attacks; hostility towards them usually takes the form of mistrust, negative prejudice or low levels of tolerance. Islamophobia is not a major political issue in Czechia (Janků et al. 2013),

but "women wearing the hijab are often regarded with suspicion, which is not caused only by the somewhat poor reputation of Islam in the country, but probably the more important fact that Czechs are not accustomed to any open manifestations of religiosity" (Mendel, Ostřanský and Rataj, 2007: 428). Despite that, Muslims still face problems at Czech schools (female students wearing headscarves) or in the healthcare system (Janků et al., 2013).

Another expression of the fear of Islam is the discussion surrounding the construction of mosques in major cities with a larger Muslim community (Prague, Teplice, Brno, Hradec Králové). The fear of the construction of mosques in Czechia follows the same pattern as in Western Europe and is therefore not aimed against Muslims as such, but rather against expressions of any religion other than Christianity in public space (Mendel, Ostřanský and Rataj, 2007). Czech Islamophobia is heightened, for example, by the problematic behaviour of Muslim spa guests in the city of Teplice who tend to ignore certain local laws (regarding noise at night, cleanliness of public spaces, etc.). In recent months, the rising number of people immigrating to Europe due to the deteriorating security situation in Southwest Asia has led to an increase of Islamophobic sentiment in the Czech society. Several anti-Muslim initiatives were established (e.g. *Islám v ČR nechceme*, "We Don't Want Islam in the Czech Republic"), mainly organised on social media.

In Spain, Muslims are also facing stereotyping and various obstacles in practicing their religion, e.g. in the issues of mosque construction or veiling (Lahuerta, 2014). This is strengthened by the unfavourable presentation of Muslims in the media, where they are often linked to negative events (demonstrations against new mosques, conflicts over veiling, cultural differences, terrorism, fear of dominance, etc.; Lahuerta, 2014). Muslims are facing problems in education as well, as the vast majority of Muslims do not have access to Islamic religious education and girls are punished and excluded from schools for wearing headscarves (Lahuerta, 2014). Generally speaking, women are more affected by Islamophobia, particularly on the labour market, because their religious affiliation is more apparent, which also prompts various political debates in Spain (Parkes et al., 2013). The country is trying to address the issue, for example, with manuals on social diversity for employers (Lahuerta, 2014).

METHODOLOGY

The paper is based on the results of a survey conducted between January and June 2014. The questionnaire was spread on the Internet using the method of snowball sampling. The use of an online application allowed fairly quick distribution among a relatively varied structure of respondents both in Czechia and Spain.

Table 1 Structure of respondents

	Czechia	Spain
number of respondents	312	203
gender		
male	64.1%	34%
female	35.9%	66%
age		
26 years and under	53.2%	55.2%
27 years and over	46.8%	44.8%
education		
primary / bachillerato	2.2%	9.4%
vocational school, secondary school / grado medio	41.3%	3.4%
higher vocational school	4.8%	
university education	51.6%	84.7%
religion		
Christianity	20.8%	42.4%
without religious affiliation	64.4%	49.7%
other	14.8%	7.9%

Notes: *because the education systems in Czechia and Spain are significantly different, their comparison is only approximate.*

The questionnaire was divided into five thematic sections. The first contained informative questions (country, gender, age, achieved education, religion, town size). The next section focused on personal experience with Muslims and Islam in general (questions: have you ever visited a Muslim country; have you ever had/do you have personal contact with Muslim culture; is anyone in your family a Muslim; where do you get most of your information about Islam and the Muslim culture). The answers to these questions were used to analyse the degree of personal contact with Islam and Muslims. Questions from the third part focused on knowledge of Islam. Their objective was to determine the level of knowledge of basic and theological aspects of Islam (who founded Islam; when Islam was founded; what is the holy book of Islam; what is the hajj; what are the two main branches of Islam; what are the holy cities of Islam; what is the percentage of Muslims in your country's population). This part of the survey was multiple choice (with the exception of the last question). The answers to these questions were used to analyse the relationship between the fear of Islam and knowledge of Islam. The next set of questions concerned specific opinions about Islam, which were used to determine the subjective degree of Islamophobia in the respondents (do you perceive Islam as a threat; do you agree with the construction of mosques in your

country; do you mind seeing women in traditional Muslim clothing; would you mind having a Muslim as a neighbour). The answers to these questions were used to identify the intensity of the fear of Islam and Muslims (the answers "yes" and "somewhat" were considered Islamophobic) and to calculate the variable for *Islamophobia*, combining four manifestations of Islamophobia: a) perception of Islam as a threat; b) disagreement with the construction of mosques; negative attitude to c) the presence of women in Muslim clothing and to d) having a Muslim as a neighbour. The degree of Islamophobia is calculated from the number of Islamophobic answers to the four questions (see Tables 2 and 4). The survey was also processed using statistical analysis methods in the SPSS 20.0 software package (correlation analyses, comparing averages).

ISLAMOPHOBIA IN CZECHIA AND SPAIN: COMPARISON AND DISCUSSION OF RESULTS

The analysis of the survey shows that the degree of the fear of Islam and prejudice against Muslims and their culture is influenced by several factors. There is still insufficient contextually focused research to provide more general conclusions about comparisons by European states. For example, research from 2015 to 2017 compared the willingness of people to accept a Muslim as family member could be used as a possible input to the discussion. There was a very big difference between the attitudes of Czechs and Spanish. Only 12% of Czechs would accept Muslims as family members, but in Spain, this proportion was 74%, indicating a significant difference in both model states (Pew Research Center 2018). The use of the same survey in two countries different in terms of their geography, social structure, culture, historical development associated with Islam and most importantly, a different predominant religious affiliation, made it possible to analyse Islamophobia in different contexts. The analysis showed a clear difference in the degree of the fear of Islam between the two countries, with Czech respondents expressing more Islamophobic opinions than the Spanish (see Tables 3 and 4). The different attitude towards Islam in Czechia compared to Spain is probably due to a combination of various factors, the most important of which, i.e. different historical experience with Islam, is unfortunately impossible to capture in the questionnaire. We can therefore only assume that due to their minimal contact with Islam, Czechs are more afraid of its manifestations than the Spanish, who have had extensive historical experience with Muslim culture.

The comparison of the attitude towards Islam and Muslims in the two countries with a different religious majority also made it possible to analyse the degree of Islamophobia in relation to the respondents' own religion. It's clear that believers (mostly Christians in this survey) are generally more tolerant of Islam than respondents without religious affiliation, even though the difference is not statistically

significant (Table 2). The degree of Islamophobia positively correlates with the age of the respondent. There is a lower fear of Islam among the younger generation (26 years and under) in both countries, probably as a result of the greater openness of young people towards different cultures and their more liberal opinions. Among the older generation, the fear of Islam is made stronger by personal contacts with Muslims (either with Islamic culture in general or with a Muslim in the family), which is not true for the generation 26 years and under (Table 2; see Sobotová, 2014). As with age, the fear of Islam is also affected by education; this link was stronger in Czechia, where it can be generally stated that Czechs with a university-level education are least affected by Islamophobia. A very important factor influencing the fear of Islam is gender. In general, there are higher levels of Islamophobia among males than females (the difference being more pronounced in Czechia). Among both groups, Islamophobic views are more influenced by fears arising from personal contacts with Islam than Islamophobia based on normative information about Islam, but direct contact with Muslim culture has a different

Table 2 Degree of Islamophobia in selected categories

		degree of Islamophobia	
aggregate average for Czechia and Spain		2.26	
gender			
	male	2.93	0.000*
	female	1.91	
age			
	26 years and under	2.16	0.025*
	27 years and over	2.72	
education			
	primary / bachillerato	2.67	0.000*
	vocational school, secondary school / grado medio	2.9	
	higher vocational school	3.61	
	university education	2.15	
religion			
	believers	2.10	0.280
	without religious affiliation	2.37	

Notes: ** the difference in the degree of Islamophobia among the listed groups shows a significant correlation at the 0.05 level based on the independent samples test and the Kruskal-Wallis independent-samples test. The degree of Islamophobia is calculated from the number of Islamophobic answers in the corresponding part of the survey (see Table 4). The minimum value is 0, the maximum value is 8 (each Islamophobic answer scores 2 points). Answers "I don't know" and "I do not care" did not exceed a significant percentage.*

effect on females and males represented in the sample. Among women, Islamophobia significantly decreases with increased personal contact, whereas it increases among men (Sobotová, 2014). Generally speaking, therefore, personal contact with Muslims and their culture leads to a loss of Islamophobia in women, while the opposite is true for men.

Regardless of the demographic characteristics of respondents, an important factor determining the degree of fear of Islam is the source of information from which respondents draw their knowledge about the Muslim culture and religion. The strongest influence comes from the media (in Czechia 34% of information, in Spain 42%; see Table 3). Statistical analysis of the source of information about Islam determined that respondents who listed the media as one of their sources of information about Muslim culture showed a higher degree of Islamophobia (Sobotová, 2014). The media thus emerged as an important source of information about Islam and a significant factor influencing Islamophobia in the society. It is also clear that the media do not mollify the Islamophobic views of respondents. The frequent association of Islam and Muslims with problematic behaviour, terrorism or crime and the emphasis on the differences of Muslim culture in the media may have a very negative impact on the perception of Islam by mainstream society. Among Spanish respondents, a frequent source of information about Islam is personal contact with the culture, which is related to the higher percentage of Muslims in the total population of Spain compared to Czechia.

Table 3 Sources of information about Islam and the definition of Islam in the Czech and Spanish population (n=515)

	Czechia (share in %)	Spain (share in %)
source of information about Islam		
media	33.8	42.4
personal contact	15.7	17.2
scientific literature	18.4	8.3
friends	14.5	8.9
school	10.2	13.6
other	8.5	9.7
what does Islam represent		
religion	23.9	54.4
threat	25.5	1.2
terrorism	14.3	2.7
way of life	12.7	22.8
system of society	12	12.7
other	7.4	6.2

Notes: *the other options did not exceed 5%*

The differences in the fear of Islam between Spain and Czechia are also highly apparent in the answers to the question of what Islam represents for the respondent (Table 3). One-quarter of Czech respondents see Islam as a threat; fewer people said it was a religion and a significant percentage of respondents directly link Islam to terrorism (Table 3). In Spain, on the other hand, more than half of respondents identify Islam as a religion, followed by a way of life or a system of society. The percentage of Spanish respondents who connect Islam with the words "threat" or "terrorism" is negligible. Even this rough analysis shows that respondents from Czechia see Islam in a very stereotypical light as a threat to society and associate it with terrorism, whereas the Spanish see it primarily as a social and religious system. In this aspect, Czechs are significantly more Islamophobic, even though (or because) they have much more limited direct experience with Muslims or Islamic fundamentalism (compared e.g. to the Spanish experience with the terrorist attacks in Madrid in 2004).

Based on the evaluated criteria, the degree of Islamophobia (answers to specific questions, Table 4) is generally higher in Czechia than in Spain. The greater fear of Islam among Czechs is expressed in various ways. Specifically, Czech respondents are more likely to see Islam as a threat to society (roughly 80% of respondents from Czechia, 50% of respondents from Spain). Furthermore, only one-third of Czechs

Table 4 Value and structure of the Islamophobia variable in Czechia and Spain (n=515)

	Czechia	Spain
degree of *Islamophobia**	2.93	1.27
Do you perceive Islam as a threat?		
yes	82.4%	51.1%
no	17.6%	48.9%
Do you agree with the construction of mosques in your country?		
yes	27.4%	76%
no	72.6%	24%
Do you mind the presence of Muslim women in traditional Muslim clothing around you?		
yes	34.2%	22.2%
no	65.8%	77.8%
Would you mind having a Muslim as a neighbour?		
yes	33.6%	9.5%
no	66.4%	90.5%

Notes: ** the degree of Islamophobia is calculated from the number of Islamophobic answers to the corresponding questions. The minimum value is 0, the maximum value is 8 (each Islamophobic answer scores 2 points). The values "I don't know", "I do not care" were not included.*

agree with the construction of mosques in their country, while in Spain the figure is roughly two in three respondents. It is also apparent that due to the relatively high proportion of Muslims in Spain, most people are used to the presence of women in traditional Muslim clothing and almost 70% do not mind. Czechs, however, are also relatively positively inclined towards women in headscarves (almost two-thirds of respondents). An interesting result is the significant difference in the answers to the question of whether respondents would mind having a Muslim neighbour, with 34% of Czechs reporting they would mind compared to 10% of Spanish respondents. This difference can be explained by a higher proportion of Muslims in Spanish society and extensive historical experiences with Islam in Spain.

Literature describes two types of Islamophobia, the first stemming from ignorance and therefore fear of the unknown and the other motivated by personal experience with a different culture (Sobotová, 2014, Janků et al., 2013, Meer, 2013). The general rule is that the more contact with Muslim culture the respondents have, the more knowledgeable they are about the normative aspect of Islam. It cannot be proven, however, that Islamophobic views of the respondents are influenced by their knowledge of Islam and its culture. The relationship between knowledge of Islam and the degree of Islamophobia is also moderated by other factors (Novotný and Polonský, 2011). It is clear that there is a different level of knowledge of Islam among Czechs and the Spanish (with Czech respondents actually scoring higher in their knowledge of the basics of Islam), but there is no provable correlation between the degree of Islamophobia and the number of correctly answered questions about Islam-related facts (Sobotová, 2014). On the other hand, there is a significant correlation between the degree of personal contact and the level of Islamophobia in the respondents (a negative correlation – see Table 5); therefore, an extended contact with Muslims and their culture generally leads to a lower level of Islamophobia. In each of the countries, however, the relationship works in a different way. In Czechia, the rule is that personal contact with Muslim culture leads to a higher degree of Islamophobia (Sobotová, 2014). In Spain, the opposite

Table 5 Correlation between the degree of Islamophobia and personal contact of the respondents with Muslims and Islam

			personal contact
Spearman's rho	*Islamophobia*	Correlation Coefficient	-.132**
		Sig. (2-tailed)	0.003
		N	515

Notes: ** *correlation is significant at the 0.01 level. The personal contact variable was calculated as the sum of positive answers to the questions: have you ever visited a Muslim country; have you ever had/do you have personal contact with Muslim culture; is anyone in your family a Muslim. For the calculation of the Islamophobia variable, see Tables 2 and 4.*

is true: direct contact reduces Islamophobia. Once the personal contact with Muslim culture transforms into contact with a family member who is a Muslim, the correlation changes in Czechia to the generally negative one, i.e. a greater degree of contact in the family leads to lower levels of Islamophobia (Sobotová, 2014).

CONCLUSION

Contemporary society in Czechia and all of Europe is transforming (Havlíček and Klingorová, 2018) and religion is becoming an increasingly important element determining its further development (Williams, 2015; Kong, 2010; Habermas, 2008; Peach, 2006; Berger, 1999). The issue of Islamophobia is therefore becoming a pressing problem not only in relation to Muslim immigration to Europe. The cultural and religious differences of Muslims, which are often externally manifested, cause fear in the largely secular and Christian society of Europe, as well as misunderstanding and hostility. For the new geography of religion, Islam and its perception by the majority society of Europe is becoming an important topic of research (Kong, 2010; Aitchison, Hopkins and Kwan, 2008; Peach, 2006). This paper was an attempt to contribute to this debate with a questionnaire-based analysis of the attitudes of the secular and Christian majority towards the Islamic minority, using the examples of Czechia and Spain, two countries with a different geography and more importantly also historical and social development.

The perception of Islam among Czech and Spanish respondents is significantly different. The different cultural background of the selected countries, their geographic location and historical experience with religious diversity are reflected also in this issue. Czechs more often consider Islam a threat to society and link it to terrorism more frequently than the Spanish, who generally see Islam as a religion and a way of life. This aspect may also be strengthened by the difference in religious orientation, as the percentage of Christians, who are generally more tolerant of Islam, in the overall population is higher in Spain than in the secular Czechia. However, Islamophobia is also formed by other and often conflicting factors. An important factor is direct contact with Muslims and their culture, but its role in shaping Islamophobia is rather complex. Generally speaking, there is a lesser fear of Islam among women and the younger generation 26 years of age and under, which seems to be more open towards religious and cultural differences.

The questionnaire analysis also showed that Islamophobic opinions are negatively influenced by the media as a source of information about Islam compared to, for example, literature, information from friends, knowledge gained at school, etc. (Sobotová, 2014). This fact undoubtedly demonstrates the importance of the media as a source of information about Islam and can be considered a significant factor influencing Islamophobia in society. The promotion of positive media coverage of ethnical and religious minorities and the support of diversity and

understanding instead of prejudice in news stories (Janků et al., 2013; Lahuerta, 2014) may be a possible step towards reducing Islamophobia in society. This could prevent open protests against sacred Muslim buildings, discrimination, exclusion of Muslims from public spaces, physical attacks, particularly on veiled women, and other manifestations of fear and intolerance of different religions. Facilitating an interaction between Muslims and mainstream society (Lahuerta, 2014) could help improve understanding and combat prejudice, thus reducing Islamophobic opinions and behaviours.

The issue of Islamophobia, or a fear of Islam, is very complex. This paper discusses it only from the perspective of the non-Muslim majority in two selected countries, Czechia and Spain. More research would be required to achieve a full understanding of the issue of Islamophobia, particularly in the form of in-depth interviews and more questionnaires that would also take the Muslim minority living in a non-Muslim world into consideration.

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REFERENCES

AGUILERA-CARNERERO, C. (2018). Islamophobia in Spain. National Report 2018. In: Bayrakli, E., Hafez, F. eds. *European Islamophobia Report 2018.* Ankara, SETA Publishing.

AITCHISON, C., HOPKINS, P., KWAN, M. (2008). *Geographies of Muslim identities: diaspora, gender and belonging.* Ashgate, Aldershot.

AL HASSANI, S. (2005). *ENAR Shadow Report 2005 Islamophobia in Europe.* Brussels, ENAR.

BALIBAR, E. (1991). *Race, Nation, Class: Ambiguous Identities.* New York, Verso.

BAYRAKLI, E., HAFEZ, F. eds. (2018). *European Islamophobia Report 2018.* Ankara, SETA Publishing.

BERGER, P. L. (1999). The Desecularization of the World: A Global Overview. In: BERGER, P. L., ed. *The Desecularization of the World: Resurgent Religion and the World Politics (1-18).* Washington D. C., William B Eerdmans Publishing Co.

CASTLES, S. (1973). *Immigrant Workers and Class Structure in Western Europe.* London, Oxford University Press.

CENTRO DE INVESTIGACIONES SOCIOLÓGICAS (2008). Religión (II) ISSP, *Estudio* n°2.776, X-XII. Madrid, Centro de investigaciones sociológicas.

COMMUNICATIE, INFORMATIE, EDUCATIE (2001). Universidad Islámica Internacional Averroes de Al-Andalus. http://www.cie.ugent.be/univcordoba.html.

ČERNÝ, K. (2008). Islám v diaspoře - muslimové v zemích Evropské unie. *Geografické rozhledy* 4, 2-4.

ČERMÁKOVÁ, D., LEONTIYEVA, Y. (2017). I do not mind immigrants; it is immigration that bothers me. The inconsistency of immigration attitudes in Europe. *Geografie* 122, 4, 500–525.

Czech Statistical Office (2011). *Databáze výsledků ze Sčítání lidu, domů a bytů k 26. 3. 2011. Elektronická databáze dat.* Praha, Český statistický úřad.

DIZDAREVIČ, S. M. (2018). Islamophobia in the Czech Republic. National Report 2018. In: Bayrakli, E., Hafez, F. eds. *European Islamophobia Report 2018.* Ankara, SETA Publishing.

ERDENIR, B. (2010). Islamophobia qua racial discrimination: Muslimophobia. TRIANDAFYLLIDOU, A., ed. *Muslims in 21st Century Europe: Structural and Cultural Perspectives* (27-45). Oxon, Routledge.

EUROPEAN UNION MILITARY COMITTEE (2013). Nejdůležitější informace ze zprávy EUMC - Muslimové v Evropské unii: diskriminace a islamofobie. http://fra.europa.eu/sites/default/files/fra_uploads/1936-EUMC-highlights-CS.pdf.

FALAH, G. W., NAGEL, C. (2005). *Geographies of Muslim women: gender, religion, and space.* New York, Guilford Press.

FEKETE, L. (2008). *Integration Islamophobia and civil rights in Europe.* London, Institute of Race Relations.

GÖKARIKSEL, B., SECOR, A. (2015). Post-secular geographies and the problem of pluralism: Religion and everyday life in Istanbul, Turkey. *Political Geography* 46, 21–30.

GOTTSCHALK, P., GREENBERG, G. (2008). *Islamophobia: Making Muslims the enemy.* Lanham, US-MD: Rowman & Littlefield Publishers.

HABERMAS, J. (2008). Notes on Post-Secular Society. *New Perspectives Quarterly* 24(5), 17–29.

HALLIDAY F. (1999). Islamophobia reconsidered. *Ethnic and Racial Studies* 22(5), 892-902.

HAVLÍČEK, T. (2006). Church-state relations in Czechia. GeoJournal 67 (4), 331-340.

HAVLÍČEK, T. (2008). Věřící jako menšina v Česku. Geografické rozhledy 4, 5, 19.

HAVLÍČEK, T., KLINGOROVÁ, K. (2018). City with or without God? Features of post-secularism in religious landscape of post-communist Prague. *Social & Cultural Geography* 19, 6, 789–811.

HENN, A. (2008). Crossroads of religions: Shrines, mobility and urban space in Goa. *International Journal of Urban and Regional Research* 32 (3), 658–670.

HEŘMANOVÁ, E., FARYADOVÁ K. (2012). Efektivnost integrace muslimských minorit v zemích EU (se zaměřením na situaci v Česku). *Současná Evropa* 1, 111-132.

HOPKINS, P. (2004). Young Muslim men in Scotland: Inclusions and exclusions. *Children's Geographies* 2(2), 257-272.

HUNTINGTON, S. (1996): Clash of Civilizations and the Remaking of World Order. New York, Simon & Schuster.

JANEČEK, M. (2011). *Islámská rozpínavost: včera, dnes a zítra.* Praha, Epocha.

JANKŮ, L., KNOB, M., KRAJŇANSKÝ, V., MATUŠINOVÁ, A., MELCROVÁ, Z., SMEKAL, H. (2013). *ENAR Stínová zpráva 2011-2012, Rasismus a diskriminace v České republice.*

KANTAROVÁ, K. (2007). Mediální boj o mešitu v Teplicích. *Cizinci, našinci a média: Mediální analýzy* (54-58). Praha, Multikulturní centrum Praha.

KEPEL, G. (1994). *The revenge of God: The resurgence of Islam, Christianity and Judaism in the modern world.* Cambridge, Polity.

KNIPPENBERG, H., ed. (2005). *The changing religious landscape of Europe.* Amsterdam, Het Spinhuis.

KONG, L. (1990). Geography and Religion: trends and prospects. *Progress in Human Geography* 14(3), 335-371.

KONG, L. (2004). Religious Landscapes. In: DUNCAN, J. S., JOHNSON, N. C., SCHEIN, R. H. (2004): *A Companion to Cultural Geography* (365-381). Oxford, Blackwell Publishing.

KONG, L. (2010). Global shifts, theoretical shifts: Changing geographies of religion. *Progress in Human Geography* 34(6), 755-776.

KROPÁČEK, L. (2002). *Islám a západ: Historická paměť a současná krize.* Praha, Vyšehrad.

KŘÍŽKOVÁ, M. (2007). Neviditelná menšina - analýza mediálního obrazu českých menšin. *Cizinci, našinci a média: Mediální analýzy* (48-53). Praha, Multikulturní centrum Praha.

KUNST, J., SAM, D., ULLEBERG, P. (2013). Perceived islamophobia: Scale development and validation. *International Journal of Intercultural Relations* 37, 225-237.

LAHUERTA, S. B. (2014). ENAR: The voice of the anti-racist movement. http://www.enar-eu.org/Shadow-Reports-on-racism-in-Europe-203.

LEE, S. A., GIBSONS, J. A., THOMPSON, J. M., TIMANI, H. S. (2009). Islamophobia scale Instrument development and initial validation. *The international Journal for the Psychology of religion* 19(2), 92-105.

LEWIS, B. (2004): *The Crisis of Islam: Holy War and Unholy Terror.* New York, Random House Edition.

MCGINTY, A.M., SZIARTO, K., SEYMOUR-JORN, C. (2013). Researching within and against Islamophobia: A collaboration project with Muslim communities. *Social and Cultural Geography* 14(1), 1-22.

MEER, N. (2013). Semantics, scales and solidarities. *Ethnic and racial studies* 36(3), 500-515.

MENDEL, M., OSTŘANSKÝ, B., RATAJ, T. (2007). *Islám v srdci Evropy*. Praha, Academia.

MODOOD, T. (2007). *Multiculturalism: a civic idea.* Cambridge, Polity Press.

MURAD, M. (2009). *Bezpečnostní aspekty irácké migrace do České republiky*. Obrana a strategie 2.

NEŠPOR, Z., LUŽNÝ, D. (2007). *Sociologie náboženství.* Praha, Portál.

NOVOTNÝ, J., POLONSKÝ, F. (2011). The Level of Knowledge about Islam and Perception of Islam among Czech and Slovak University Students: does Ignorance Determine Subjective Attitudes. *Sociológia* 43(6), 674-696.

OSTŘANSKÝ, B., ed. (2017) Islamofobie po česku. Vyšehrad, Praha.

PARKES, B., MAYNARD, E., KARIM, R., ROBINSON, A. (2013). *Racism in Europe, ENAR Shadow Report 2011-2012*. Brussels, ENAR.

PASTORELLI, S. (2009). The European Union and New Religious Movements. LEUSTEAN, L. M., MADELEY, J.T.S. (eds.): *Religion, Politics and Law in the European Union* (193-206). London, Routledge.

PEACH, C. (2006). Islam, ethnicity and South Asian religions in the London 2001 census. *Transactions of the Institute of British Geographers* 31(3), 353-370.

PEW RESEARCH CENTER ed. (2018). Eastern and Western Europeans Differ on Importance of Religion, Views of Minorities, and Key Social Issues. https://www.pewforum.org/2018/10/29/eastern-and-western-europeans-differ-on-importance-of-religion-views-of-minorities-and-key-social-issues/

RATTANSI, A. (2007): *Racism: A Very Short Introduction. Oxford*, Oxford University Press.

SCHMITT, T. (2013). Moschee-Konflikte und deutsche Gesellschaft. HALM, D., MEYER, H., eds. *Islam und die deutsche Gesellschaft* (145-166). Wiesbaden, Springer.

SOBOTOVÁ, J. (2014). *Islamofobie v Evropě: příklad Česka a Španělska.* Master Study, Faculty of Science, Charles University, Praha.

SOYER, F. (2013). Faith, culture and fear. *Ethnic and Racial studies* 36 (3), 399-416.

STEVEN, M. (2009). Religions Lobbies in the European Union from Dominant Church to Faith-based Organisation? *Religion, State and Society* 37(1-2), 181-191.

TARAS, R. (2013). Islamophobia never stands still: race, religion and culture. *Ethnic and Racial Studies* 36(3), 417-433.

VĚTROVEC, L. (2013). Definice a kontextualizace pojmu islamofobie. http://www.e-islam.cz/sites/default/files/VETROVEC%20K%20definici%20a%20kontextualizaci%20islamofobie.pdf.

WERBNER, P. (2013). Folk devils and racist imaginaries in a global prism: Islamophobia and antisemitism in 21st century. *Ethnic and racial studies* 36(3), 450-467.

WIEVIORKA, M. (1995). *The Arena of Racism*. London, SAGE Publications.

WILLIAMS, A. (2015). Postsecular geographies: Theo-ethics, rapprochement and neoliberal governance in a faith-based drug programme. *Transactions of the Institute of British Geographers* 40(2), 192-208.

WORLD CHRISTIAN DATABASE (2014). http://worldchristiandatabase.org/wcd/.

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LIFE-PATHS OF SERBS IN THE CONTEXT OF CONFLICTS IN FORMER YUGOSLAVIA

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Abstract
Ethnic and religious differentiation greatly contributed to the collapse of former Yugoslavia. The national and religious structure of the country's population was formed by unusually complex historical developments. This process has been influenced by many external and internal factors, varying in intensity over time. Under the influence of historical development, religion and ethnicity manifest themselves as a complex socio-cultural phenomenon, reflected in the identity of the population. Nationalism was the accompanying phenomenon of ethnic and confessional differences and reached the extreme positions. Serbian citizens, like other nationalities of the former Yugoslavia, were strongly influenced by a wave of nationalism in the early 1990s, resulting in an extremely complicated and long-term military conflict and high territorial and state instability. The aim of this paper is to briefly analyse the development of former Yugoslavia and to study the perception and impact of pre-war, war and post-war situations on behaviour of 24 individuals of Serbian nationality who were affected by conflicts in several areas of former Yugoslavia over period of last three decades. The purpose of this article is also to illustrate how the conditions surrounding individuals who were affected by war limit or enhance his/her range of activities in the conflict and post-conflict space have manifested in their time-space behavioural patterns. In this paper a process of individual behaviour is emphasized because each situation is unique and requires special investigation and understanding.

Key words
migrations, life-paths, time-space approach, conflict and post-conflict geography, Serbs, former Yugoslavia

INTRODUCTION

The historic landscapes, along the line of contact between the continuous Croatian and Serbian settlements (especially Bosnia and Slavonia), were the buffer zone where the Latin and Byzantine features of the Yugoslavian space met. At the same time, the ideas of the territorial definition of the Serbian and Croatian states, the concept of the Great Serbia and the Great Croatia, were also encountered and in-

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terwoven. The aforementioned geopolitical and cultural break has also deepened under the influence of different economic development, conditioned by developments in two different civilization spheres (Fňukal, 2012; Bucher and Ištok, 2015). Ethnic differentiation greatly contributed to the collapse of Yugoslavia. The national and religious structure of the country's population was formed by unusually complex historical developments. This process has been influenced by many external and internal factors varying in intensity over time. It would undoubtedly be too demanding on a limited area to characterize ethnic processes, their causes and consequences in former Yugoslavia. Very diverse ethnic structure of the population was the result. This structure was manifested in several highly heterogeneous territories, e.g. Vojvodina and Bosnia and Herzegovina, heterogeneous regions (Macedonia and Kosovo and Metohija) although there were ethnically homogeneous areas in Yugoslavia, e.g. Slovenia and some parts of Serbia (Ištok, 2005). There was an ambition to create the Yugoslav political nation. It failed, even though more than 300,000 inhabitants of the country reported to Yugoslav nationality (statistically monitored since 1961) before its disintegration (Baar, 2002).

An important factor that has influenced and still influences the development in the Yugoslavian area was confessional differences, which are more important here than national ones, especially in the case of Serbs and Croats. Here, under the influence of historical development, religion manifests itself not only as a matter of faith, but also as a complex socio-cultural phenomenon reflected in the identity of the population (Matlovič, 1997). In this context, belonging to the Roman Catholic and Orthodox faith was dominant in former Yugoslavia. The relationships of these two religions are personified in those between the Croatian and Serbian nations, whose territories were not only in direct contact, but these nations have lived and mixed. It was precisely the religious diversity that became the basis of mutual hostility between the South Slavs and led to the deepening of patriotic tendencies in this area (Kumpres, 1992; Hladký, 1994).

Nationalism was the accompanying phenomenon of ethnic and confessional differences on the territory of Yugoslavia and reached extreme positions. In the context of historical development of Balkan Peninsula and especially of former Yugoslavia, it has much deeper roots than elsewhere in Europe. The nationalist thoughts became a welcome tool for the former Communist Nomenclature after 1989, which has succeeded in imposing them on the broad masses of the population. Even churches have been instrumental in promoting nationalist ideas among the broad groups of the population (Pirjevec, 2000). Serbian citizens, like other nationalities of the former Yugoslavia, were strongly influenced by a wave of nationalism in the early 1990s, resulting in a complex and long-term military conflict and high territorial and state instability (Gurňák, 2007).

The aim of this article is to briefly analyse the development of former Yugoslavia and to study the perception and impact of the pre-war, war and post-war situations

on behaviour of 24 individuals of Serbian nationality who were affected by war conflicts in several areas of former Yugoslavia over almost last three decades. The purpose of this article is also to illustrate how the conditions surrounding individuals who were affected by the war limit or enhance their range of activities in the conflict and post-conflict space have manifested in their time-space behavioural patterns.

FEW REMARKS TO THE THEORETICAL AND METHODOLOGICAL FRAMEWORK

Theoretical experts apply different theoretical approaches to the study of the ethnic conflict, violence, genocide adding a "new" word, ethnic cleansing (Sekulić et al., 2002). But such behaviour should be first determined by explaining the origins of those categories. According to Jesse and Williams (2011) it is also important to pay attention to the international relation, because this approach can tell us much about the ethnic conflicts by explaining events in the world politics.

Ethnic and religious identity are very important factors for many conflicts while other factors like economy, politics or international influence are just the triggering mechanism of ethnic conflicts (Jesse and Williams 2011). By examining international, domestic, and individual level factors, it is possible to construct a more complete picture of an ethnic conflict (Horowitz, 1985; Kaplan, 1994; Connor, 1994; Hutchinson and Smith, 1996 and Moore, 2015).

The best way to define the so-called post-conflict era, a period after the armed conflict is halted, is to take it as a process-oriented approach. In the post-conflict period, the communities are confronted to annihilated or functionless political, economic, social, educational or cultural institutions (Blagojević, 2004 and 2009). Ethnic intolerance in the society as a consequence of ethnic conflicts, as it was in some former republics of Yugoslavia, is also typical for this period. Society in the post-conflict time is in the process of renewal and development on almost all of its levels. To achieve this human development, it is necessary to involve peacebuilding, defined by Lambourne (2004) as strategies for stable and long-lasting peace and nation-building. Peacebuilding not only means establishment of durable peace but also means to achieve a better quality of life in society.

All significant human interactions can be seen from geographical (time-space perspectives), especially from the behavioural geography and time-geography point of view. Behavioural geographical approach is not based on an abstract model of rational behaviour, but is focused on what people do and why they do it (Castree et al., 2013). Behavioural approach in geography recognizes that people live simultaneously in a subjective environment of values, meanings and perceptions and in an objective physical environment. Current behavioural approaches include both, qualitative and quantitative methods (Golledge, Stimson 1990;

Golledge, 2008; Gold, 2009) and expand into various areas including ethnic and religious tensions (e.g. Ira, 1997; Jacobson, 2006; Uher 2018). Time geography is an approach aimed at clarification of the constraints to objects and individuals in their search for slots in the time-space continuum. Hägerstrand (1970) builds on everyday experience and the bounding capacity of time and space. Every individual move from one place to another and these movements can be described by a trajectory (observed path) in time-space. Time-geography studies applied a broad spectrum of own concepts (e.g. Ellegård, 1999 and 2019; Lenntorp, 1999; Ira, 2001). The individual human being is an integer unit of existence. The life paths of individuals are influenced by biological needs and by societal factors. Hägerstrand's concept "individual path" (life path of the individual), is inspired by his work on migration in Sweden (Hägerstrand, 1957), where he analysed the movements in the time-space of the individual rather than looking at aggregate data. The life trajectory of a person whose demands do not comply with the political environment will search for refuge domain, either as a permanent solution in full or partial accord with her or his demands, or as a stepping-stone in the search for full satisfaction. Planning his or her day, year and life, the individual utilizes and accommodates to all the networks and structures available (Lundén, 2003).

HISTORICAL AND POLITICAL CONTEXT

In order to clarify the course of the events that have led to the social crisis, which caused the violent disintegration of the Yugoslav Federation, a short historical background should be presented. Probably the most shinny period in the modern history of Serbia was a time in Tito´s Yugoslavia after the World War II, and lasted till the very end of the last Yugoslavia in 2003. In this context it is necessary to mention that Yugoslav federation was considered as efficient one, seeing from outside. Yugoslavia rose from the war and it was founded on a complex constitutional settlement of six republics and two autonomous provinces within Serbia (Fig. 1).

Policy of centralism in 1980s and cultural pressure to unitarism, including the sensitive linguistic (cultural) what was understood as clear degradation of Yugoslav Constitution from 1974 and improved federalism. The planned centralism was abandoning regional connections among some republics and it produced a revolt, that followed to the disintegration of Yugoslav federation. In the late 1980s, Tito´s system of balance, so called brotherhood and unity started to collapse rapidly and Yugoslavia was struggling with decentralisation and fragmentation of the national-ethnic territories. This helped national communists in all six republics to gain their positions. At that time Slobodan Milošević became a representative of Serbian nationalism. Together with the Serb political elites and help of political allies they started to increase the centralisation in Federation but also within Serbia

Figure 1
Former Yugoslavia in 1991: administrative division.
Source: http://www.camo.ch/karta_yu2.htm

where they managed to limit significantly the autonomy of two provinces, Vojvodina and Kosovo and Metohija.

The situation in 1990s became more complicated. Long historical tradition and political ambitions of national communists in some republics started to call for independence, in which they saw a long-term future. It started with the multi-party democratic system all over the country, continue with disintegration of the League of Communists of Yugoslavia and after the civil wars it culminated in independence of some former republics. First Slovenia, followed by Croatia, Macedonia and finally Bosnia and Herzegovina in 1995 became independent. This process was neither easy nor fast and it was the worst scenario which could be expected.

The Yugoslav civil wars started in Sarajevo in April 1992 and definitely ended in 1999 when the North Atlantic Treaty Organization (NATO) used military force and embarked on a war from the air. The 21st century started with the hope that political culture will be transformed and opposition empowered. In 2006, Montenegro broke away from the Union of Serbia and Montenegro, which was created from the two remaining federal republics of Yugoslavia in 2003, and after a referendum became independent country. After two years, in 2008, the Autonomous Province

of Kosovo and Metohija declared its independence from Serbia and became a sovereign state. Official Government of Serbia strongly opposed Kosovo´s declaration of independence and since then refused to deal directly with the Government of Kosovo, and does so only through the international intermediaries.

As a result of wars within former Yugoslavia in the mid-1990s, tens of thousands of Serbs found themselves refugees, a humiliating role reversal for a people proud of their skills as warriors. Riding tractors, hunched in trailers and astride horses, they were migrating from Croatia and Bosnia in one of the biggest exoduses of refugees since Yugoslavia broke up in 1991. In the first half of the 1990s, many of them were steadily moving on into Yugoslavia, and some were already showing up in Belgrade, the capital and in Novi Sad and their surroundings. Many of them brought with them the bitter realization that they were suffering the same kind of ethnic cleansing that the Serbs had carried out, with the winners of territory forcing members of opposing ethnic groups to leave the area.

As a result of conflicts and demographic developments in the former Yugoslavia, the percentage of Serbs has decreased in most former republics and autonomous territories since 1948 (Table 1). The exception is Vojvodina, where their share increased.

Table 1 Population of Serbs in territorial units of former Yugoslavia and in successor states (%)

Territorial unit	1948	1953	1961	1971	1981	1991	1994	2001	2002	2011	2013
SLOVENIA	0.50	0.76	0.85	1.20	2.41	2.41	-		1.98	-	
CROATIA	14.47	15.01	15.02	14.16	11.55	12.21	-	4.54		4.35	
BOSNIA & HERZEGOVINA	44.28	44.39	42.89	37.18	32.02	31.21	-			-	27.09
Federation of Bosnia & Herzegovina	-	-	-	-	-	-	-	-	-	-	2.54
Republic of Srpska	-	-	-	-	-	-	-	-	-	-	82.95
SERBIA	92.11	91.70	92.46	89.50	85.43	88.91	-	-	89.48	89.40	
Vojvodina	50.57	51.05	54.86	55.78	54.42	57.17	-		65.04	66.75	
Kosovo & Metohija (KOSOVO)	23.61	23.49	23.57	18.35	13.15	9.92	-	-	-	1.46	-
MONTENEGRO	1.77	3.30	2.98	7.46	3.32	9.34	-	-	31.99	28.72	-
(NORTH) MACEDONIA	2.57	2.69	3.03	2.82	2.33	2.10	2.06	-	1.77	-	-

Source: own calculations based on census data:
Savezni zavod za statistiku SFRJ, 1998; Statistical office of Slovenia, 2003, 2013; Croatian bureau of statistics, 2013; Federalni zavod za statistiku, 2003, 2013; Institute of statistics of Republika Srpska, 2017; Statistical office of the Republic of Serbia, 2003, 2012; Kosovo agency of statistics, 2013; Statistical office of the Republic of Montenegro, 2004; Republic of Macedonia state statistical office, 2005.

STUDY AREA, METHODS AND DATA

The survey was conducted in the area between two largest cities, the capital of the province of Vojvodina, Novi Sad and Belgrade, the capital of Serbia within the radius of about 100 km. The selection of the study area was inspired by several factors, but the important one was the higher concentration of post-war refugees of Serbian nationality from former Yugoslavia. After more than 45 years (since the end of World War II), the war in the territory of former Yugoslavia gave rise to the long forgotten types of migration but did not change the direction of migration and the tendency of moving towards the native republics, which is obvious to all ethnicities. Due to the geographical characteristics, but also the strategic position of Vojvodina, migration, especially for ethnic Serbs, has always the greatest importance, more than in any other area in former Yugoslavia (Raduški, 2002). Starting with the Austro-Hungarian authorities many nations colonized this area. The experience from the period of planned colonization in 18th and 19th century had an impact on later colonization organized by the Yugoslav communists after the World War II and on the forced migration (mostly immigration) in the late 20th century (Drbohlav and Uherek, 2007).

More than a half (15) of the total number of respondents comes from the area called Srpska Krajina (Lika, Kordun and Banija) and Slavonija in the present Croatia, and a small proportion of respondents are from Zagreb, the capital. It should be mentioned in this context that Srpska Krajina was colonized by Serbian population by Austro-Hungarian authorities mainly for the same reasons as Vojvodina, to be incorporated into the Military Frontier. Through the centuries, the Serbs had become the largest proportion of Croatia´s population. Some respondents are also from north-west Bosnia, which is now part of Republic of Srpska, and two respondents are from Kosovo.

In this research the activity patterns of a selected sample of 24 Serbs, individuals who were directly affected by war, were studied. Their life-paths were followed starting from the pre-war period to the present (year 2018). The data allowed to gain a new insight to the behaviour of these individuals before, during the and after the war. It contributes to understanding of activities of people affected by war conflicts in physical space and chronological time in concrete political, economic, socio-cultural, institutional and geographical contexts. The time-geographical approach based on records of activities in time-space was applied through the time-space diaries (activity diaries), a significant instrument for an analysis of life-paths of individuals. The use of time-space diaries expanded after the introduction of Hägerstrand's time geography into human geography (Hägerstrand 1970). The development of geographic information systems (GIS) and computational capabilities in the last few decades facilitated the analysis of time–space diaries (Couclelis, 1999). Activity diaries collect information on the activity content (the time that an

activity episode starts and ends), the geographical context (the spatial location where the activity takes place), the social context (the person(s) involved in the event), and the use of transportation mode(s). According to Schwanen (2009) there are several additional dimensions for which information is collected, for example the respondent's feelings and emotions during activities. This method may facilitate reflections on changes in the patterns of activities and may enable a deeper understanding of relationships in community (Díaz-Muñoz, 1999; Ellegård, 1999). Apart from geography it was applied in several scientific disciplines (Kwan, 2012 and Miller, 2017). Life-paths represent all movement, whether temporary travel, or more or less permanent migration. The aim is to use the time-geographical form of notation to describe and interpret the form and development of mobility biographies. This approach should also be regarded as an attempt to capture and exemplify how regional and international interconnectedness is constituted by the time-space practices of individuals (Frändberg, 2008). One of time-geography's most important contributions to social theory has been to bring out the significance of people's movements and interactions in time and space for the creation of place (Giddens, 1984).

The analyses of time-space diaries helped us better understand importance of life-paths of people affected by war conflicts in a physical space and chronological time in concrete economic, socio-cultural, and political contexts. The first column of the time-space budget referred to time, the date. The basic analytical time unit was one month. In case of forced and urgent migrations we applied even a day as a basic unit. The second column of the time-space budget referred to the activity and the third column (geographical context - place) referred to the geographical location where the activity took place. The fourth column characterised a social context (with whom they did that activity specified in terms of their relations with the respondent) and the fifth column described the transport mode. The sixth column contained some notes, explaining e.g. feelings in specific situations. This helped us discover their influence upon and relations with any other event. The time-space diary technique/method has been complemented by audio recording of oral history.

Data collection for this research was organized in the April 2018. Respondents were interviewed and asked to keep a time-space activity diary. One of the key challenges within the mixed methods research is the successful integration of quantitative and qualitative data during analysis and interpretation. In the study the 3D maps were used in order to visualize the trajectories of individuals during the period of 30 years. In-depth interviews with the same individuals were consequently conducted. Oral history interviews may concern a very specific subject or cover an entire lifespan or trace a complex issue that unfolds over time offering the geographers the opportunity to examine the complexities and intricacies of place

(George and Stratford, 2010). The main challenge associated with collecting data was to reach a desired group of individuals. This was possible using the snowball sampling, which works like a chain referral (e.g. Goodman, 1961; Rochovská et al., 2014). It helped to develop a research sample group who grows like a rolling snowball (Cohen and Arieli, 2011). The snowball sampling in our study seemed to be useful in collecting data in post-conflict environments and thus the sampling was conducted among post-war refugees of Serbian nationality from former Yugoslavia. Our snowball sampling rested on the assumption that social networks consist of groups with relatively homogenous traits (experiences from armed conflict and informality of respondents´ statements).

TIME-SPACE BEHAVIOUR OF SERBS AFFECTED BY WAR (SAMPLE OF SERBS BORN OUTSIDE THE TERRITORY OF PRESENT-DAY SERBIA)

The diaries that we have analysed were based on personal histories of 24 respondents (8 males and 16 females), which we collected mostly between April and September 2018 and then recorded their trajectories. In one-to-one interviews, respondents were questioned about their personal history starting at the point of birth through the time of war in the1990s till present. All of them are Serbs by nationality, Orthodox by religion and usually with dual citizenship by now – Serbian and Croatian or Bosnian. All of them were born outside the territory of the present-day Serbia. The average age of interviewees is 34.7 years. The youngest respondent was 27 and the oldest 93 years old. Among all respondents, only 2 participants completed just the primary school of 8th grades, but most of them graduated in high schools, or finished vocational education. Five of total have a university degree (bachelor´s and master´s degree) and one of them is a Ph.D. degree holder. Only three participants are in post-productive age group (working age population 16 to 64). Most of our respondents were forced to move after the military Operation Flash in May or Operation Storm in August 1995 conducted by the Croatian Army, which was the last major battle of the Croatian war for independence but also the main factor for the outcome of the Bosnian war. According to their statement, most of them did not have closer connections to Serbia before the war and in the time of forced moving nothing was organised. In that time of chaos, they often joined a refugee convoy on the way, although not knowing where they were going. By this way they travelled proximately about 4-5 days in convoy and stopped beyond the border of the province of Vojvodina or Serbia. Only few of them had relatives in Vojvodina or Central Serbia. In case of Serbs from Kosovo they did not travel in convoys but after the bombing in 1999 they started to leave secretly their hometowns with some family members and moved to place where some of their relatives lived.

Before the civil wars their households were in urban area, such as the city of Zagreb and towns Osijek, Knin or Sisak, or small towns, for example, Slavonska Požega, Petrinja, Sanski Most or Kosovska Mitrovica. In the case of older respondents (over 60 years old at present), before the civil wars they were employed in industrial sector in one of the local fabrics or in social sector such as medical nurse and few of female respondents were housewives. Very small portion of respondents lived in rural areas around Petrinja, Glina, or Sanski Most where most of economically active population was employed in agricultural sector.

Visual interpretation of time-space diaries of three respondents from Kosovska Vitina in Kosovo (Fig. 2), Petrinja in Croatia (Fig. 3), Bestrma in Croatia (Fig. 4) in 3D graphs. Vertical line in the graph represents the time context, duration of activity in certain geographical space of the individual person. Every interruption or diversion meant changing of direction of the movement of time axis and its duration. Time span expressed in the construction of 3D graph is the period between 1990 and 2018, within which the most important changes in time-space behavioural patterns were analysed. Before the war no important changes were recorded in place of living.

Fig. 2 shows almost the 30 years life-span segment of 33 years old woman originally from Kosovska Vitina in Kosovo and Metohija (Republic of Kosovo in the present) who currently lives in Stara Pazova, a town in the province of Vojvodina. During the NATO bombing between March and June 1999, her parents were forced to send her by car together with some of her siblings and their neighbour to Jagodina in Serbia. Since one of the bombs dropped near them and destroyed

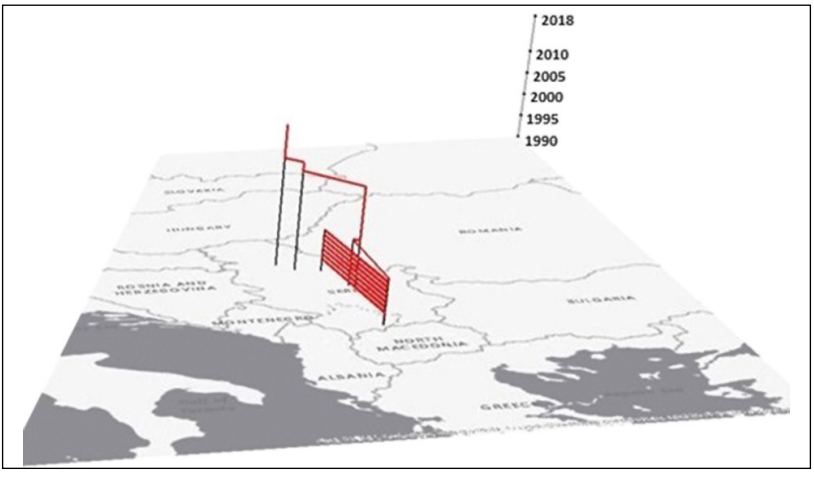

Figure 2
Examples of life-path of 33 years old female living in Stara Pazova, Serbia

the house, she was not able to return home any more. After this her family moved to Ćuprija where she completed high school. Then she continued her higher education in capital of Belgrade. The reason of her moving out from Belgrade was because she got married and started her own family. According to her statement, after all she experienced with Albanians, she would never go back to Kosovo.

Fig. 3 shows one segment of the life-span of 44 years old male from a small village Bestrma near Sisak (Croatia). After high school he became subject of compulsory military service in Vrhnjika, Slovenia. He finished his military service at the beginning of the war in 1992 and became an army soldier of Republic of Srpska Krajina. For three years he fought against the Croatian army around Knin and Bestrma, but after the Operation Flash in August 1995 together with other soldiers he was forced to retreat. They left the territory of Srpska Krajina and joined the refugee convoy and continued in route towards Kosovo and Metohija where he stayed for almost a year. After that he used to move often until he settled in Stara Pazova in the province of Vojvodina. Since the economic situation in Serbia is difficult, from time to time he took the opportunity to travel abroad for occasional jobs.

Figure 3
Examples of life-path of 44 years old male living in Stara Pazova, Serbia

Fig. 4 shows the time-span of 59 years old male from Petrinja in Croatia. Before the war in Croatia, he was for long time employed by the radio station in Petrinja. In spite of fact that he tried to move to safer place together with his family, his military duties compelled him to work at the radio station during the next four war years in Croatia. This ended in August of 1995 when Croatian army started the ethnic cleansing in the Operation Flash. He joined the refugee convoy and moved with his family on tractor to Serbia. After about 10 days they reached their destination where they currently live (Stara Pazova). Because of lack of job opportunities in the town, he accepted a job in Zrenjanin where he spent couple of months.

In-depth interviews offered the opportunity to capture rich descriptive data about interviewees´ behaviour, attitudes, perceptions, and to explain motivations

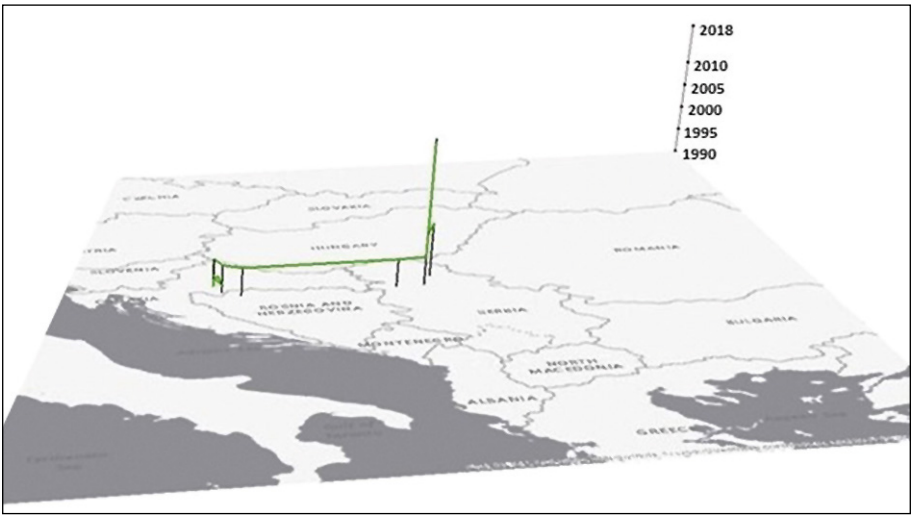

Figure 4
Examples of life-path of 59 years old male living in Stara Pazova, Serbia

and experience gained in the pre-war to post-war period, and the complicated processes in between. All our respondents have been exposed to multiple pre-and post-migratory traumatic experiences; it was therefore essential for us to be aware and respectful of their vulnerability. The total number of questions in this in-depth interview was 27 and questions were related to the key areas of their lives.

According to the Serbian respondents, the relations among neighbours in the domestic community before the war were good (13) to very good / excellent (11). Only less than a tenth of respondents experienced personally some inconvenience from conflicts in the 1990s due to the nationality or religion. Some of these answers were: yes, from a Croatian teacher or school mates when they called me "Četnik", or at the playground when a girl said that she would take my head and play with it as it were a ball. But this did not directly imply our decision to move. Until they (Albanian army) initiated the killing, no one left their home.

Most of respondents (19) agreed that if there were no armed conflicts, they would still remain in their original region / place of residence. More than two-thirds of respondents think that the propaganda of some nations affected the development of the conflict in the former Yugoslavia. On the contrary, three respondents answered no. Most of the questioned Serbs (two thirds) believe that the faith, religion in the environment in which they formerly lived, did not play a very important role. "Till the 1990s it did not play any role, until they started with the propaganda against each other." (43 years old female). Opinions on whether official attitudes of church leaders played an important role in promoting their

own interests and contributing to the spread of conflicts were different. In fifteen cases the answers were positive, six respondents answered no and three did not comment. It is evident from the positive answers that the church leaders did not make sufficient efforts to calm the situation and promote reconciliation. Significant number of respondents (13) believe that the political leaders abused religion in their favour. The war conflict also had an impact on marriage. Five respondents also reported ethnically mixed marriages that have ended in a divorce after the war conflicts. The most of respondents said they did not intend to return to localities where they used to live before the war. The main reasons were as follows: their homes and properties were either burned or withdrawn/taken away, or in some cases they managed to replace properties. Over time some of them managed to sell what they owned before the war. The important reason why they plan to stay at the place of their present stay is a feeling of security and that they like their neighbours (Slovaks). And it has often been accounted that those places have no more importance for them than they had before the war, even if they feel sorry for properties they left behind. These reasons suggest that the move was provisionally terminated with the prospect of settling permanently.

Moving away is associated not only with the changes of housing and employment, but also with coming into a different cultural, social and economic environment, that has a significant impact on the lives of the respondents. More than two-thirds reported a very negative impact, especially the deteriorated state of health i.e. emotional, mental exhaustion or diabetes, heart disease, and so on. The new beginnings after war were very difficult for many, frequent moving, no money, new environment, new people, family was not altogether. Motivations to move as very important aspects of the time-space behaviour are presented in Tab. 2. Almost three decades analysed in our research were divided into three sub-periods: pre-war period in former Yugoslavia (January 1990 - April 1991), war times (May 1991 – December 14th, 1995) and post-war period ending in the time when survey was conducted (December 15th, 1995 – 16th April 2018). It is evident, that the war and post-war period are characterized by complicated life-paths in some cases with numerous movements and places (stations). The most of them were forced by the war and post- war events. Pre-war motivations to move were induced by family, living conditions and work reasons. Motivation factors changed during the war. Apart from the fact that several respondents were motivated to join their families, seven respondents joined a *convoy* of *refugees* fleeing heavy fighting, several war-endangered persons were forced to leave their homes and directed by domestic and international institutions to new localities. Post-war movement were mostly motivated by better living conditions, family, work, and education reasons.

Table 2 Motivations to move

Age (in 2018), Gender	Motivation to move		
	January 1990 – April 1991	May 1991 - December 14th, 1995	December 15th, 1995 – April 16th, 2018
93, F	0	SE (refugee convoy)	OT
69, M	0	MD, SE (refugee convoy)	OT
67, F	SE, FA	SE (refugee convoy)	LC
64, M	0	FA, IN, SE (refugee convoy)	FA, WO
61, F	0	FA, SE	LC
61, M	MD	FA, MD, SE	WO, FA
59, M	0	FA, LC, SE (refugee convoy)	LC, WO
57, F	0	FA, OT, WO	FA, OT, WO
56, F(KM)	0	IN, SE (refugee convoy)	IN, OT
56, F (LM)	0	FA, SE, WO	0
53, M	0	MD	MD, SE, WO
50, F	FA, SE, WO	0	0
46, M	MD	MD, SE, WO	FA, WO
44, M	0	MD	FA, WO
43, F	FA, MA, LC, SE	FA, SE, WO	OT
42, F	FA, SE, WO	FA, SE, WO	FA, MA
41, F	0	FA, OT, SE	MA, OT
39, F	0	FA, OT, SE (refugee convoy)	ED, WO
37, M	FA	FA, SE, ED	ED, FA, MD, WO
34, M	0	FA, SE	ED, FA, SE
33, F	0	FA, SE	ED, FA, MA
32, F	0	FA, SE	FA
31, F	0	LC, SE	ED, MA, WO
27, F	0	0	ED, FA, SE, WO

Source: *own research*
Motivations: 0 - no motivation reason to move, FA - Family, IN - Institution, SE - Security, MD - Military duty, WO – Work, ED – Education, MA – Marriage, LC – Living conditions, OT – Others

DISCUSSION AND CONCLUSION

The time-geographical approach applied in this study seems to be a convenient foundation for mapping migration processes and analysing time-space behavioural patterns of individuals in the conflict and post-conflict times. The methodological concept is based on works of Hägerstrand and his followers, who state that in time-space the individual describes a path. Four dimensional views of the world

respect the continuity and interdependence of matter, space and time (Pred, 2005). The life-path can be understood in a variety of temporal and spatial scales and can contribute to better understanding of the phenomenology of migration, usually employing qualitative methodologies. Compared to the traditional geographical methods the diaries (time-space diaries) and in-depth interviews are especially appropriate for addressing sensitive topics and searching for a comprehensive set of factors that influence individual's life and their behaviour. The time-space diaries enabled to create a complex picture of how individuals interact with each other and make it possible to identify the socio-economic context in which our respondents lived before the war compared to their present situation (Schwanen, 2009).

The GIS is becoming something more than the computer mapping software (Couclelis, 1999; Kwan, 2004). With the rapidly increasing technical and conceptual sophistication of the technology came increasingly complex demands and expectations from the user community focused on life paths analysis.

Wars in former Yugoslavia had long term effects not only on the populations in the conflict zones, but also on populations beyond these territories (flight of refugees and social, cultural and economic impacts). The landscapes of war zones are well marked, e.g. damaged buildings and infrastructure, destroyed landmarks such as churches, abandoned lands and post war rebuilding (O'Loughlin, 2009). Significant part of the post-conflict geographical research is focused on the political, social and economic consequences of wars but in this paper a special attention was given to selected behavioural geographical aspects. The long-term impacts of war conflicts are yet unclear and thus behavioural geographic research (especially perception of war and post war situations and life path studies as a part of time-geography) could be one of possible important contributions.

As far as the time-space behaviour patterns of studied group of Serbs are concerned, in pre-war period it was traditionally typical for inhabitants not to move or migrate far from the place of their birth, except for marriages and migrations for labour motives (mostly men). Usually they did not leave their region. Unfortunately, the war became the main push and pull migratory factor, which forced to them to escape the war zone. Our research paid special attention to the geographical and social contexts recorded in the time-space diaries. It was very important for a deeper understanding of behaviour of individuals affected by war not only in time of conflict but also in post-conflict period. Twenty-four men and women with complicated and disturbed life trajectories survived many changes of locations. With the ever-changing relations in the war and post-war states they got into trouble. We can state similarly as Lundén (2003) that the real individual reasons for their life choices at different conjunctures will never be clear. Family, personal economy, community relations, religion and ethnicity may have in some cases more impetus than political situations in several war and post-war situations.

The time–space diaries were applied in focusing on specific research questions with a particular interest in the multiplicity and particularity of people's experiences of life in the conflict and post-conflict environment. The survey was based on a systematic ex-post record of the person's use of time over almost three decades including the spatial coordinates of activity locations. The study based on the concept of an individual's activity patterns was combined with post-diary interviews. The method of diary reliably supplied information for disaggregated analysis of life paths of Serbs affected by war in former Yugoslavia. The research presented in this paper could be perceived as one of the first contributions to a conceptual work in this area and brings original empirical material which may serve for the development of further interdisciplinary researches.

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REFERENCES

BAAR, V. (2002). *Národy na prahu 21. století, Emancipace nebo nacionalismus?* Šenov u Ostravy: Tilia.

BLAGOJEVIĆ, B. (2004). *Ethnic Conflict and Post-conflict Development, Peacebuilding in Ethnically Divided Societies*. (A dissertation). Rutgers, The State University of New Jersey, USA [online]. [accessed on 10 October 2017]. Retrieved from: http://dga.rutgers.edu/sites/default/files/uploads/2012/10/bojana.pdf.

BLAGOJEVIĆ, B. (2009). Causes of Ethnic Conflict: A Conceptual Framework. *Journal of Global Change and Governance,* 3, 1, 1-25.

BUCHER, S., IŠTOK, R. (2015). Geopolitická poloha Srbska ako potenciálny dezintegračný činiteľ. *Geografický časopis*, 67, 1, 63-83.

CASTREE, N., ROGERS, A., KITCHIN, R. (2013). *A Dictionary of Human Geography*. Oxford: Oxford University Press.

COHEN, N., ARIELI, T. (2011). Field research in conflict environments: Methodological challenges and snowball sampling. *Journal of Peace Research*, 48, 4, 423–435. DOI:10.1177/0022343311405698.

CONNOR, W. (1994). *Ethno-Nationalism: The Quest for Understanding*. Princeton: University Press.

COUCLELIS, C. (1999). Space, time, geography. In Longley, P. A. et al. eds., *Geographical information systems, principles and technical issues.* New York: John Wiley and Sons, pp. 29-38.

CROATIAN BUREAU OF STATISTICS. (2013). *Census of Population, Households and Dwellings 2011* [online]. [accessed on 18 March 2019]. Retrieved from: https://

www.dzs.hr/Eng/censuses/census2011/results/htm/e01_01_21/E01_01_21_RH.html.

DÍAZ-MUŇOZ, M. A., SALADO-GARCÍA, M. J., DÍAZ-CASTILLO, C. (1999). A teaching approach to time-geography: Some results of an educational experiment. *GeoJournal*, 48, 3, 159-166.

DRBOHLAV, D., UHEREK, Z. (2007). Reflexe migračních teorií. *Geografie – Sborník České geografické společnosti*, 112, 2, 125–141.

ELLEGÅRD, K. (1999). A time-geographical approach to the study of everyday life of individuals—a challenge of complexity. *GeoJournal,* 48*,* 167–175.

ELLEGÅRD, K. (2019). *Thinking Time Geography: Concepts, Methods and Applications.* New York: Routledge a Taylor & Francis Group.

FEDERALNI ZAVOD ZA STATISTIKU. (2003). *Popis stanovništva 1991* [online]. [accessed on 18 March 2019]. Retrieved from: http://fzs.ba/index.php/popis-stanovnistva/popis-stanovnistva-1991-i-stariji/.

FEDERALNI ZAVOD ZA STATISTIKU. (2003). *Popis stanovništva 2013* [online]. [accessed on 18 March 2019]. Retrieved from: http://fzs.ba/index.php/popis-stanovnistva/popis-stanovnistva-2013/.

FŇUKAL, M. (2012). Teritoriální politická organizace Západního Balkánu s důrazem na vývoj ve 20. Století. *Geografia Moravica* 3. Olomouc: Univerzita Palackého v Olomouci.

FRÄNDBERG, L. (2008). Paths in transnational time-space: representing mobility biographies of young Swedes. *Geografiska Annaler B*, 90, 1, 17–28.

GEORGE, K., STRATFORD, E. (2010). Oral history and human geography. In Hay, I., ed., *Qualitative Research Methods in Human Geography*. Toronto: Oxford University Press, pp. 139-151.

GIDDENS, A. (1984). *The Constitution of Society*. Berkeley, CA.: University of California Press.

GOLD, J. R. (2009). Behavioral Geography. In Kitchin, R., Thrift, N. eds., *International Encyclopedia of Human Geography.* Vol. I. Amsterdam–Oxford: Elsevier, pp. 282–293.

GOLLEDGE, R. G. (2008). Behavioral Geography and the Theoretical/Quantitative Revolution. *Geographical Analysis*, 40,3, 239–257.

GOLLEDGE, R. G., STIMSON, R. J. (1990). *Analytical behavioural geography*. London: Routledge.

GOODMAN, L. A. (1961). Snowball sampling. *Annals of Mathematical Statistics,* 32, 1, 148-170. DOI:10.1214/aoms/1177705148.

GURŇÁK, D. (2007). *Vývoj politickej mapy stredovýchodnej a juhovýchodnej Európy – historickogeografická analýza*. Bratislava: Kartprint.

HÄGERSTRAND, T. (1957). Migration and area. Survey of a sample of Swedish migration fields and hypothetical considerations on their genesis. In Migration in

Sweden: A Symposium. D. Hannerberg, T. Hägerstrand and B. Odeving (eds), pp. 27–158. *Lund Studies in Geography, Series B Human Geography*, No. 13. Lund, Sweden: C.W.K. Gleerup

HÄGERSTRAND, T. (1970). What about people in regional science? *Papers in Regional Science*, 24, 1, 7-24. https://doi.org/10.1111/j.1435-5597.1970.tb01464.x

HLADKÝ, L. (1994). Jugoslávský problém – jeho historické kořeny a současný vývoj. *Medzinárodné otázky*, 3, 3, 35-51.

HOROWITZ, D. (1985). *Ethnic groups in conflict*. Berkeley: University of California Press [online]. [accessed on 15 January 2019]. Retrieved from: Institute for statistics of FB&H. http://fzs.ba/wp-content/uploads/2016/12/Konacni-rezultati-Popisa-2013.pdf.

HUTCHINSON, J., SMITH, A. D. (1996). *Ethnicity*. Oxford: Oxford University Press.

INSTITUTE OF STATISTICS OF REPUBLIKA SRPSKA. (2017). 2013 *Census of Population, Households and Dwellings in the Republika Srpska* [online]. [accessed on 18 March 2019]. Retrieved from: http://www2.rzs.rs.ba/static/uploads/bilteni/popis/gradovi_opstine_naseljena_mjesta/Rezultati_Popisa_2013_Gradovi_Opstine_Naseljena_Mjesta_WEB.pdf.

IRA, V. (1997). The perception of potential ethnic tensions: the region of East Slovakia and Northeast Hungary. *Földrajzi Értesítő: Geographical Bulletin*, 46, 3-4, 161-171.

IRA, V. (2001). Geografia času: prístup, základné koncepty a aplikácie. *Geografický časopis*, 53, 3, 231-246.

IŠTOK, R. (2005). Juhoslovanská kríza. Slovania proti Slovanom. In Bilasová, V., Dupkala, R., Žemberová, V., eds., Fenomén slovanstva II. *Acta Facultatis Philosophicae Universitatis Prešoviensis, Filozofický zborník*, 23. Prešov: FF PU, 63-82.

JACOBSON, D. (2006). Behavioral geography. In Warf, B. ed., *Encyclopedia of Human Geography*. London: SAGE Publications, pp. 17–18.

JESSE, N. G., WILLIAMS, K. P. (2011). *Ethnic Conflict: a systematic approach to case of conflict*. Washington DC: CQ Press, a division of SAGE.

KAPLAN, R. (1994). *Balkan ghosts: journey through history*. New York: Vintage Departures.

KOSOVO AGENCY OF STATISTICS. (2013). *Estimation of Kosovo population 2011* [online]. [accessed on 18 March 2019]. Retrieved from: https://web.archive.org/web/20151017212618/http://ask.rks-gov.net/ENG/publikimet/cat_view/8-population.

KUMPRES, J. (1992). Religija i etnički konflikt na južnoslovenskom prostoru (sociologijske i socialno-historijske napomene). *Migracijske i etničke teme,* 8, 1, 5-13.

KWAN, M.-P. (2004). GIS Methods in Time-Geographic Research: Geocomputation and Geovisualization of Human Activity Patterns. *Geografiska Annaler B*, 86, 4, 267–280.

KWAN M-P. (2012), Critical space–time geographies thinking the spatiotemporal. Guest editorial. *Environment and Planning A*, 44, 2043-2048. DOI:10.1068/a45437.

LAMBOURNE, W. (2004). Post-conflict peacebuilding: Meeting human needs for justice and reconciliation. *Peace, Conflict and Development*, 4, 1-24. DOI: 10.7246/pcd0404.

LENNTORP B. (1999). Time-geography – at the end of its beginning, *GeoJournal* 48, 3, 155-158.

LUNDÉN, T. (2003). States, Networks and Individual Life Paths. In Clark, E., Hallin, P. O., Widgren, M., eds., *Tidrumsfragment: en vänbok till Bo Lenntorp*. Stockholm & Lund: Institutionen för kulturgeografi och ekonomisk geografi, Lunds universitet, pp. 137-159.

MATLOVIČ, R. (1997). Vývinové tendencie geografie relígií. *Geografický časopis*, 47, 3-4, 231-241.

MILLER, H. J. (2017). Time Geography and Space–Time Prism. In Richardson, D., Castree, N., M. F. Goodchild, M F., et al. eds., *The International Encyclopedia of Geography*. John Wiley & Sons. DOI: 10.1002/9781118786352.wbieg0431.

MOORE, A. (2015). Ethno-Territoriality and Ethnic Conflict. *Geographical Review*, 106, 1, 1-17.

O'LOUGHLIN, J. (2009). Postconflict Geographies. In: R. Kitchin, R., Thrift, N., eds., *International Encyclopedia of Human Geography* Vol. 8. Amsterdam and Oxford: Elsevier, pp. 334–338.

PIRJEVEC, J. (2000). *Jugoslávie 1918-1992*. Praha: Argo.

PRED, A. (2005). Hägerstrand matters: life(-path) and death matters - some touching remarks. *Progress in Human Geography,* 29, 328-332. DOI: 10.1177/030913250502900310.

ROCHOVSKÁ, A., KÁČEROVÁ, M., ONDOŠ, S. (2014). *Výskumné metódy v humánnej geografii a ich aplikácie, Vysokoškolská učebnica*. Bratislava: Univerzita Komenského v Bratislave.

REPUBLIC OF MACEDONIA STATE STATISTICAL OFFICE. (2005). *Total Population, Households and Dwelings*, Accoarding to the Territorial Organization of the Republic of Macedonia, Book VIII [online]. [accessed on 18 March 2019]. Retrieved from: http://www.stat.gov.mk/Publikacii/knigaXIII.pdf.

SAVEZNI ZAVOD ZA STATISTIKU SFRJ. (1998). 1991 *Census of Population, Households, Dwellings and agricultural holdings in SFRJ*. Belgrade.

SEKULIĆ, D., HODSON, R., MASSEY, G. (2002). War and Tolerance. *Revija za sociologiju,* 33, 1-2, 33-57.

SCHWANEN, T. (2009). Time-space diaries. In Kitchin R, Thrift, N., eds., *International Encyclopedia of Human Geography* Vol. 11. Amsterdam and Oxford: Elsevier, 294–300.

STATISTICAL OFFICE OF THE REPUBLIC OF MONTENEGRO. (2004). *Census of Population, Households, and Dwellings 2003,* Book 3 [online]. [accessed on 18 March 2019]. Retrieved from: https://www.monstat.org/eng/page.php?id=184&pageid=56.

STATISTICAL OFFICE OF THE REPUBLIC OF SERBIA. (2003). *2002 Census of Population, Households and Dwellings in the Republic of Serbia,* Book 3. [online]. [accessed on 18 March 2019]. Retrieved from: http://publikacije.stat.gov.rs/G2002/Pdf/G20024003.pdf.

STATISTICAL OFFICE OF THE REPUBLIC OF SERBIA. (2012). 2011 *Census of Population, Households and Dwellings in the Republic of Serbia,* Book 1 [online]. [accessed on 18 March 2019]. Retrieved from: http://publikacije.stat.gov.rs/G2002/Pdf/G20024003.pdf.

STATISTICAL OFFICE OF THE REPUBLIC OF SLOVENIA. (2003). *Population by ethnic affiliation, Slovenia, Census 1953, 1961, 1971, 1981, 1991 and 2002* [online]. Rapid Reports No 92/2003, p. 4. [accessed on 18 March 2019]. Retrieved from: https://www.stat.si/Popis2002/gradivo/si-92.pdf.

STATISTICAL OFFICE OF THE REPUBLIC OF SLOVENIA. (2013). *Ljudje, družine, stanovanja: registrski popis 2011* [online]. [accessed on 18 March 2019]. Retrieved from: https://www.stat.si/doc/pub/Ljudje_druzine_stanovanja.pdf.

UHER, A. (2018). Human behaviour in the territory affected by war conflict: theoretical-methodological notes and examples of war and post war life courses. *Montenegrin Journal for Social Sciences*, 2, 2, 109-121.

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EFFICIENCY OF ACTIVE LABOUR MARKET POLICY IN HUNGARY: DETRANSITIVE SETTLEMENT STRUCTURE OF SUPPORTED PUBLIC EMPLOYMENT

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Abstract
The present study sets out to examine Hungary's active labour market policy tool, i.e. the effectiveness of supported public employment and leaving opportunities on a territorial basis as its most important objective. The relevance of the territorial examination of leaving supported public employment is explained by the fact that there are marked differences in this respect in Hungary, which can be attributed to the different level of development of the labour market. Building on this, the research intends to reveal settlements which are less prone to supported public employment detransitivity. The chance of leaving the employment policy tool can be determined by means of demotivating factors (endogenous factors) and factors outside of public employment behind the lock-in in supported public workers, as well as the vulnerability of the primary labour market (exogenous factors). The method of investigation was a complex geographical delimitation. The detransitive settlement structure of supported public employment shows significant cohesion with the respective beneficiary regions and settlements in Hungary. In the areas of Southern Transdanubia, in the border area of North-Eastern Hungary and Central Tisza Region, the greatest vulnerability can be found, hence in these regions, the low level of transition from the active labour market tool is more pronounced. The disadvantage of small village settlements is particularly worrying, where more and more cumulative problems (deprivation of the local economy, low mobility tendency, etc.) further reinforce the high degree of lock-in within the employment policy tool.

Keywords
detransitivity, supported public employment, active labour market policy, peripheral regions, primary labour market

INTRODUCTION

In today's globalized world, where workers can move freely, they can validate their intellectual capital less dependent on their local living environment from a territorial point of view, and more emphasis is placed on the continuous and sustained employment of economically active people. The inclusion of active labour market policies has been on the agenda since the 1970s (increasing unemployment), which can be explained by the decreasing role of welfare states. By bringing the

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activation of long-term unemployed (activating state) to the fore, in public thinking, the ideal of „self-care" has become increasingly accepted (Csoba, 2017). In recent years, decommodification[1] has been observed increasingly stronger, which raises the question of what is the territorial effectiveness of motivating/forcing the unemployed, and what aspects affect the employment of primary labour market?

In Hungary, active labour market policies, which are still important today, have been strengthened, in particular, as a result of the 2008 global economic crisis. As a result of the crisis, macro-level labour market territorial divergence became characteristic. As a result of the global economic crisis, typical crisis areas (through the degradation of labour market) have emerged (Lőcsei 2010, Egedy, 2012, Alpek, Tésits, 2014a). In the regions that were considered to be underdeveloped even before the drastic fragility caused by the crisis, dominant cumulative depressive labour market trends have become dominant. These areas have not been removed from the labour market vulnerability as a spatial shaping impact of supported public employment (employment expansion) - which can be rightly explained by the increasing income peripheralization of inhabitants in settlements, by getting people in less resilient settlements into a hopeless situation, which all strengthened peripherality during territorial delimitation. Among the types of active labour market policies (Bonoli, 2010), the study analyses the territorial effectiveness of the type of „direct job creation" program in Hungary. In reducing the trauma caused by the crisis, supported public employment (direct job creation), although it appeared as a temporary solution, did not solve the acute problems triggering labour market spatial inequalities that have been „pigeon-holing" for decades (low labour supply, etc.). The efficient management of the country's vulnerable labour market areas was becoming more and more acute from the point of view of spatial development policy and employment policy (reducing labour shortages) as well. A number of studies (e.g. Szabó, 2013, Cseres, Molnár, 2014, Alpek, 2017) have a clear thesis about that the chance of transition[2] of supported public employment to the primary labour market is minimal - thereby reducing the clear objective of the program as well as consistency increasingly promoted by decision makers. However, territorial analyses are key to the proper and effective territorial adaptation of spatial development support - in this case, referring to the backwardness of the labour market, which organically determines the chances of leaving supported public employment.

As in most OECD countries, more and more emphasis has been placed on active labour market policies, so it has also gained more and more ground in Hungary to

1 Stronger activation, motivation/coercion of employees related to welfare benefits in order to participate more in labour market (Csoba J. 2017).

2 The study considers those settlements as *transitive*, which have a relatively higher chance of appearing on the primary labour market and it considers those settlements as *detransitive*, which have quasi-lower chances of primary labour market integration.

deal effectively with unemployment. Launched in 2011, the active labour market tool is a policy instrument, and acted as the largest employer in the country, which is increasingly demanding for natural transition from supported public employment programs (primary labour market integration without state interventions). However, the relevance leaving supported public employment based on territorial studies is evidenced by the fact that homogeneous labour market areas with little territorial divergence can hardly be detected, which contributes to the marked territorial polarization of leaving supported public employment. Namely, leaving supported public employment - in addition to demotivating factors of supported public employees (endogenous factors) - is significantly determined by the level of development of the primary labour market (exogenous factors), where drastic territorial differences accumulate in Hungary. This explains the macro-level problem of high degree of lock-in in supported public employment, which can be attributed to both individual (transition willingness) and nation-state level (appropriate regional development targeting) factors which all emphasize the marginalized position of the program in peripheral living spaces (short-term leaving chances).

This paper focuses on effectiveness analysis based on regional basis of one of the key program types (supported public employment) of the Hungarian active labour market policy tool. It does so in the knowledge of that the most important objective is when introducing a unified supported public employment that the integration of long-term unemployed into the primary labour market should take place as soon as possible;

In order to discover the territorial reasons behind the detransitivity of supported public employment, the aim of the study is to show that since the years following the change of regime, from the labour market and economic indicators previously used to designate beneficiary areas with a tendency for territorial development, which explain the territorial underdevelopment the most. The study attempts to select the most optimal indicators influencing the program that determine labour market periphery (exogenous factors) which can provide a realistic answer to the transition chances of supported public employees. The study primarily seeks to identify areas or settlements with the highest detransitivity, which are determined by separating clusters generated from complex indicators resulting from the primary labour market vulnerability and the demotivating factors of supported public employees in Hungary.

MATERIAL AND METHOD

The present study aims to illustrate the detransitive settlements of Hungary's secondary labour market, and it aims to demonstrate them by exploring the factors that hinder the development of the labour market - with the strength of backwardness and the local economy - and the transition of supported public employees in

a complex way. In the course of our study, the main emphasis - besides the evaluation of the results - is on the conceptualization of the used indicators - with the description of the methodological issues (Nemes Nagy, 2009, Nagy, 2011, Pénzes, 2014, Pénzes, 2015).

The first phase of the research was the collection of basic data. In the course of our research, we tried to analyse indicators that have been widely used in the official governmental delimitations[3] so far - to explain local economy and labour market deprivation. In addition, such basic data have been included in the study that has not yet been applied in any delimitation (e.g., the lock-in indicator of supported public employment), but at the same time, by their explanatory power, are considered to be an adequate indicator not only to illustrate the chances of supported public employment transition, but also to explain the socio-economic backwardness. In the course of collecting the basic data, the review of literature closely related to the research topic (secondary analysis of national and international literature) was relevant, which made it possible to reveal the most important factors hindering the transition of supported public employees (e.g. Cseres, Molnár, 2014, Váradi, 2010, Kluve, 2010, Card et al., 2010, etc.). Finally, in order to select adequate indicators, we relied on the „field" experiences accumulated in our empirical research as well. We have tried to selectively target the particular indicators, seeking to include the most relevant indicators in the delimitation objective (avoiding the inclusion of unnecessary indicators) (Appendix 1). After this, in order to compare the individual indicators, we produced specific indicators - which also appeared as a condition for the applicability of statistical surveys.

Although some indicators (e.g.: number of registered businesses) define backwardness better at county or micro-region level, at the same time, when analysing the complexity of the peripherality, for the sake of full territorial detail[4], we considered the settlement level (LAU2) as standard within the research framework. The argument for settlement level is that while examining larger territorial levels (district - LAU1), such settlements could be removed from the detransitive category - which when typically tested without their centre - would be legitimately placed in cluster less prone to transition.

After collecting the indicators that are closely related to the research topic, we examined the indicators according to which territorial inequalities accumulate within them. Logarithmic weighted relative standard deviation was used for the

3 In Hungary, the delimitation of peripheral regions and settlements has been modified several times due to the relative hectic nature of changes in public administration systems. As a result, a number of governmental delimitations are available to compare changes in spatial trends.

4 In accordance with the European Union territorial positions, there is a vertical hierarchical territorial administrative division in Hungary, the so-called NUTS system.

analysis of the different indicators, which revealed the indicators showing relatively high territorial disparities[5], thus explaining high degree of divergence.

$$V = \sqrt{\frac{\sum_{i=1}^{n}\left(log\frac{y_i}{\bar{y}}\right)^2 f_i}{\sum_{i=1}^{n} f_i}} * 100$$

$y_i = \frac{x_i}{f_i}$ specific indicator value in i.unit area; $\bar{y} = y_i$ weighted average; f_i weight

We have abandoned the further investigation of indicators that showed light inequalities, aiming to rather define territorially more divergent indicators. The next step was the correlation analysis of data (Spearman's rank correlation), where the relationship between the indicators was determined.

Which responds to the further abandonment of well-correlated indicators that can be derived from each other (e.g. instead of the number of registered jobseekers, we have considered the number of long-term registered jobseekers to be decisive for a higher degree of peripherality) in order to avoid distortion of data. For the sake of clarity, it was necessary to turn the data series in one direction (reversal of the indicators representing development). Finally, the indicators included in the delimitation were adjusted to a unified level (undimensionality test), which made it possible to produce the complex indicator (by means of arithmetic averaging of the indicators) from different measurement units and sizes. We used the method of normalization (projection to the minimum-maximum interval) out of the dimensionality methods.

$$Z_i = \frac{X_i - X_{min}}{X_{max} - X_{min}}$$

Z_i= normalized variable; X_i= examined data series; X_{min}= minimum value; X_{max}= maximum value

The next neuralgic point was the determination of the thresholds, i.e. where should we draw the range of detransitive settlements? Similar to the recent governmental delimitations in Hungary, we drew the boundaries of underdeveloped settlements by one third, and we considered 1041 settlements to be detransitive. The settlements in the detransitive category were not considered homogeneous due to the differences in the level of development, therefore we created 3 clusters:

5 In the case of logarithmic weighted relative standard deviation, the order of elements does not change due to logarithmization, but the effect of extreme values decreases, so the extremes of the data series have less effect on the detected inequality values (Nemes Nagy, 2005).

strongly detransitive, basically detransitive, and typically detransitive. It is important to note that in a complex geographic delimitation - in this study, regarding the detransitivity of supported public employment - the author's sometimes inevitable subjectivity cannot be ignored. In fact, there are no two identical results in each delimitation based on the same criteria. At the same time, in Hungary, the relatively concentric spatial structure of developed and underdeveloped regions has been „stiffened" for the past 3 decades, which is also proved by the complex indicator values used in our present study.

The data needed for the research were based on the statistics of the Hungarian Central Statistical Office (HCSO), the Regional Development and Spatial Planning Information System (TeIR), the National Tax and Customs Administration (NTCA), the Ministry of the Interior (MI) and GeoX Ltd geographic information system.

Data was processed using Microsoft Excel and SPSS software, while maps were displayed by Quantum GIS Lisboa Version 2.18.

CHARACTERISTICS OF UNIFIED SUPPORTED PUBLIC EMPLOYMENT PROGRAM IN HUNGARY

In this chapter, we would like to present the most important features of the political, direct job creation tool for the active labor market, which was significantly restructured in 2011, in order to make it possible for the participants, target and tools of the program to be explored - even though without completeness.

From the 1980s onwards in Hungary - initially within the framework of the „non-profit",„public purpose",„public work",„the way to work" and then the „unified supported public employment" program - the main emphasis was placed on reducing the onset of welfare policy, the process of redistribution, and increasingly focusing on forcing the unemployed (especially the long-term unemployed) into work (Csoba, 2010).

The current management of supported public employment and the designation of the most important strategies are centralized, which is a matter of law and duties of the Ministry of the Interior. In contrast, the program organization, the implementation is decentralized, and it is the responsibility of the municipalities (LAU 2) who can apply for the organization of supported public employment. The supported public employment relationship can only be decisive, which is different depending on the special program types (long-term, national, start-up work program) (Act CVI of 2011). The program is positive in that, during the supported public employment relationship, the participants' work competencies and skills can be sustained and improved, which can be positive for employers as well in the course of later employment.

The current direct job creation program offers a „gesture" primarily for disadvantaged, permanently inactive workers, according to which it provides the possibility

of a wage which is lower than the minimum wage, but higher than passive state aid (social welfare) (Kóti, 2018). Most of the participants have up to 8 primary education qualifications, but special types of supported public employment programs with higher qualifications (secondary, tertiary) can also be observed.

Activities in the framework of supported public work as well as the impact of programs on the development of settlements may vary greatly by each settlement. In addition to keeping the settlements clean (garbage collection, arranging green areas, etc.), value creation (e.g. bio- and renewable energy use) also appears, typically where the municipal leader (mayor) sets ambitious goals for the development of the settlement trough the political instrument of an active labor market.

Overall it can be concluded that at the time of the introduction of the program, the most important objective was the reintegration of the unemployed into the primary labor market. However, according to most researchers (see the following chapters), the program is less suitable for this purpose.

HISTORICAL OVERVIEW OF THE APPLIED LABOUR MARKET AND ECONOMIC INDICATORS FOR THE SELECTION OF THE ADEQUATE INDICATORS

The delimitation of central and peripheral regions has been one of the most important regional development issues for decades. Act XXI. tv. (2§) about regional development and spatial planning mentions among its most important objectives that the anomalies between developed and underdeveloped regions and settlements should be mitigated as well as the further development of crisis areas should be prevented (Act XXI of 1996). Among the most important constituent factors of spatial structure, the indicators representing the level of development - backwardness- of the labour market play a prominent role, which were identified as a primary differentiating indicator in the delimitation of the respective beneficiary regions.

The multi-dimensional nature of the regional and settlement backwardness shows that the decision-makers have tried to grasp the complex peripherality with a number of indicators - giving considerable space for fluctuation - during the delimitation of beneficiary regions and settlements for regional development purposes dating back to more than three decades. Despite the fact that indicators perceived as traditional (e.g. taxable income) are sometimes able to grasp the range of peripheral areas themselves (Nagy, 2011), the dynamic growth of indicators (in 1993 - 11, in 2001 - 19, in 2015 - 23 indicators) has been observed from year to year.

The question arises that among the external labour market and economic indicators that hinder the transitivity of supported public employment, the application of which can capture the vulnerability of the labour market, which can also highlight the settlements with high levels of lock-in in supported public employment?

Table 1 The range of labour market and economic indicators used in the governmental delimitations between 1993 and 2015 to delimit the beneficiary regions and settlements

Indicator used 1993		Year of application				
		1997	2001	2004	2007	2015
Labour Market	• Rate of unemployed;	x	x	x	x	x
	• Rate of long-term unemployed;		x	x	x	x
	• Agricultural employees;	x	x		x	
	• Industrial employees;		x			
	• Employees in service sector;		x		x	
	• Rate of activity;				x	
	• Registered jobseekers with a maximum of eight classes of primary school qualification					x
Economic	• taxable income per inhabitant;	x	x			
	• Income forming a taxable income per permanent inhabitant;		x	x		
	• Number of economic organizations per thousand inhabitants;		x	x		
	• Operating business organizations;			x	x	x
	• Local tax revenue of local governments.				x	x

Note: *The exact names of the indicators can be found in the legislation referred to*
Source: *based on the legislation referred to, own editing*

In Hungary, a number of labour market and economic indicators have been used to delimit the settlements in the beneficiary regions over the past three decades (Table 1). In our study, we have taken into account the delimitation of both regional and settlement level, because - due to the methodological background that overlaps in many respects - it can be suitable for comparison and detecting temporal changes and a shift in emphasis.

In 1993, the widening territorial inequalities as a result of the transformational crisis (the collapse of socialist industry, bankruptcy of large agricultural farms, etc.) required the rethinking of delimitation of the beneficiary regions. The regions were considered to be in crisis where serious unemployment was observed alongside the historical backwardness. To this end, effective job creation in the areas facing the most severe employment problems has been treated as a high priority for economic restructuring. The labour market depression of underdeveloped regions was demonstrated by the ratio of long-term unemployed, while among the economic indicators, per capita taxable income was referred to the peripherality (84/1993 (XI.11) Parliamentary resolution).

Act XXI of 1996 established a new basis for the beneficiary regions of regional development, and as a result, the delimitation of peripheral regions was updated in 1997. Under this regulation, economic growth in underdeveloped regions as

well as employment-enhancing developments should be promoted - in synergy with the governmental delimitation of 1993, with a change that regions with long-term unemployment have been classified into a separate category during the development of clusters. The range of indicators used has increased significantly, as separate labour market indicator groups have been established (occupational structure, employment changes and unemployment indicators). They wanted to determine the backwardness with the ratio of the unemployed, the proportion of the long-term unemployed and the changes in the labour market sectors (primary, secondary, tertiary). While in addition to the economic development-backwardness explained by the taxable income, they referred to peripherality with the value of business organizations per 1000 inhabitants (30/1997. (IV.18) Parliamentary resolution).

In 2001, the types of areas that resulted in delimitation (rural development areas, industrial restructuring areas, and underdeveloped region from a socio-economic point of view) changed. The range of indicators used in governmental delimitations only affected the economic indicators, as the number of functioning economic bodies is intended to explain the peripherality as a new indicator (24/2001. (IV.20) Parliamentary resolution).

As a change in the number of micro-regions, the delimitation of the beneficiary regions was done again in 2004. At the same time, the range of indicators has not been updated, so the new delimitation has only been prepared for the new territorial frameworks (Pénzes, 2015, 64/2004. (IV.15) Parliamentary resolution).

In 2007, special attention was also paid to the delimitation of settlements affected by significant unemployment (1182 settlements) (exceeding the national average unemployment rate by 1,75 times). The range of indicators used has increased significantly. The employment indicators that have already been considered traditional (ratio of long-term unemployed, etc.) have not expanded, while the economic indicators (e.g. local tax revenue of local governments) have increased dynamically (67/2007 (VI.28) Parliamentary resolution, Faluvégi, Tipold, 2009).

In the delimitation of the last beneficiary regions, the local economy and the labour market formed a separate set of indicators, where the number of people with a maximum of eight classes of primary school qualification and the number of retail stores per thousand inhabitants appeared as a new indicator (105/2015 (IV.23) Governmental Decree).

Overall, it can be concluded that there are a number of indicators used in governmental delimitation that can be considered as relatively traditional (taxable income, proportion of unemployed, and long-term unemployed, number of registered/operating economic organizations), and those that have been used only once or twice to designate peripheral regions.

It raises an important research question, which of the indicators is the most relevant to explain lock-in in supported public employment? In addition, what

regional inequalities can be detected among the indicators of supported public employment detransitivity, and to what extent do they explain the peripherality of particular regions, settlements?

THEORETICAL BACKGROUND TO CHOOSING INDICATORS REPRESENTING DETRANSITIVITY OF SUPPORTED PUBLIC EMPLOYMENT

The time elapsed since the introduction of unified supported public employment (2011) is considered sufficient to examine the leave of supported public employees with more complex (quantitative and qualitative) methods. The dynamic increase in budgets for the employment policy tool (at the peak of 2016, 340 billion HUF was envisaged) is directly proportional to the increasing number of participants in the program (Southern Transdanubia, North-eastern Hungary and some of its regions are overrepresented). And this requires an interpretation of the primary objective of supported public employment (the integration of supported public employees into the primary labour market as soon as possible), as well as the analysis of factors behind lock-in in supported public employment. In addition to exogenous factors (labour market development-underdevelopment) that reduce the efficiency of supported public employment, an effective organizational deficiency in supported public employment and a number of endogenous factors of supported public employees (e.g. education level is less appropriate compared to the expectations of primary labour market) contribute to reducing the chances of leave.

In the literature on the effectiveness of supported public employment, research on micro-level (typically micro-regional and settlement case studies) is most likely to be found (Váradi, 2010; Szabó, 2013, etc.) apart from some studies taking into account the macro-territorial inequalities of efficiency (Alpek, Tésits, 2014, Cirfusz, 2015, Kóti, 2018). At the same time, the factors behind lock-in in supported public employment need to be handled in a nuanced manner, as the theses that inhibit the detransitivity of supported public employees can be highly differentiated by territoriality - through heterogeneous labour market and attitudinal differences.

The regionally depressive nature of the cyclical nature of leaving supported public employment is not a recent phenomenon. Examining the type of program that precedes unified supported public employment („Út a munkához") (typically in the most disadvantaged micro-regions), it can be stated that the participants in the program, despite their education for work, are not able to leave the primary labour market. The reason behind this is not only the insufficient absorption capacity of the labour market but also the fact that the likelihood of lock-in in supported public employment also increases with the increase in participation in supported public employment (Váradi, 2010, Csoba, 2010, Szabó, 2013), and even more, those outside the program are more likely to start working (Bass, 2010).

Even after the introduction of unified supported public employment, similar research results were drawn from the theses of analysts who analysed the effectiveness of the program. Namely, with the length of the supported public employment episode, there is an increasingly negative coherence in open labour market transition (Cseres, Molnár, 2015). One of the biggest obstacles to the transition of supported public employment is the low level of education[6] (Fay, 1996, Koltai, 2014), which shows significant regional (macro-level) homogeneity in Hungary (among supported public employees) - which is in fact due to the employment of disadvantaged target groups of supported public employment.

The willingness to mobility largely determines the chances of leaving the program and the integration into the labour market. The more mobile the worker is, the easier it is to find a job in the primary labour market. At the same time, the greater the distance (especially in the case of settlements with a smaller network of settlements), the lower willingness to mobility can be realized (Kiss, Szalkai, 2018). Of course, most immobile jobseekers are in underdeveloped regions, which can be traced back to the vulnerability of the labour market (Alpek, 2016). As a result, those are the areas with the most long-term commuting, where the size of the local labour market supply cannot keep up with the number of economically active people, thus creating a significant space for long-term and large-scale unemployment (Kiss, Szalkai, 2018). The chances of employment (commuting relations) of workers living in small village areas are thus significantly reduced (the chances of leaving of supported public employees even more marginalized by their immobility), with the proportion of distance from county seats with typically polycentric urban networks (Pénzes, 2013, Pálóczi, 2016). Cyclically circulating in local supported public employment, and „entrapment" in local unemployed registers can be observed significantly in areas where the construction of linear infrastructure is inappropriate[7], and the inadequacy of individual transport conditions is drastic. In addition, the marginalization of income of supported public employees (Pénzes, et al., 2014) culminates in the immobilization explaining detransitivity due to the high travel time-cost factor. It is worth mentioning the relevant study of Tamás Bartus, who examined the development of the unemployment rate in relation to commuting time - cost factor - and cost reimbursement in Hungary. From his analysis, it turned out that the level of reimbursement of the costs associated with different commuting activities greatly influences the commitment to the costly commuting. Where long-distance traffic conditions are lagging behind, most of all, it can be

6 Mainly characteristic of rotational supported public employees, and re-participants of the program (Koltai, 2014).

7 Insufficient infrastructure has a significant impact on the development of disadvantaged areas. Developing infrastructure can become a generator of further developments (Bujdosó, et al., 2016).

a solution to travel by car which may result in a much lower rate of return and it can be less incentive to the mobility of the unemployed (Bartus, 2011).

One of the most important principles of unified supported public employment is that employees should be entitled to lower income than the minimum wage, and thus to stimulate their primary labour market integration (Belügyminisztérium, 2016, p. 26). While there are no direct surveys available, it is common knowledge that a large proportion of supported public employees are of Roma origin. In some regions, a higher rate of fertility can be observed among the members of this social group, and a much higher income can be realized due to the different tax benefits that can be obtained. This fact reduces the „pay gap" between supported public employment wages and minimum wage, which is less incentive for participants to leave permanently, and instead choosing long-term employment in supported public employment that seems more comfortable.

Examining some policy tools of the active labour market - based on the regulation of European Commission in 2017 - the least incentive for direct reintegration into the primary labour market is direct job creation in the public sector (European Comission 2017). However, according to some research results (Calmfors et al., 2002), the more imitated the position of employment in the competitive sector when working in supported public employment, the greater the chance of transition, mainly due to the higher quality of work competences acquired. So, the quality of the work done under the program can be very important (e.g. in value-creating supported public employment).

The vulnerability of the active labour market tool is indicated by the long-term employment willingness of employers, which significantly affects the transition of disadvantaged supported public employees who are away from the labour market for a long time. Employers' prejudiced attitudes towards supported public employees - especially in the case of the Roma ethnic group - may lead to an accumulation of further disadvantages. As a result, in some regions - especially in those small villages[8], which are inhabited by a high proportion of Roma people (Pásztor, et al., 2016) - it pushes its „negative stamp" to the effectiveness of the program as a whole, which rightly explains the highly differentiated high degree of lock-in in supported public employment (Kóti, 2018).

8 Matlovicová Kvetoslava et al., 2012, Klimovsky et al., 2016, Brunn et al., 2018, and István Zoltán Pásztor et al., 2016 draw attention to the uncertain measurement results and methods of the actual number of Roma population. The development of a settlement is strongly determined by the quality of the existing human capital, which suggests the deprivation of settlements inhabited by a high proportion of Hungarians of Roma origin, due to their undereducation, which can still be observed significantly among them compared to the majority society. In the case of these settlements, prejudicial discrimination (e.g. in case of job creation) can be observed, which puts its „negative stamp" on the settlement's further breakaway.

Jochen Kluve has undertaken to examine the effectiveness of European active labour market policies at European level. In his study, he distinguished four different types (trainings, private sector incentive programs, direct employment programs, services, and sanctions) according to what elements of the program could help the integration of long-term unemployed into the primary labour market. In their results, supported public employment programs were considered to be effective, as with good central management, they are able to bring workers back into the world of work. At the same time, a modest improvement in employment was assumed with regard to the effectiveness of individual training, despite the fact that the main purpose of training is to increase the quality of human capital. In their research, it was emphasized that special attention should be paid to the development of appropriate services for recruiting the unemployed. The lack of different job search courses and professional counselling can have serious negative consequences regarding the transition into primary labour market (Kluve, 2010).

Lucas Fervers also attempted to analyse the effectiveness of various activating labour market policies. His initial hypothesis (e.g. Caliendo, Hujer, Thomsen study in 2008) was that supported public employment programs do not contribute to reducing long-term unemployment, they only increase public expenditures. The target group of the survey was primarily those in the primary labour market who has not been able to find work for a relatively long time. According to his results, supported public employment does not sufficiently develop the cognitive abilities of the unemployed (e.g. counting, literacy, Internet skills), but the acquisition of higher work competencies (teamwork, etc.) already suggests greater optimism. His theses also found a positive effect regarding the program and the fight against social exclusion, and even considered the expansion of social relationships as a generator of later employment. At the same time, serious concerns were raised about supported public employment trainings, which do not adequately help workers return to the primary labour market (Fervers, 2018).

Similar tendencies can be observed in the analysis of Hungarian training programs. József Bagó's work reveals that based on a questionnaire survey conducted by the Századvég Research Institute (2014), only a small proportion of supported public employees said they were informed about training opportunities in order to increase their qualifications. According to their findings, the lack of training programs can be attributed to the fact that they are less adapted to the individual needs of public employees and to the demand of employers. Trainings are less effective, they do not fulfil their function as expected, that is the move towards long-term open labour market employment (Bagó, 2016). Overall, we can say that making training more effective can be a major step forward in leaving the program, reducing unemployment if there is a close interaction between the appropriate organizational background, the training institution, and the mutual motivation of trained people.

RESULTS

In the followings, the background, analysis and conclusion of the selection of underlying indicators are presented.

The *ratio of long-term unemployed*[9] (beyond one year), ratio of unemployed in the working age population, were all adequate indicators in the official governmental delimitations, without an exception (Table 1) for delimiting the peripheral regions. However, in order to derive from one another, the former was considered to be standard, referring to a higher degree of peripherality.

The chances of leaving are largely determined by the territorially different nature of supply and demand in the labour market, which shows a very high divergence, thus „stigmatizing" the rural villages in the countryside, suggesting that the people living there are in a situation of hopelessness. It is desirable to measure the difference with the number of economic organizations. Although the number of operating businesses explains the chances of leaving - the database was not available in the year of the survey - and, in the absence of this, the number of registered companies was included in the survey, which needs to be treated somewhat nuanced (by static testing, we strived for uniformity). Indeed, there is a risk that non-performing, non-income-generating enterprises in certain regions (especially in small village areas) may significantly distort the supply-demand balance of the labour market. On the other hand, it considers all businesses homogeneous, regardless of the number of employees.

The endogenous factors of lock-in in public employment would, without exception, be suitable for the designation of detransitive geographical areas (see, for example, Kóti, 2018). The database of national coverage published by the Ministry of Interior, representing a complexity of efficiency – *the lock-in indicator*[10] – is capable of covering some of the indicators quasi in itself that explain low leaving chances (number of those with a maximum of eight classes of primary school qualification), however, due to the multi-dimensional nature of the problematic area, we could not consider all the factors behind lock-in to be homogeneous. Namely, there are such reasons for this, which are very different from one region to another. Therefore, due to the chiselled nature of the indicator, the use of another endogenous indicator (representing detransitivity well) is also required for completeness.

9 According to the European Commission regulation, efforts should be made to reduce long-term unemployment. Namely, with the rise in unemployment, labour market bonding deteriorates (EC, 2017).

10 The Ministry of Interior constantly examines persons who entered some supported public employment programmes by considering whether the employee spent at least one year in supported public employment in the three years preceding their entry into the programme (continuity is not a condition).

When examining the detransitivity of supported public employment, it is important to consider that there are a significant number of participants who are not or only less able (e.g. low skilled) to leave the program. In our study, in those settlements where the majority of employees *with a maximum of eight classes of primary school qualification,* we attributed much less chance of transition, mainly due to higher skill requirements in the primary labour market.

In order to illustrate the chances of mobility from supported public employment, we also considered the *everyday accessibility indicator* - which is also used by the HCSO to illustrate the peripheral regions in case of governmental delimitations. In fact, the farther a particular settlement is located from its centre (disctrict, county seat), the less is the chance of daily commuting - for the reasons outlined above.

Income peripheralization of supported public employees is considered to be an additional endogenous and at the same time exogenous factor, which encourages further detransitivity. Namely, the smaller the anomaly between the supported public wage and the minimum wage offered by the primary labour market, the greater the chance of lock-in in the supported public employment policy tool. This factor is illustrated by the *proportion of income earned from work per capita,* which is able to cover the income potential of individual regions, which can be used to identify areas with greater chances of leaving, transiting, and higher earnings.

An adequate indicator would have been the data series representing labour market demand (number of unfilled vacancies), in particular, explaining the employment willingness of supported public employees (labour market demand), however, the author's excuse to say is that such a data series was not available for him disaggregated to settlement level.

Finally, municipal employment „power" is highlighted by *the proportion of taxpayers per 1000 inhabitants*, transformation into the working age population. The indicator contributes to the definition of centres or decentres with higher employment potential. The settlements located in the catchment areas of centres with higher employment potential have a significantly higher chance of leaving supported public employment. Based on this, we considered it as a relevant indicator in our study.

Considering the target and instrument system of our study, we considered the inclusion of the following indicators to be justified:

- Proportion of job seekers registered for more than one year, of all jobseekers, 2016 [%]
- Value of registered businesses per 1,000 inhabitants, 2016 [%]
- Lock-in indicator in supported public employment, 2016 [%]
- The ratio of people with a maximum of eight classes of primary school qualification
- among supported public employees, 2016 [%]

- Everyday accessibility indicator[11], 2016 [%]
- Income from work per capita within the working age population, 2016 [Ft]
- The ratio of taxpayers to 1,000 inhabitants within the working age population, 2016 [%]

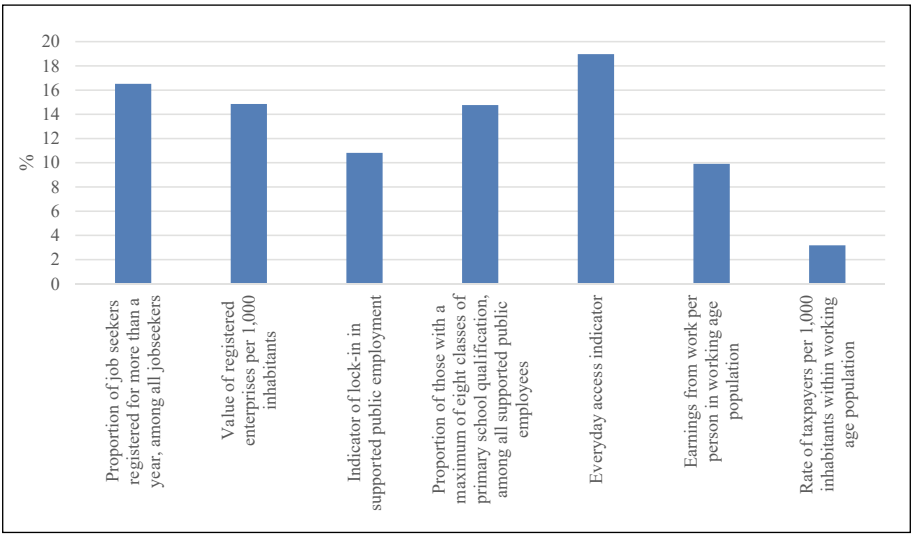

Figure 1
The values of the territorial inequality of the indicators that constitute the complex indicator based on the logarithmic weighted relative standard deviation in Hungary, 2016
Source: Based on the data of HCSO, TEIR, NTCA, MI, GeoX Ltd., own editing

Among the factors hindering the transition of supported public employment, we considered such indicators as adequate, which explain relatively high levels of territorial inequalities based on the results of the logarithmic weighted relative standard deviation (Figure 1) - thus showing the regionally different chances of integration.

The highest value was indicated by the *everyday accessibility indicator*. The high inequality ratio is basically explained by the different geographical areas of the counties. The larger the size of the particular administrative unit, the higher the number of settlements that are located at a higher distance from their centre (especially if the county seat is not in the geographical centre of the area). Although the distance from the district centres is of the same weight in the study, their administrative area shows much greater homogeneity. In the case of Hungary, the

11 The accessibility data measures the shortest distance measured on the road, expressed in minutes, with a weight of 50-50%, measuring the distance from the county seats and district centres.

greatest distance data can be observed in the case of Somogy, Bács-Kiskun, Borsod-Abaúj-Zemplén and Szabolcs-Szatmár-Bereg counties, measured from their centres, due to their large area. The results suggest (Figure 2) that the distance from the centres has a significant impact on the development-backwardness of the settlement. The southern, outer peripheral settlements of Bács-Kiskun County can be considered as highly detransitive settlements, which can be rightly explained by the considerable distance and isolation from the county seat, But there is also a high level of inequality at macro level, that is *the ratio of jobseekers registered for more than one year* (16.5%) *and registered enterprises per 1,000 inhabitants* (14.9%), which suggests a highly differentiated job supply. There is a similarly high level of endogenous factors explaining detransitivity, but smaller inequality values can already be observed. *The lock-in rate of supported public employment* is 10.8%, which implies concerns about the high level of macro-homogeneity, while *the proportion of those with a maximum of eight classes of primary school qualification* was 14.8% among supported public employees. Among the indicators, the lowest territorial inequalities were indicated by *the ratio of taxpayers per 1,000 inhabitants* within the working age population (3.2%). One of the main reasons for this is that supported public employees also appear in employment registers, which significantly transforms the spatial structure of employment, resulting in higher employment rates in Hungary. At the same time, in some regions, higher levels of inequalities may be cumulative in case of examination at smaller territorial levels, and therefore - referring to the reasons set out above - this was considered to be a relevant indicator.

In the followings, it is necessary to examine what kind of relationship can be observed among the indicators used.

The relationship of indicators to each other is illustrated by Spearman's correlation matrix (Table 2) - calculated by the indicators included in the delimitation. The adequacy of the indicators is answered by the fact that only a few indicators show a moderately strong relationship, which suggests that the complex indicator is undistorted. The highest correlation is between taxpayers and income per capita (0.505) as well as between supported public employees with a maximum of eight classes of primary school qualification and income per person (0.405). However, the strength of relationship between these indicators does not explain the deductibility of each other. The relationship between the indicators, at lower regional levels (region, county), may indicate greater differentiation. However, the current macro-level framework for delimitation does not justify the detection of correlation at lower regional levels.

Overall, it can be concluded that the indicators included in the study reinforce in a non-distorted way the complex indicator indicating the settlements which are disadvantaged in the labour market which are of almost the same importance. The complex indicator shows the strongest relationship with the income per capita (0.782), while a moderately strong relationship with a maximum of eight classes of

primary school qualification (0.624), the ratio of taxpayers (0.521) and the lock-in indicator (0.402) - when examining the relationship with a complex indicator. The smallest relationship is with the number of registered companies (0.211).

Table 2 Correlation matrix of normalized values of complex indicators at national level, based on Spearman Rank Correlation

	LOCK-IN	JOB.SEEK	EIGHT. CLA	1.P.EARN	EVRY.ACC	REG.ENT	RAT.TAX
LOCK-IN	1.000	-0.097	0.065(**)	0.139(**)	0.150(**)	-0.058(**)	-0.149(**)
JOB.SEEK	-0.097(**)	1.000	-0.030	0.018	-0.059(**)	0.007	0.142(**)
EIGHT.CLA	0.065(**)	-0.030	1.000	**0.405(**)**	0.123(**)	**0.298(**)**	0.188(**)
1.P.EARN	0.139(**)	0.018	**0.405(**)**	1.000	**0.297(**)**	0.150(**)	**0.505(**)**
EVRY.ACC	0.150(**)	-0.059(**)	0.123(**)	**0.297(**)**	1.000	-0.116(**)	0.047(**)
REG.ENT	-0.058(**)	0.007	0.298(**)	0.150(**)	-0.116(**)	1.000	0.228(**)
RAT.TAX	-0.149(**)	0.142(**)	0.188(**)	**0.505(**)**	0.047(**)	0.228(**)	1.000

** *Correlation is significant at the 0,01 level*
Explanation of symbols: *[BERAG]: Indicator of lock-in in supported public employment; [EGY. TÚL]: Proportion of job seekers registered for more than a year, among all jobseekers; [LEG.8.ÁLT]: Proportion of those with a maximum of eight classes of primary school qualification, among all supported public employees; [1.F.JÖV]: Earnings from work per person in working age population; [HÉT. ELÉR]: Everyday accessibility indicator; [REG.VÁLL]: Value of registered enterprises per 1,000 inhabitants; [ADÓ.FIZ]: Rate of taxpayers per 1,000 inhabitants within working age population*
Source: *Own calculation based on referenced databases*

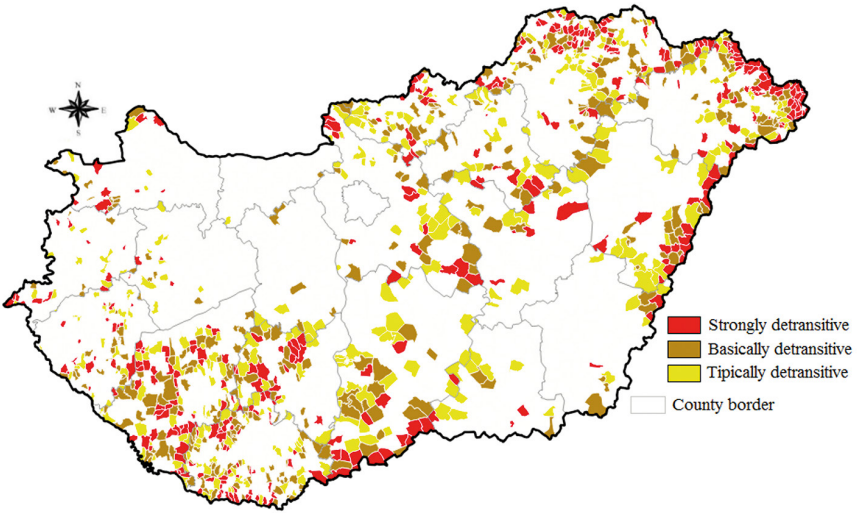

Figure 2
Macro structure of detransitive settlements of supported public employment in Hungary
Source: Based on the legislation referred to, own editing

Macro structure seems to show significant territorial overlapping indicating the detransitive settlements of supported public employment outlined as a result of delimitation with the respective beneficiary regions and settlements (see Government Decree 105/2015), which suggests the „stiff" spatial structure of the country. The settlements in the area of Southern Transdanubia Region, Border Region of Northern Hungary Region, Central Tisza Region, Szatmár-Tiszahát and Border Region of Szabolcs-Szatmár-Bereg County form a major contiguous zone, which, although differently, but indicate a significant labour market vulnerability. The most alarming situation is in the border areas of Hungary, where most of the highly detransitive settlements are concentrated. The border area of Borsod-Abaúj-Zemplén, Szabolcs-Szatmár-Bereg, Hajdú-Bihar Baranya and Bács-Kiskun County is outstanding when examining this cluster. The other clusters (basically and typically detransitive) already exhibit significant spatial dispersion. The greatest chance of transition can be observed in the following settlements in order: Iborfi, Megyer, Hegyesd, Sénye, Lendvadedes, Tornabarakony, Csér and Gombosszeg, based on the values of the complex indicator[12]. In the ranking, the worst position can be observed in the following settlements in order: Tornanádaska, Alsószölnök, Uszka, Kispalád, Felsővadász, Pusztaapatin, Botpalád, Bácsszentgyörgy, Szinpetrin, Szárász and Tornaszentjakab.

Table 3 Absolute and relative regional differences of detransitive settlements and comparing with the delimitation of governmental, peripheral settlements in 2015, pcs

Region	Detransitivity			Total	Relative position – %*	Underdeveloped, during both delimitation
	Strongly	Basically	Typically			
Western Transdanubia	38	32	37	*107*	16,3	38
Central Transdanubia	4	10	15	*29*	7,2	11
Southern Transdanubia	113	118	94	**325**	49,5	252
Central Hungary	13	18	21	*52*	27,7	3
Northern Hungary	80	87	82	*249*	40,8	190
Northern Great Plain	76	57	60	*193*	49,6	165
Southern Great Plain	23	25	38	*86*	33,9	51
Total	*347*	*347*	*347*	*1041*	*33,5*	*710*

Source: *Based on own editing*
** As a percentage of all settlements in the region*

12 Most of these settlements are small settlements and small villages without exception. It is worth noting, of course, that due to the lower number of populations, a lower number of supported public employees is accumulated in these settlements, where it is easier to achieve results even with one or two leaving in absolute terms.

On the basis of the absolute values of detransitive settlements (Table 1), the labour market vulnerability of Southern Transdanubia, Northern Hungary and Northern Great Plain stands out. Southern Transdanubia's peripherality is shown by the fact that both absolute (325 settlements) and relative (49.5% of the region's settlements) are ranked among the top runners, when examining the distribution of detransitive settlements. In the ranking, the second worst-ranking (in absolute sense) is Northern Hungary - with 249 detransitive settlements. At the same time, due to its small village spatial structure, a more favourable relative position (40.8% of settlements in the region) can be observed compared to Southern Transdanubia and the Northern Great Plain (49.6%). Among the most favourable regions of the country, with the greatest chance of transition, the settlements of the Central Transdanubia region can be highlighted, where 7.2% of the settlements of the whole region belonged to one of the detransitive categories. This is followed by Western Transdanubia (16.3%) and Central Hungary (27.7%) - based on relative values.

It is worth mentioning the system of relations between the currently official 2015 governmental and the present delimitation based on the various indicator groups. Out of the 1041 settlements found in our study, 710 were considered to be underdeveloped during the government delimitation. In the Northern Great Plain, showing the highest periphery, 85.4%, in Northern Hungary, 76.3% and 77.5% agreement can be realized. At the same time, it can also be seen that only 35% of the detransitive settlements in the more developed Western-Hungarian region are in line with governmental delimitation. The reason for this is that in the course of the governmental delimitation (taking into account much more factors - social, economic, infrastructural underdevelopment) much less settlements fell into one of the underdeveloped categories. On the other hand, the exit from the supported public employment as the subject of this study is a macro-level problem, which is also worrying in more developed regions, mainly due to the homogeneous characteristics of supported public workers and the specific vulnerabilities of small villages.

Table 4 Distribution of detransitive settlements by population categories, pcs

Population - category	Detransitivity			
	Strongly	Basically	Typically	Total
– 499	164	135	111	*410*
500 – 999	92	78	86	*256*
1000 – 1999	58	73	74	*205*
2000 – 4999	31	51	64	*146*
5000 – 9999	2	8	10	*20*
10000 – 49999	–	2	2	*4*

Source: *Based on own editing*

Lock-in of supported public employment causes the biggest problems in small villages (Table 3). Settlements with less than 1,000 people represent 63.9% of all settlements with less chance of transitivity. Due to the economic deprivation because of the size of the settlement, the only way out of the active labour market tool is if employees undertake commuting on a daily or weekly basis. The problem of expansion of small villages, which in some regions (mainly in Baranya, and Borsod-Abaúj-Zemplén counties) is the „hotbed" of developing long-term unemployment due to increasing travel time and cost from the centres because of the region's large spatial extent.

Only 4 settlements with more than 10,000 inhabitants (Albertirsa, Nagykáta, Abony, Hajdúhadház) showed labour market depression. In the case of Albertirsa, Nagykáta, Abony triangle - despite the favourable infrastructure and attraction centres (e.g. in case of Abony, the proximity of Cegléd and Szolnok) - a high proportion of long-term unemployment can be observed, which reinforces the cyclical rotation of supported public employment. In case of Albertirsa and Nagykáta, their 64 km and 71 km distances from the capital indicate that the 60 km distance mentioned many times in the literature significantly reduces the willingness to mobility of workers (especially disadvantaged individuals in supported public employment). Further detransitivity of the 3 settlements is explained by the fact that the majority of public employees have a low (at most basic) educational level (in the case of Nagykáta - e.g. 75.5% of supported public employees have up to 8 primary education qualifications), which strengthens the lock-in within the program. In the case of Hajdúhadház, the question also arises as to why the economically inactive persons living in the suburbanisation of Debrecen do not profit from the abundant labour demand of the region centre? A significant part of the „reserves" of human resources of the settlement is underdeveloped (high proportion of Roma population), as it is less suited to the expectations of the primary labour market, which contributes significantly to the lock-in of supported public employment (40.6%). And it continues to peak the detransitivity that earnings from work per capita show relative lower values (689,669 HUF), which does not encourage exit, due to the low differential value between the minimum wage and supported public employment wage.

Overall, it can be stated that the biggest problem of the disadvantaged regions and settlements resulting from the delimitation is the high level of lack of jobs. This fact predicts the vulnerability of leaving supported public employment. In the future, regional development policy should pay more attention to job creation in peripheral regions. As long as this trend does not change, employment transitions (from the secondary labour market to the primary labour market) will be a „foreign" definition for inactive job seekers living in settlements farther away from regional centres. In order to achieve „abundant" job creation in the future, human resource

development, which is the most determining factor in today's competitiveness, is essential, especially in highly detransitive settlements, in order to provide high-quality human capital to potential employers.

SUMMARY

This study has attempted to examine the transition chances of the active labour market policy tool in Hungary, which has been playing an increasing role in recent decades, from a territorial perspective. The primary objective of the employment policy tool is to bring supported public employees back to the labour market of the competitive sector as soon as possible. However, it is worrying that the chances of leaving supported public employment are very different from one area to another, due to differences in development. The method used in the study can provide an appropriate contribution to the territorial evaluation of the effectiveness of the active labour market program (direct job creation in the public sector). As a basis of geographic delimitation, exogenous and endogenous indicators influencing the leaving of supported public employees were all used - which, on an objective basis, explains settlements showing a greater and lesser chance of detransitivity.

The lock-in of supported public employment primarily indicates the high degree of periphery of the settlements, especially the settlements with less than 1000 inhabitants. Social, economic, and infrastructural underdevelopment explain the significantly marginal situation for these types of areas. Settlements less susceptible to detransitivity are overrepresented in the regions of Southern Transdanubia, Northern Hungary, Northern Great Plain, and Southern Great Plain (especially in Bács-Kiskun County). The most deprived settlements can be found on the outer peripheries of the border, especially in the areas of Southern Transdanubia and North-eastern Hungary. As a result of the investigation, the detransitive settlements - apart from some regions - show a high correlation with the beneficiary settlements serving the purpose of the governmental delimitation. It also draws attention to the country's „stiff" spatial problems that have been going on for decades, and the issue of compliance with the effectiveness of spatial development policy.

Overall, it can be concluded that the delimited types of settlements may give rise to further studies - to discover specificities that hinder local detransitivity, which can give the policy a good direction - in order to make the future spatial development policy more effective.

APPENDIX 1

Indicators included in the study

Number	Name of indicators
1.	**Value of registered businesses per 1000 inhabitants, 2016, %**
2.	Value of active businesses per 1000 inhabitants, 2015, %
3.	Value of discontinued businesses per 1000 inhabitants, 2016, %
4.	Distribution of the number of registered jobseekers within the working age population, 2016, %
5.	**Distribution of permanently registered jobseekers within working age population, 2016, %**
6.	The ratio of jobseekers with a maximum of eight classes of primary school qualification among all job seekers, 2016, %
7.	The ratio of people with a maximum of eight classes of primary school qualification among all supported public employees, 2016, %
8.	Migration Difference, 2016, %
9.	**Everyday accessibility indicator, 2016, %**
10.	**Income from work per person, within the working age population, Ft**
11.	**The ratio of taxpayers per thousand inhabitants within the working age population, 2016 %**
12.	Distribution of 24-year olds and under, among all supported public workers, 2016, %
13.	**Lock-in indicator in supported public employment, 2016, %**
14.	Change in the number of supported public employees compared to the number of public employees of the previous year
15.	The proportion of people in value-creating supported public employment among all supported public workers, 2016, %

Source: *based on own editing*
** The indicators that make up the complex indicator are bold*

REFERENCES

ALPEK, B. L. (2017). Hátrányos helyzetű csoportok munkaerő-piaci területi esélyei Magyarországon. Doktori értekezés.

ALPEK, B. L., TÉSITS, R. (2014a). A közfoglalkoztatás területileg eltérő lehetőségei I. Szociálpedagógia 2 (1-2), 45-60.

ALPEK, B. L., TÉSITS, R. (2014b). A munkaerő-piaci szenzitivitás. Új módszer a magyarországi munkaerőpiac területi, térszerkezeti kérdéseinek feltárásában. Területi Statisztika, 4. pp. 333-359.

BAGÓ, J. (2016). A közfoglalkoztatottak képzése. In: Opus et Educatio, 2 (2), pp. 13-16.

BARTUS, T. (2011). Commuting time, wages and reimbursement of travel Costs. Evidence from Hungary. In: Review of Sociology (4), pp. 72-94.

BELÜGYMINISZTÉRIUM. Közfoglalkoztatási évkönyv 2011-2016. p. 26.

BONOLI, G. (2010). The political economy of active labour market policy. In: Politics and Society, 38 (4) pp. 5-28.

BRUNN, S., MATLOVICOVÁ, K., MUSINKA, A., MATLOVIC, R. (2018). Policy implications of the vagaries in population estimates on the accuracy of sociographical mapping of contemporary Slovak Roma communities. *GeoJournal*, SPRINGER, Vol. 83, Issue 4, pp. 853-869.

BUJDOSÓ, Z., GYURKO, Á., HÁGEN, I. (2016). Socio-economic aspects of the urbanisation in northern Hungary in the 21st century, Folia Geographica. Vol. 58, 2016, No. 2, pp. 35-53.

CALIENDO, M., HUJER, R., & THOMSEN, S.L. (2008). The employment effects of job creation schemes in Germany: a micro econometric evaluation. In T. Fomby, R. Carter Hill, D. L. Millimet, J. A. Smith, & E. J. Vytlacil (Eds.). Modelling and evaluating treatment effects in econometrics (advances in econometrics, vol. 21, pp. 381–428.

CALMFORS, L., FORSLUND, A., HEMSTRÖM, M. (2002): Does active labour market policy work? Lessons from the Swedish experiences, Institute for Labour Market Policy Evaluation, Working paper 2002: 4, Stockholm.

CARD, D., KLUVE, J., WEBER, A. (2010). Active labour market policy evaluations: A meta-analysis. In.: The Economic Journal. IZA Discussion Paper 4002.

CIRFUSZ, M. (2015). A közfoglalkoztatás térbeli egyenlőtlenségei. In: Munkerő-piaci Tükör, pp. 126-138.

CSERES-GERGELY, ZS., MOLNÁR, GY. (2014). Közmunka, segélyezés, elsődleges és másodlagos munkaerő-piac. In: Társadalmi riport, Budapest: TÁRKI, pp. 204-225.

CSERES-GERGELY, ZS., MOLNÁR, GY. (2015). Munkapiaci helyzet a közfoglalkoztatásból való kilépés után. In: Munkaerő-piaci Tükör, pp. 143-153.

CSOBA, J. (2010). „Segély helyett munka". A közfoglalkoztatás formái és sajátosságai. Szociológiai Szemle, (20), 1, pp. 26–52.

CSOBA, J. (2017). Gondoskodó állam, aktiváló állam, befektető állam. A foglalkoztatáspolitika és a jóléti modellváltás néhány összefüggése. Debreceni Egyetem, Szociológia és Szociálpolitika Tanszék.

EGEDY, T. (2012). The effects of global economic crisis in Hungary. – Hungarian Geographical Bulletin 61. 2. pp. 155–173.

FALUVÉGI, A., TIPOLD, F. (2007). A területfejlesztés kedvezményezett térségeinek 2007. évi besorolása. Területi Statisztika, 6.

FERVERS, L. (2018). Can public employment schemes break the negative spiral of long-term unemployment, social exclusion and loss of skills? Evidence from Germany. In: Journal of Economic Psychology, 67, pp. 18–33.

KISS, J.P., SZALKAI, G. (2018). Az ingázás mobilitási jellemzői a legutóbbi népszámlálások adatai alapján. In: Területi Statisztika 58 (2), pp. 177-199.

KLIMOVSKY D., ZELINSKY, T., MATLOVICOVÁ, K., MUSINKA, A. (2016). Roma settlements and poverty in Slovakia: Different policy approaches of the state, local

governments, and NGOs. Anthropological Notebooks, Volume 22, Issue 1, pp. 23-42.
KLUVE, J. (2010). The effectiveness of European active labour market programs. In.: Labour Economics, 17, pp. 904-918.
KOLTAI, L. (2014). A közfoglalkoztatottak jellemzői. In: Munkaügyi szemle, 3.
KÓTI, T. (2018). Spatial differences regarding the chance to leave supported public employment in Hungary's rural periphery. In: Regional Statistics 8 (2), pp. 109-134.
LŐCSEI, H. (2010). Területi növekedési pályák Magyarországon, 1998-2008. Doktori értekezés.
MATLOVICOVÁ, K., MATLOVIC, R., MUSINKA, A., ZIDOVÁ, A. (2012). The Roma Population in Slovakia. Basic Characteristics of the Roma Population with Emphasis on the Spatial Aspects of its Differentiation. Roma Population in the Visegrad Countries, Spatial Trends and Social Challenges. pp. 77-103.
NAGY, A. (2011). A kedvezményezett térségek besorolásának alakulása, a lehatárolások módszertanának sajátosságai. Területi Statisztika 14 (51) (2), pp. 148-160.
NEMES NAGY, J. (2005). Regionális elemzési módszerek. Regionális Tudományi Tanulmányok 11. ELTE, Regionális Földrajzi Tanszék – MTA ELTE Regionális Tudományi Kutatócsoport, Budapest.
NEMES NAGY, J. (2009): Terek, helyek, régiók. A regionális tudomány alapjai. – Akadémiai Kiadó, Budapest.
PÁLÓCZI, G. (2016). A munkaerő-piaci ingázás vizsgálati lehetőségei komplex hálózatelemzéssel. In: Területi Statisztika, 56 (2), pp. 118-138.
PÁSZTOR, I.Z., PÉNZES, J., TÁTRAI, P., PÁLÓCZI, Á. (2016). The number and spatial distribution of the roma population in Hungary – in the light of different approaches, Folia Geographica. Vol. 58, 2016, No. 2, pp. 5-21.
PÉNZES, J. (2013). A foglalkoztatottság, az ingázás és a jövedelmi szint összefüggései Északkelet- és Északnyugat-Magyarországon. In: Területi Statisztika, 53 (3), pp. 202-224.
PÉNZES, J. (2014). Periférikus térségek lehatárolása. Dilemmák és lehetőségek. – Didakt Kiadó, Debrecen.
PÉNZES, J. (2015). A kedvezményezett térségek lehatárolásának aktuális kérdései. Területi Statisztika, 55 (3), pp. 206-232.
PÉNZES, J., MOLNÁR, E., PÁLÓCZI, G. (2014). Helyi munkaerő-piaci vonzáskörzetek az ezredforduló utáni Magyarországon. In: Területi Statisztika, 54 (5), pp. 474-490.
SZABÓ, A. (2013). A közfoglalkoztatás jelentősége két gazdasági recesszió tükrében. Esély, 4. pp. 73-86.
VÁRADI, M.M. (2010). A közfoglalkoztatás útjai és útvesztői egy aprófalvas kistérségben. Esély, 1, pp. 79-99.

ONLINE SOURCES

105/2015. (IV. 23) kormányrendelet – a kedvezményezett települések besorolásáról és a besorolás feltételrendszeréről.

12/1991. (VI. 13) KTM-BM-MüM-PM együttes rendelet – a területfejlesztést és munkahelyteremtést szolgáló támogatásban részesíthető települések 1991. évre vonatkozó kijelöléséről.

1996/21. évi XXI. törvény – a területfejlesztésről és a területrendezésről.

24/2001. (IV. 20) Országgyűlési határozat – a területfejlesztési támogatások és a decentralizáció elveiről, a kedvezményezett térségek besorolásának feltételrendszeréről.

30/1997. (IV. 18) Országgyűlési határozat – a területfejlesztési támogatások és a decentralizáció elveiről, a kedvezményezett területek besorolásának feltételrendszeréről.

67/2007. (VI. 28) Országgyűlési határozat – a területfejlesztési támogatások és a decentralizáció elveiről, a kedvezményezett térségek besorolásának feltételrendszeréről.

84/1993. (XI.11) Országgyűlési határozat – a területfejlesztési támogatás irányelveiről és a kedvezményezett területek besorolásának feltételrendszereiről.

64/2004. (IV.15) kormányrendelet – a területfejlesztés kedvezményezett térségeinek jegyzékéről.

106/2011. (VII. 19) kormányrendelet – a közfoglalkoztatásról és a közfoglalkoztatáshoz kapcsolódó, valamint egyéb törvények módosításáról.

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GEOGRAPHY EDUCATION AT THE COMENIUS UNIVERSITY IN BRATISLAVA IN THE YEARS OF 1922-1938: INSTITUTIONALIZATION, ACTORS AND STUDY COURSES

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Abstract:
The paper deals with the institutionalization of geography at the Comenius University, the main persons involved in its initial development and the offer of study subjects and courses at this first stage that is the period of years 1922-1938. It is a time period during which the development of geography was conditioned by the assistance of Czech professors from the Charles University in Prague. This period terminated by the end of 1938, when the vast majority of Prague professors had to leave Slovakia.

Key Words:
Bratislava, Comenius University, Geographical Seminar, geography education, Seminar for Anthropogeography, Seminar for Physical Geography

INTRODUCTION

The centenary of the existence of the Comenius University in Bratislava that we commemorate in 2019 is an opportunity to look into the birth of geography education at this biggest Slovak university. Initially, it was expected that four faculties were to be established – faculty of medicine, law, arts and science. Eventually, they succeeded to establish only three faculties at the first stage – and the Faculty of Science, at which geography has now been developing, was founded not earlier than in 1940. However, certain circumstances caused that the development of geography got ahead of the development of the Faculty of Science itself; its first decades are connected with the Faculty of Arts that was established back in 1921. Geography was brought on one year later (Matlovič, Matlovičová 2018).

The paper focuses on the institutionalization of geography at the Comenius University, the main persons involved in its initial development and the offer of study subjects and courses at this first stage which is deemed to be the period of 1922-1938. It is a period in which the development of geography was conditioned

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by the assistance of Czech professors from the Charles University in Prague. This stage terminated by the end of 1938, when the vast majority of the Czech professors had to leave Slovakia.

CONCEPTUAL FRAMEWORK AND RESEARCH METHODOLOGY

In the recent years, the interest in the study of geographical thought has come back to life, because its heuristic relevancy (Matlovič, Matlovičová 2012). From the methodological point of view, mainly the social-constructivist and contextual approach have been applied within these efforts. In the first case, the explorational attention is focused on microsocial conditions of scientific research and education (Matlovič, Matlovičová 2015, s. 16). In the second case, the focus is on the study of the joint-influence of social, political, economic, cultural and other contexts in which the processes of establishment and development of geography were going on, accompanied by continuities and discontinuities of geographical thought. Our research combines both said approaches.

A detailed archival research realized in 2018-2019 found out some empirical data. It was the Literary Archive in Martin, the Comenius University Archive in Bratislava, the Czech Academy of Sciences Archive in Prague, Czechia and the Masaryk University Archive in Brno, Czechia.

INSTITUTIONALIZATION

The institutional fundamentals of university geography in Bratislava were laid before the foundation of the Comenius University. In 1912, the Elizabethan University was established in the city[1] (official name: *A Pozsonyi Magyar Királyi Erzsébet-tudomány egyetem*) with Hungarian as the language of instruction. Individual disciplines started to progressively develop. Geography was integrated into the Faculty of Arts at which the study started not earlier than in the summer semester of 1917-1918. Mr Gyula Prinz was appointed as professor on 24th March 1918. The geography workplace at the Elizabethan University was based in the building of Academia Istropolitana on Ventúrska Street, but its life was very short. Actually, its activities ended on 30th June 1919. Legally, the Elizabethan University was cancelled by Government Decree No. 276/z of 1921 and moved to the Hungarian town Pécs. A part of its inventory, the literary fund and other aids were taken over in 1919-1921 by the workplaces of the newly founded Comenius University (Csáder 2000, Martínek 2010, s. 23, Szederkényi 1984, Varsik 1969).

After the break-up of Austria-Hungary and the foundation of Czechoslovakia in October 1918 the establishment processes of a new university in Bratislava were

1 till beginning of 1919 was city named Prešporok (in Slovak language), Pressburg (in German), Pozsony (in Hungarian).

initiated. Act No. 375/1919 was adopted, according to which the Czechoslovak National University in Bratislava was founded on 27.06.1919, effective as from 11.07.1919. It got the official name *the Comenius University* after the Government Decree No. 595/1919 of 11. November 1919 was adopted. Initially, it had been presumed that there would be four faculties, but in the end only three faculties were successfully established at this stage - the Faculty of Medicine, Law and Arts. As the Faculty of Science was not founded, geography started to develop at the Faculty of Arts at which the study started on 24th October 1921. With regard had to the acute lack of qualified professionals in Slovakia, the activities of the Faculty were initially almost completely dependent on Czech professors from Charles University in Prague (Csáder 2000, Grófová et al. 2012).

At the Faculty, seminars, that were its fundamental organisational units, were formed. Some seminars were divided into departments. Just at the beginning, the Seminar for Slavic Philology, History Seminar, Seminar for General Ethnography and Seminar for Musical Science were formed (Csáder 2000, s. 34). The institutionalization of the Geographical Seminar was a several months´ long process. It started at the session of the Professors´ Board of the Faculty of Arts on 20th January 1922 comprised of professor Hanuš, Heidler, Orel, Chotek, Pražák, Škultéty and Weingart. Their discussion resulted in the need to ensure political geography lectures for the state exams candidates in Czechoslovak language, history and geography. Ethnography professor K. Chotek showed his willingness to temporarily substitute it. The Professors´ Board welcomed this solution and unanimously approved this proposal in order to be further approved by the Ministry of Education and National Awareness. In this context, dean Hanuš suggested that all the geographical collections (maps, plans, books) inherited from the Elizabethan University that were deposited in the university library, be assigned to the Faculty of Arts[2]. At the Professors´ Board session held on 23rd and 24th March 1922, Chotek stated that the former Hungarian geography institute inventory was not of a high value because there were only a few books and the maps were Hungarian. He suggested that the collection remain in the deposition of the university library. For given reasons he requested that extraordinary subventions be assigned in order to found a map section, to buy books and geography teaching aids; it was approved by the Professors´ Board at its session held on 7th December 1922. The Ministry of Education and National Awareness reacted promptly to this request. Upon a letter dated 28th December 1922 it informed the Comenius University in Bratislava of an extraordinary donation for the year of 1922 in the amount of KČS 15,000 for the purchase of books and aids for the Geographical Seminar while it requested to proceed economically and ordered that the purchased goods be registered in the inventory separately from the other

2 Comenius University Archive, Faculty of Arts - Comenius University Fund, Professors´ Board records A1 1921-1931, a.k. 5.

seminars´ inventories of the Faculty and, at the same time it requested that the accounting of the assigned donation be produced by the end of January 1923. The facts above make it evident that the institutionalization process of the Geographical Seminar was completed by the end of 1922 and its founder was Karel Chotek (Matlovič, Matlovičová 2018, s. 277).

After founder K. Chotek, the Geographical Seminar was taken over by geographer Jiří Viktor Daneš in 1923. Another director was František Štůla, who functioned from 1925 to 1929. During this period – in June 1926 – the Geographical Proseminar was approved as another institutional unit. Since 1929 both said institutions were taken over by Jiří Král. In 1938 the Geographical Seminar was divided into the Seminar for Physical Geography led by J. Hromádka and the Seminar for Anthropogeography that, together with the Geographical Proseminar, was led by J. Král until the end of 1938 (Matlovič, Matlovičová 2018). The first seat of the Geographical Seminar was the building on the Rudnay Square (in that time) on the corner of Kapitulská Street. In 1923-1931 it had its seat in the building of current Hungarian Grammar School on the corner of Rajská and Dunajská Street. In 1932-1937 the geography workplace was located in the yard tract of the building on current Slovak National Uprising Square No. 22. In 1937 it was moved to the building on Rajská Street No. 12 (Martínek 2010, Matlovič 2018).

Table 1 Institutional development of geography in Slovakia in the first half of 20th century

Period	Institution	Head
1918-1919	Department of Geography, Elizabethan University	Prinz Gyula
1922-1923	Geographical Seminar, Faculty of Arts, Comenius University	Karel Chotek
1923-1925		Jiří Viktor Daneš
1925-1929		František Štůla
1929-1938		Jiří Král
1927-1929	Geographical Proseminar, Faculty of Arts, Comenius University	František Štůla
1929-1938		Jiří Král
1938-1939	Seminar for Physical Geography	Jan Hromádka
1938-1938	Seminar for Anthropogeography	Jiří Král

Source: *Dolan 1968, Martínek 2010.*

ACTORS

Prinz Gyula

Although Prinz Gyula (1882-1973) was not a direct person involved in the development of geography education at the Comenius University, his short involvement was meaningful due to the fact that at his workplace there remained many book and map collections that were partially used for its institutionalization. Prinz was

a professor at the Elizabethan University in 1918-1919. He had studied at universities in Budapest (1900-1902) under the direction of professors Lajos Lóczy and Antal Koch and later in Wrocław /*Königliche Universität zu Breslau*/ (1902-1904), where he was awarded with doctorate in 1904. He completed his research fellowship with Ferdinand von Richthofen at the university in Berlin. His main focus was on geomorphology. Having left Bratislava, he worked at universities in Budapest (1919-1923), Pécs (1923-1940), Cluj-Napoca (1940-1944) and Szeged (1945-1957) (Szederkényi 1984, Matlovič 2018).

Karel Chotek

The first person involved in geography education at the Comenius University was Karel Chotek (1881-1967), who was appointed as professor of general ethnography[3] by the president of the Republic on 14th September 1921. Chotek showed his interest in substituting the lectures in political geography at the Professors´ Board session of the Faculty of Arts held on 20th January 1922. The Professors´ Board approved his suggestion reasoning it by his sufficient qualification and agreed to refer it to the Ministry[4].

At this point, it is reasonable to point out to possible facts that predetermined Chotek to stand for the role of the founder of geography at the Comenius University. Along with ethnography, anthropology and history, Chotek also studied geography. As early as during his study in 1904 and 1905, he completed his detailed field research in Slovak municipality Cerovo. He was habilitated in 1912 on the grounds of his field and statistical research in the Caucasus. The important factor was close relations between ethnography and geography in the first decades of the 20th Century. Joint gatherings of Slavic geographers and ethnographers were organized. Geographical-multidisciplinary cooperation was implemented also at a common summer expedition of Czech experts in Slovakia which also involved the presence of Chotek and geographers V. Dvorský and J.V. Daneš and botanist K. Domin. As an expert, Chotek participated in the peace conference in Paris. (Martínek 2008). At that time, ethnography was deemed a natural-scientific discipline especially in the context of Berlin school of A. Bastian. The study of cultural particularities in the context of natural environment was promoted. Probably because of that, as a private assistant professor, Chotek was organizationally joined in the Geographical Institute at the Charles University in Praque (Ducháček 2016, s. 49-50, Ducháček 2018, s. 122).

Chotek´s concept of ethnography was grounded in thorough field research and took into account geographical and physical-anthropological aspects (Petráňová

3 CU Archive, Karel Chotek´s personal collection, it was tme first professorship in this field in Czechoslovakia.

4 CU Archive, FA CU Fund, Professor´s Board records A1 1921-1931, a.k. 5.

2016). Chotek worked for Bratislava Faculty of Arts until June 1931 when he left to cooperate with the Charles University in Prague. While working there, he was always interested in geography issues and he often promoted its interests at the Professors´ Board sessions. He taught geography-related subjects during 17 semesters in 1922-1930. The subjects were anthropogeography, political geography and regional geography of Asia, Africa and Americas (Matlovič 2018, Archív UK ...).

Jiří Viktor Daneš

The second person involved and an authentic geographer at the Comenius University was Jiří Viktor Daneš (1880-1928) who studied geography and history at the Czech Charles-Ferdinand University in Prague where he was influenced by his professors Jan Palacký, Jan Nepomuk Woldřich and Lubor Niederle. Afterwards, he studied in Berlin under the leadership of Ferdinand von Richthofen and also visited other German universities. In 1902, he completed his doctorate and in 1906 he habilitated. In 1912 he was appointed as extraordinary professor and in 1919 as full professor at the university in Prague. In 1920-1923 he was a consul at the Czechoslovak Consulate in Sydney.

His main scientific focus was on geomorphology. His geographical thought was influenced by the theory of geographical cycle by American Geographer W. M. Davis, karst geomorphology by Serbian geographer J. Cvijić, scientific precision of German geographer A. Penck and geomorphologic concepts by French geographer E. de Martonne. He was also devoted to anthropogeography that was further developed in Prague by his student J. Pohl-Doberský.

Daneš worked in Bratislava in 1923-1925 while commuting from Prague for two days in a week. His short cooperation ended in 1925, because he had been elected a dean of the Faculty of Science in Prague. (Martínek 2017). He was teaching during three semesters, namely geomorphology, political geography and ran seminars and excursions.

František Štůla

The third actor was František Štůla (1883-1943) who completed his geography studies at the university in Prague. He completed his doctorate in 1914 and habilitated in 1925. In 1926, he was appointed as extraordinary professor. He was J. Palacký´s student and J.V. Daneš´s friend.

Unlike him, he dedicated himself more to economic geography and as the first Czechoslovak geographer, he elaborated summarising papers in oceanography. During his time in Bratislava, he published a book about geography of Slavic countries (1927). He commuted to Bratislava 3 days in a week. In 1929 he accepted a professor´s position at the Business College in Prague after V. Dvorský´s serious illness (Häufler 1967; Martínek 2010). Štůla taught geography-related subjects during 8 semesters in 1925-1929.

He introduced lectures in hydrogeography, fundamentals of mathematical geography and regional geography of the Czechoslovakia. Apart from that, he taught general physical geography, general economic geography, physical geography of Europe and regional geography of Africa, Southern Europe, Asia and Americas as well as seminars and undergraduate-seminar exercises. Štůla initiated the habilitation of J. Hromádka which was completed by his successor J. Král after he had left.

Jiří Král

Jiří Král (1893-1975) was the fourth person involved who moved in Bratislava and, in contrast to his ancestors, he was fully available for the job. He studied geography, history and Czech philology at the university in Prague. He was a formed student of V. Švambera, J. V. Daneš and V. Dvorský.

He devoted himself to anthropogeography while his thought was influenced mainly by the French school of anthropogeography (P. Vidal de la Blache, J. Brunhes, A. Demangeon, P. Deffontaines), but he was also inspired by Anglo-Saxon geography (I. Bowman, E. Huntington, W. Cushing), some Polish geographers (L. Sawicki, S. Pawłowski) and Serbian geographer J. Cvijić. He assumed a definite attitude to German geography school and refused the genetic and statistical approach (Král, Kondracki 1951). He pointed out to a human role when forming geographical environment and urged the detailed field researches. He completed his doctorate in 1917, habilitated in 1924; in 1929 he was appointed as extraordinary professor of anthropogeography and in 1935 full professor.

J. Král was a very agile professor at the Seminar; he was continuously submitting various applications related to financial support for the activities and facility equipment. He established the edition series „Zeměpisné práce-Les Travaux géographiques" comprised of 13 volumes. He initiated the exchange of the publications whereby he significantly extended the geography library. He was one of the major organizers of 2nd Czechoslovak Geographers Congress held in 1933 in Bratislava at which 114 experts were present (Král 1937). He developed international scientific cooperation that mainly related to his position of a leader of Czechoslovak Section of the Slavic Committee for research of shepherd´s life and shepherding in the Carpathians and in the Balkans. He closely cooperated mainly with Krakow geographers (L. Sawicki, W. Kubijowicz, Z. Hołub-Pacewiczowa) and French geographer P. Deffontaines. In connection with progressive militarization of economy, his efforts to establish a lectorate of military geography at the Comenius University were interesting in the second half of 1930s. In 1936 Král also agreed with the division of the Seminar into the Seminar for Physical Geography and the Seminar for Anthropogeography whereby conditions for full employment of J. Hromádka were created. Král was forced to leave Slovakia together with a majority of other Czech professors by the end of 1938 upon a resolution of the Government of the Slovak Republic of 19th December 1938 (Martínek 2008, 2010, Matlovič 2018, Matlovič, Matlovičová 2018).

During his work in Bratislava, J. Král taught geography subjects during 19 semesters while he was able to cover a whole spectre of disciplines. Apart from traditional subjects such as general physical geography and anthropogeography (Král preferred the term "*human geography*"), he introduced a whole range of new subjects - geography of trade, geography of world transport, human and mountains, geography of rural settlements, regional geography of Australia, Oceania, Poland, Bulgaria, Soviet Union – European part, Eastern Europe, anthropogeography of Czechoslovakia and natural areas of Czechoslovakia. At seminars, he paid his attention to new publications and maps and some semesters were focused on the analysis of important geographical works – e.g. books by French geographer P. Deffontaines „La vie forestiére en Slovaquie" and the books by Polish-Ukrainian geographer W. Kubijowicz „Pastýřský život na Podkarpatské Rusi"[5]. The most noticeable student of J. Král in this period was F. Bokesz with whom he was in touch until his death.

Jan Hromádka

The fifth actor was Jan Hromádka (1886-1968), born in South Bohemia. Hromádka started studying geography and history and the university in Prague where he was mainly influenced by J.V. Daneš and V. Dvorský. His study had been interrupted by the 1st World War, after which Hromádka was sent to Slovakia and worked at the Teachers Training Institute in Spišská Nová Ves and since 1925 in Bratislava.

In 1925-1926 he continued his geography and history studies at the Comenius University under the guidance of professor Štůla. In 1928 he completed his doctorate and in 1930 he habilitated and started to work at a grammar school and at the Bratislava university as a private lecturer. In 1931-1932 he took part in a research fellowship at Sorbonne in Paris with prof. A. Demangeon and E. de Martonne and at the same time he participated in the International Geography Congress in September 1931 in Paris[6]. In 1938 he was appointed as extraordinary professor of physical geography and in 1939 full professor of general geography.

After J. Král had left to Prague, he took over the Seminar for Anthropogeography leadership and after the establishment of the Faculty of Science in 1940, he became a director of its Geographical Institute where he worked as long as until 1946. He educated the first generation of Slovak geographers; his most noticeable student and successor was M. Lukniš.

Hromádka´s research was focused on geomorphology and regional geography. His geomorphologic papers were influenced by J.V. Daneš and E. de Martonne.

5 CU archive, RUK Fund. *Register of persons and institutes and national exam committees. List of winter semester lectures. List of summer semester lectures*. UK/SU Academic Senate, Bratislava, 1921-1949.

6 CU Archive, FA CU, E, 1390/1930-31, a.k. 126.

He acknowledged the theory of geographic cycle by W.M. Davis. He applied a synthetic approach and studied georelief in association with other geographic factors including a man. His regional-geographic papers reflected the concepts of the French geography school of P. Vidal de la Blache. He did not avoid the topics of political and historical geography that was mainly influenced by V. Dvorský. Hromádka started teaching geography disciplines at the university in 1930. Until 1938 he was a private lecturer and his main workplace was the Masaryk National Grammar School in Bratislava (Lukniš 1987, Martínek 2010, Matlovič 2018).

Hromádka mainly delivered physical-geography subjects and courses – geomorphology, continental hydrography, oceanography and general physical geography. Thanks to him the offer was broadened by climatology, biogeography (geography of fauna and flora) and limnology. He also organized a geology course for geographers. As for regional geography subjects, he taught geography of South America, physical geography of Asia and Europe. A special subject was devoted to the Czechoslovak Carpathians and geography of the Tatras. As for general subjects, he taught the fundamentals of mathematical geography and general Earth features, physical-geography seminar, cartography course and cartographic exercises.

Table 2 Geography Teachers at the Comenius University in 1922-1938

Person	Term of work	Number of semesters	Number of subjects
Chotek	1922-1930	17	19
Daneš	1923-1925	3	9
Štůla	1925-1929	8	35
Král	1929-1938	19	70
Hromádka	1930-1938	13	30
Novák	1931-1932, 1933-1934	2	3
Kuchař	1931-1932	1	1

Source: *CU Archive, RUK Fund. Register of persons and institutes and national exam committees. List of winter semester lectures. List of summer semester lectures. CU/SU Academic Senate, Bratislava, 1921-1949.*

Karel Kuchař

Karel Kuchař (1906-1975) substituted lectures and exercises in cartography in Bratislava during Hromádka´s exchange fellowship in the winter semester of 1931-32. Kuchař was born in Prague. He studied geography at the Charles Unviersity in Prague and was most influenced by cartographer B. Šalamon and geographer J. V. Daneš. These influences were reflected in his orientation to cartography and physical geography, especially hydrology and hydrogeography. He defended his dissertation thesis in 1928 and was focused on cartometric analysis of some maps from the turn of 15th and 16th Century. He habilitated in 1935 based on his thesis on

lakes in Eastern Slovakia and Ruthenia. Kuchař educated one generation of Czech cartographers (e.g. O. Kudrnovská, L. Mucha, R. Čapek). His student was also excellent Czech physical geographer and hydrologist and former president of the Czech Geographic Society Bohumír Janský (Martínek 2017, s. 213).

Vladimír J. Novák

Vladimír J. Novák (1882-1951) substituted lectures in physical geography and geography of Africa in Bratislava during Hromádka´s absence due to his exchange fellowship in Paris in the winter semester of 1931-32 and also led lectures in geography of Africa in the winter semester of 1933-34. He was born in Brno. He studied geography in Prague and later in Vienna with Albrecht Penck. In 1924 he habilitated while mainly dealing with geomorphology (Morphologic Development of Neognic Lowered Areas in Morava). He also occupied himself with geography of population and settlements. (Martínek 2017, s. 213).

STUDY SUBJECTS AND COURSES

Geography lectures at the Comenius University in Bratislava started in the summer semester of 1921-1922. It happened thanks to the suggestion of the Professor´s Board held on 20th January 1922 that K. Chotek should teach substitute lectures. The Ministry took its time to make a decision despite Chotek already giving geography lectures, which is confirmed by the records of the Professor´s Board held on 24th June 1922 stating that geography lectures were given twice a week. At the same time, the records contain a request for sending a reminder to the Ministry in this matter[7]. The Ministry provided its reaction not earlier than after a few such reminders dispatched. By the letter dated 17.01.1923 No. 125.658-IV, the Ministry approved the Professor´s Board resolution of 20th January 1922 and retroactively authorised K. Chotek to substitute geography in the summer semester of 1921/22[8].

Number of provided subjects progressively increased in the course of the monitored period. In the following year of 1922-1923 ethnographer K. Chotek was the only one to teach the two-semester course titled Geography of Asia, three lessons a week. The offer of subjects was broadened after J. V. Daneš had joined in the autumn of 1923 and during the 1920´s there were 5-6 subjects a year. After J. Král came and J. Hromádka habilitated at the beginning of 1930´s, the number of subjects increased to 11. In the years to follow, there was a decrease that related to the worsened position of geography at the Faculty of Arts and that was further analyzed by J. Martínek (2010, p. 26). In the context of financial problems and insufficient number of students, the Professors´ Board reached a decision on 27th April

7 Archív UK, Fond FiF UK, Zápisnice profesorského zboru A1 1921-1931, ak 5.

8 Archív UK, Fond FiF UK, Zápisnice profesorského zboru A1 1921-1931, a.k. 5.

1934 that the study program was cancelled which was contained in the Decree of the Ministry of Education and National Uprising of 7th June 1934 cancelling the study of *geography teaching for secondary schools;* only rigorous state exams study remained because it was scientific preparation. Because of this, the Ministry reduced the financial donation and restricted J. Hromádka´s work-load which led to a reduced number of delivered courses (tab. 3). The study of *Teaching* was renewed after multiplied requests not earlier than in 1937 (Martínek 2010, p. 26). The worsened position of geography evidently had a connection with obstacles, which had facing J. Král in the proceedings with respect to his appointment as full professor in 1933-1935, mainly due to the disagreement of some members of the Professors´ Board.[9].

During the first stage of the formation of geography education at the Comenius University in Bratislava, 167 subjects appeared on aggregate. According to specialization, the subjects can be divided into four groups – physical geography, human geography, regional geography and general geography and seminars (see similar in Ilieș et al. 2017). During the whole monitored period, the general geography subjects had the highest share according to hourly rate, namely 32.8 %, followed by general geography subjects with seminars of 31.6 %. The third was physical geography with the share of 22.1 % and the last were human geography subjects (anthropogeography) with the share of 13.5 %.

As for physical geography, there were 36 subjects in physical geography delivered by 5 teachers (Daneš, Štůla, Král, Hromádka, Novák). The most frequently taught was general physical geography (14), geomorphology (6) and hydrography (5). Less frequent was climatology (3), biogeography or geography of fauna and flora (3), geology for geographers (2) and only once there was oceanography, human and mountains and limnology.

As for human geography, there were 26 subjects in human geography delivered by 4 teachers (Chotek, Daneš, Štůla a Král). The most frequently offered was the basic anthropogeography course or introduction to anthropogeography (8) and general economic geography (6). Apart from that, there was geography of transport (4), political geography (3), geography of settlements (3) and geography of trade (2).

As for regional geography, there were 50 subjects delivered by 5 teachers (Chotek, Štůla, Král, Hromádka, Novák). The most frequently offered was regional geography of Asia (10) and Czechoslovak Republic (9). In some cases, the courses were divided into physical geography of Czechoslovakia (e.g. natural areas in Czechoslovakia) and anthropogeography or economic geography of Czechoslovakia. Apart from that, there was geography of Africa (6), Europe (4), Americas (3),

[9] Academy of Sciences of the Czech Republic Archive, Jiří Král Fund

Table 3 Selected Characteristics of Geography Teaching at the Comenius University in Bratislava in 1922-1938

Indicator	**1921/22**	**1922/23**	**1923/24**	**1924/25**	**1925/26**	**1926/27**
Number of teachers	1	1	2	2	2	2
Number of subjects and courses	1	1	5	5	5	6
Hourly rate per week	2	6	15	20	20	22
Physical geography	0%	0%	20,0%	30,0%	25,0%	0,0%
Human geography	0%	0%	13,3%	20,0%	5,0%	27,3%
Regional geography	0%	100%	26,7%	30,0%	50,0%	45,4%
General geography and seminars	100%	0%	40,0%	20,0%	20,0%	27,3%
Indicator	**1927/28**	**1928/29**	**1929/30**	**1930/31**	**1931/32**	**1932/33**
Number of teachers	2	2	3	2	4	2
Number of subjects	6	7	10	11	13	11
Hourly rate per week	26	32	32	32	32	32
Physical geography	23,1%	31,3%	25,0%	25,0%	28,1%	31,3%
Human geography	15,3%	12,5%	0,0%	15,60	18,8%	9,4%
Regional geography	23,1%	31,3%	50,0%	31,3%	28,1%	25,0%
General geography and seminars	38,5%	24,9%	25,0%	28,1%	25,0%	34,3%
Indicator	**1933/34**	**1934/35**	**1935/36**	**1936/37**	**1937/38**	**1938/39**
Number of teachers	3	2	2	2	2	2
Number of subjects	8	7	6	11	9	8
Hourly rate per week	18	16	23	32	23	18
Physical geography	22,2%	43,8%	8,7%	12,5%	43,8%	27,8%
Human geography	16,7%	18,8%	13,0%	31,3%	8,7%	16,7%
Regional geography	27,8%	12,5%	60,9%	25,0%	13,0%	11,1%
General geography and seminars	33,3%	24,9%	17,4%	31,2%	34,5%	44,4%

Source: *CU Archive, RUK Fund. Register or persons and institutes and national exam committees. List of lectures in winter semester. List of lectures in summer semester. CU/SU Academic Senate, Bratislava, 1921-1949.*
Note: *data from 1933/34, 1934/35 and 1938/39 are only for winter semester*

South America (3), Poland (3), Eastern Europe (2), Czechoslovak Carpathians (2), North America (1), Australia (1), Oceania (1), Australia and Oceania (1), Tatras (1), Southern Europe (1), Bulgaria (1), Soviet Union – European part (1).

As for general geography, there were 55 subjects delivered by 6 teachers (Chotek, Daneš, Štůla, Král, Hromádka, Kuchař). The offer most frequently consisted of seminars, undergraduate-seminars and seminar exercises and excursions, presentations, new publications and maps. A certain conception of these activities can be found in the report of J. Král on the activities of the Geographical Seminar and the Geographical Proseminar 1930-1931. In that year, 6 students produced their

seminar works: Maříková (Pavlovské Mountains), Fuščič (Polonina Boržava), Bokesz (Anthropogeography of Bratislava), Bobák (Košice Basin), Bukovinský (Alföld) and Sabo (Mineral Sources of Slovakia in the Past and Now)[10]. As for the rest of the subjects, there was cartography and topography (3), mathematical geography and general characteristics of the Earth (2) and general geography (2).

CONCLUSION

The paper came into existence on the occasion of the centenary of the Comenius University in Bratislava that was established in 1919. Despite the fact that they had not been successful in accomplishing the original intentions and the Faculty of Science was founded more than two decades later, not earlier than in 1940, geography started to develop within the structures of the Faculty of Arts since 1922. For a short period of time it joined in the shortly opened Department of Geography at the Elizabethan University. The founder of the Geographical Seminar was the ethnography professor Karel Chotek who also started giving lectures in the summer semester of 1921-1922. During the first stage of the formation of the workplace, where the key roles were played by Czech professors from the Charles University, there were also J. V. Daneš, F. Štůla, J. Král, J. Hromádka and for a short time J.V. Novák and K. Kuchař assisted, too. The most significant trace at the first stage of the formation of the workplace was made by K. Chotek and J. Král. Chotek was the founder of the workplace and during 17 semesters also taught 19 subjects and often promoted the interests of the Geographical Seminar at the Professors´ Board sessions at the Faculty of Arts. Král worked in Bratislava 19 semesters and taught 70 subjects. He contributed to opening of the geography library and tirelessly urged and requested the support for the Geographical Seminar. He also agreed with the division of the Seminar into the Seminar for Physical Geography and the Seminar for Anthropogeography whereby conditions for full employment of J. Hromádka were created. After that, he was forced to go back to Prague by the end 1938. After he had been forced to leave back to Prague, Hromádka took over the leadership over the whole workplace and educated the first generation of Slovak geographers.

All in all, there were 167 subjects on offer during the first stage of the formation of geography education at the CU in Bratislava. According to their specialization, the subjects can be divided into four groups – physical geography, human geography, regional geography and general geography and seminars. During the whole monitored period, the highest share according to the hourly rate was represented by regional geography subjects, namely 32.8 %, followed by general geography subjects with seminars representing 31.6 %. The third came the group of physical

10 CU Archive, Geography Seminar Fund

geography with the share of 22.1 % and the last place was occupied by the subjects of human geography (anthropogeography) with the share of 13.5 %.

The curricular structure reflected the context of the time period in which regional geography disciplines prevailed. As for the territory, greater attention was paid to Czechoslovakia, Europe, Asia and Africa. A smaller share was represented by Americas, Australia and Oceania. From the point of trends in geographical thought, the biggest influence was made by French geography school that was linked with J. Král´s contact with P. Deffontaines or research exchanges of J. Hromádka with A. Demangeon and E.de Martonne. In physical geography, the theory of geographic cycle by W. M. Davis maintained its influence as well as the concepts of E.de Martonne, A. Penck and J. Cvijić.

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REFERENCES

ARCHÍV UK, Fond RUK. Soznam osôb a ústavov a štátnych skúšobných komisií. Soznam prednášok na zimný semester. Soznam prednášok na letný semester. Akademický senát UK/SU, Bratislava, 1921-1949.CSÁDER, V., 2000. *História a súčasnosť Univerzity Komenského v Bratislave 1919 – 2000*. Bratislava : Univerzita Komenského v Bratislave, 98 s. ISBN 80-968419-0-4.

DOLAN, O., 1968, Univerzita Komenského – prehľad profesorov (1919-1966), prehľad pracovísk 1919-1948). Rektorát Univerzity Komenského, Bratislava.

DUCHÁČEK, M., 2016. Deset tezí k (dis)kontinuitě československé etnografie před rokem 1945. In Woitsch, J., Jůnová-Macková, A., eds. *Etnologie v zúženém prostoru*. Praha: Etnologický ústav AV ČR, s. 37-70. ISBN 978-80-88081-10-4

DUCHÁČEK, M., 2018. Karel Chotek a Cerovo: od iniciace k specializaci (causerie k půlstoleté proměně terénního výzkumu). In *Slovenský národopis*, 66, 1, 116-139.

GRÓFOVÁ, M., MACOUNOVÁ, J., OČENÁŠOVÁ, J., 2012. Zbierky v archíve Univerzity Komenského v Bratislave. In *Zbierky v archívoch. 15. archívne dni v SR*. Bratislava: Spoločnosť slovenských archivárov, s. 132-149. ISBN 978-80-970660-3-5.

HÄUFLER, V., 1967, Dějiny geografie na Univerzitě Karlově 1348-1967, Karlova univerzita, Praha.

ILIEŞ, D. C. BAIAS, S. BUHAŞ, R. ILIEŞ, A. HERMAN, G. V., GACEU, O., DUMBRAVĂ, R., MĂDUŢA F., 2017. *Environmental education in protected areas. case study from bihor county, romania*, *GeoJournal of Tourism and Geosites*, Year X, no. 1, vol. 19, May 2017, p.126-132. ISSN 2065-0817, E-ISSN 2065-1198

KÁRPÁTY, P., MÁZOROVÁ, H., 2011. K vývoju atraktivity geografického a geovedného vzdelávania Univerzity Komenského v Bratislave, *Geographia Cassoviensis*, 5 (2), 45-56.

KÁRPÁTY, P., SLAVÍK, V., 2014. Geografia a pramene k jej inštitúcii v metropole Slovenska 1. časť. In *Geografia*, 22, 3, 91-98.

KRÁL, J. 1937. Úvod do zeměpisné literatury, *Zeměpisné práce – Travaux Géographiques*, 13, Bratislava: Nákl. vlast.

KRÁL, J., KONDRACKI, J. 1951, West Slav Geographers, [w:] G. Taylor (red.), Geography in the Twentieth Century, Methuen, London, 116-127.

LUKNIŠ, M., 1974, Prof. RNDr. Jiří Král osemdesiatročný, In *Geografický časopis*, 26 (1), 67-68.

LUKNIŠ, M., 1987, Prof. Jan Hromádka ako vedec, pedagóg a človek, In *Geografický časopis*, 39 (2), 137-147.

MARTÍNEK, J., 2008. Geografové v českých zemích 1800-1945 (biografický slovník), Historický ústav AV ČR, Praha.

MARTÍNEK, J., 2010. Čeští vědci na Slovensku. Geografický ústav Univerzity Komenského, *Klaudyán*, 7 (1-2), 22-28.

MARTÍNEK, J., 2017. *Geograf a cestovatel Jiří Daneš*. Praha: Historický ústav AV ČR, 292 s. ISBN 978-80-7286-287-0.

MATLOVIČ, R., 2008. The brief profile of the Slovak geographical community. In *Folia Geographica*, 12, 6-24.

MATLOVIČ, R., 2018. Początki akademickiej geografii i jej przedstawiciele na Słowacji w 2. połowie XIX i 1. połowie XX w. In Jackowski, A., ed. *Rola geografii w utrwalaniu niepodległej Polski i w jej rozwoju*, IGiGP UJ, Kraków, s. 155-184. ISBN 978-83-64089-49-7

MATLOVIČ, R., MATLOVIČOVÁ K., 2012. Spoločenská relevancia a budovanie značky geografie *Geografie /The Czech Journal of Geography*, 117, č. 1, ISSN 1212-0014., s. 33-51

MATLOVIČ, R., MATLOVIČOVÁ, K., 2015. *Geografické myslenie*. Prešov: Fakulta humanitných a prírodných vied Prešovskej univerzity. 321 s. ISBN 978-80-555-1416-1.

MATLOVIČ, R., MATLOVIČOVÁ, K., 2018. Etablovanie geografie na Univerzite Komenského a úsilie o posilnenie jej vplyvu v kontexte militarizácie pred druhou svetovou vojnou. In *Geografické informácie*, 22, 1, 2018, 274-287.

PETRÁŇOVÁ, L., 2016. Karel Chotek a jeho škola. In Woitsch, J., Jůnová-Macková, A., eds. Etnologie v zúženém prostoru. Praha: Etnologický ústav AV ČR, s. 71-92. ISBN 978-80-88081-10-4

SZEDERKÉNYI, T., 1984. Prinz Gyula és a magyar földtan, In *Földtani Közlöny*, 114, 375-383.

VARSIK, B., 1969. Univerzitné štúdium na Slovensku pred vznikom Univerzity Komenského. In *50 rokov Univerzity Komenského*. Bratislava: Univerzita Komenského, s. 7-21.

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TOURISM DEVELOPMENT IN HUNGARY ON THE EXAMPLE OF THE NORTHERN HUNGARY REGION

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Abstract
The current study's topic is the summary of the results of a touristic core area impoundment whose target area is the region of Northern Hungary. The methodological basis of the research was given by the work of Antal Aubert and Géza Szabó who made a similar touristic impoundment along five parameter examinations. The matter of research is relevant as an investigation based on similar quantitative methods has not been made yet on the target area; moreover it consists of important results for the profession as the national tourism has evolved to a determining industry at a national economy level too. Based on what we read, it is essential to assert that which municipalities, areas are the region's real touristic scenes. As the results of the research are numerical data, it enabled to set up a ranking between the emerging core areas and the touristic municipalities. On this basis, it can be determined that which areas are the most preferable tourist places. Further advantage of the quantification is that the study can conclude to the touristic fullness as well, knowing the potential of the given destinations, municipalities. This knowledge is of major importance in the basis of setting of objectives in touristic strategies. The current research, regarding the future, is an ideal starting point to know the region's real tourism, and to compare with the already existing touristic zones, like for instance the priority holiday zones impoundment. According to the results we can stated that 6 touristic core area can be appointed in the region. The study also highlighted that Hollókő developed into a touristic destination which could contribute to the development of Nógrád county. In city level Miskolc and Eger are the most important destinations in the region.

Key words
tourism, regional development, core area, Northern Hungary, tourism indicators

INTRODUCTION

Tourism development is a key question in all countries where it plays an important role in the economy, and the sensitivity of governments into tourism is various in the European countries (Zhang, 2005/a-b; Jones – Munday – Roberts, 2003, Matlo-

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vic et al, 2008, Kozma et al., 2015, Sarfaraz et al., 2015,Buczek-Mitura, 2018). In the vast majority of the European states tourism administration is in accordance with the general administration of the country (Bujdosó, 2018). In Hungary the system of tourism administration is changing and its structure is developing. In our paper we present a new approach of tourism development system and its evaluation on the example of Northern Hungary Region.

The history of Hungary's tourism development started its growing period from 1945 after World War II. Between 1945 and 1947, the primary goal was the restoration of living conditions to an adequate level in most part of Europe. At the same time, the reorganization of tourism also started, but at this time in Europe, as well as in Hungary, the tourism meant by occupying soldiers and those on officials trips. In Hungary, the demands of the Soviet forces had to be adapted. Tourism in the communist era was characterized by the framework of the sector's economy planning and the development of the basic infrastructure has come to the limelight. (Rehák, 2011)

Hungary's tourism started to grow into an economically important sector under the socialist regime. The first important act for domestic tourism was the Act of 1971, Law on Territorial and Settlement Development. Two points of the act of 1006/1971 .II.3. focuses on important tourism priorities. (Aubert, 2001)

- Development of Lake Balaton, Budapest and spas, which are the destinations that attract foreign visitors
- Development of tourism in urban areas which functions as place for weekend recreation

From tourism point of view, perhaps the greatest achievement of socialism was the right to organize the 1988 World Congress. About 7,000 travel professionals arrived to Hungary, resulting in listing Hungary on the world map of international tourism. (Rubovszky et al.,2009, Matlovicova-Husarova, 2017)

After the change of regime, unfavorable processes have started in the tourism of Hungary. This is because Hungary has lost its former prominent role among the socialist countries, and the whole Central and Eastern Europe has been opened for tourists. With the opening of the borders, Budapest and Lake Balaton became unnecessary as a meeting place for the East and West German relatives and friends. The new political, economic structure also created a new competitive position, where the Hungarian tourism supply had to meet the Western European level. In the early 1990s, the privatization of state-owned enterprises was launched in tourism, which was practically completely became privately owned. (Rubovszky et al. 2009)

In Hungary, we can talk about conscious regional tourism institutional development since 1996, which was established by the National Territorial Development Law and the integrational intention of European Union. The bottom-up organi-

zation of regional tourism management was only developed at Lake Balaton and South Transdanubia. Due to the limited number of organizations, in 1997, the National Tourism Committee decided to set up nine tourism regions covering the entire territory of the country. (Aubert, 2001)

These tourist regions eliminated in 2016 were the following (Figure 1).

1. Budapest-Central Danube region
2. Central Transdanubia
3. Western Transdanubia
4. Southern Transdanubia
5. Northern Hungary
6. Northern Great Plain
7. Southern Great Plain
8. Lake Tisza
9. Lake Balaton

Figure 1
Former tourist regions of Hungary
Source: www.jumptohungary.hu

From 2017 the government introduced a new methodology which is based on destinations instead of attractions. The Hungarian Tourism Agency appointed five special tourist areas in order to implement joint tourist development (Balaton, Sopron-Fertő, Tokaj, Upper-Tisza and Nyírség, Debrecen, Hajdúszoboszló, Hortobágy and Lake Tisza, Danube Bind)

Parallel with the appointment of tourist development areas planning documents were accepted by the governments. Following the 1990s, the most significant domestic tourism development measure was the Széchenyi Plan between 2000-2003. The aim of the program was to improve the quality of tourism, which was based on the stimulation of domestic and international tourism and the increase of tourism performance. (Aubert - Berki 2010) The biggest achievement of the development plan is that the domestic tourism season grew from 221 days to 316 days. This is due to significant health tourism developments, which is the

leading tourist product of domestic tourism. The program's consequence was the domestic revival of this sector of tourism, which meant a number of spa developments at nationwide. It is also important to note that the development program was implemented 100% from domestic sources, which shows the importance of tourism in the national economy and the relationship of the then policy to this sector. (Aubert et al., 2000)

Hungary's accession to the European Union led to a number of tourism investments. Meanwhile, the number of catering establishments and the number of guest nights increased considerably. Between 2004 and 2006, EU developments became available under the I National Development Plan. The most significant funds were made available under the Regional Operational Program, which contributed to the achievement of national territorial development objectives. From the point of tourism, the first of the four main priorities of the Program - the strengthening of tourism potential in the regions - was of the utmost importance. His goals included increasing the profitability of tourism and the competitiveness of domestic attractions, as well as the quality development of services. The developments were justified by the fact that the tourism sector has a positive impact on employment and has become a major industry in the national economy (According to the Central Statistic Office the contribution of tourism rose by 5% in GDP and by 6% in employment in Hungary between 2016-2018). The implemented projects mainly focused on the development of competitive tourist attractions and raising of the standard of accommodation. The Northern Hungary region has the largest share of tourist resources at national level (Figure 2), which was similarly developed in subsequent development plans.

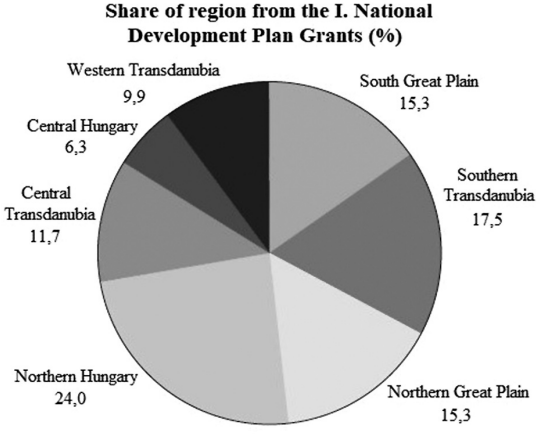

Figure 2
Share of the regions from the I. National Development Plan Grants
Source: Ministry of Municialities and Regional Development; Tourism Secretary of State

The next cycle, which significantly affected the tourism sector, was initially the New Széchenyi Development Plan for 2007-2013 following the New Hungary Development Plan since 2010. The Regional Operational Programs gave opportunity to support tourism projects. The objectives of the Program were defined based on the experiences of the previous period and based on the target system of the national tourism development strategies. Out of the three constructions of tourism development, the attraction development was the highest weight, about 70-75%. This was followed by the development of accommodation and the support of TDM organizations. Almost three thousand projects have been implemented throughout the country with more than 400 billion forints financial support. In spite of this fact, the continuation of the mentioned financial aid structure is justified in the next period.

The aim of the Program was to increase the number of employees and to increase their revenue to the level of national economy. These key objectives were not met, due to several factors, such as the economic crisis, the weakening of the forint exchange rate and the black economy, which still characterizes the sector. (Vargáné, 2015) The long-term goal of the current 2014-2020 development plan of Széchenyi 2020 is to make Hungary one of Europe's most popular hosting areas. In order to achieve this development plan structured along the following objectives.

1. Hungary should be in the 30 best countries in the world regarding tourism competitiveness
2. Successful development of the most important national tourism products
3. Creating a fully functioning tourism organizational system
4. Improving domestic and international tourist base indicators
5. Successful opening towards new markets
6. Budapest should be among the top destinations in Europe and Central Europe and Balaton should be recognized European resort

In the current period, for tourism development many operational programs are available, which are the following.

- Economic Development and Innovation Operational Program (GINOP)
- Supporting the Competitive Central Hungarian Operational Program (VEKOP)
- Regional and Municipal Development Operational Program (TOP)
- Rural Development Operational Program (VP)

The most significant tourism sources of the period are available from GINOP, in which tourism is also present on several priority axes. Grants are available for attractions, services, destinations, national tourism marketing, and energy efficiency.

After the historical review of the Hungarian tourism areas, following the work of Antal Aubert and Géza Szabó, the next part is the detailed description of methodological criteria of the delimitation of the tourism core area and the results of the research on the Northern Hungary region.

OBJECTIVES

The main objective of the study was to appoint the core areas in Northern Hungary region by quantitative methods. To state the hierarchy by settlements was also an aim of our work while during ranking the settlements potential we got a clear picture about the touristic potential of the region.

In our days tourism is one of the main elements of regional development documents however also plays a crucial role in economic development. Hence, in numerous less developed regions governments invested huge financial resources into tourism development. (Zhang, 2005/a-b; Jones – Munday – Roberts, 2003). Our target was also to examine how important is tourism in the regional development of the studied area.

THEORETICAL FRAMEWORK

The research basic question is whether tourism could be a tool regional and local development in Northern Hungary region. The region is an ideal research area while assesses several touristic potential such as medical water, lakes, cultural and natural attractions. To prove the fundamental question we can examine the local (settlement) level. If settlement network is concerned by tourism, we can state that the tourism plays a vital role in the development of the region. Huge national and European funds invested into tourism also predestinate the fruition of basic statement as these financial tools contributed to the rising of statistic data and had developing effects.

DATA AND METHODS

Tourism is a complex and multidimensional phenomena so that its affects can be examined by multidimensional factors. Such index is TPI index (Tourism Penetration Index) which is a complex affect factor in tourism and worldwide used (McElroy – Albuquerque, 1998). However, in the impoundment of touristic core areas there is not any widely accepted methodology.

The demarcation of this touristic core area in the Northern Hungary region was completed along the work of Antal Aubert and Géza Szabó. There are no uniform criteria system and methodology for the geographic delimitation of a tourism core area or any tourism area (Aubert - Szabó, 2007).

The application of this methodology was justified by the fact that the test target area has similar geographic characteristics, as well as measurability of the examined parameters, access to data are similarly available. The demarcation of the tourism core area of the Northern Hungary region was determined along five parameters, which are the following.

1. Current attraction
2. Determinative touristic products

3. Turnover indicator
4. Tourism networks and development activities
5. Local Tourist Tax

The core areas emerging from the survey are cleared up according to the current state, thus tourism investments can have a significant impact on the demarcation. However, due to the sensitivity of tourism to change, this is not surprising.

The examining factors were taken into account with different weights, the use of which was justified by hierarchy among the parameters. The following weight numbers are similarly defined as the baseline methodology.

1. Current attraction 20%
2. Determinative touristic products 25%
3. Turnover indicator 30%
4. Tourism networks and development activities 20%
5. Local Tourist Tax 5%

Henceforward, the details of each parameter can be read through the theoretical study and the practical results of the Northern Hungary region.

Current attractions

The study area is Northern Hungary region which location is shown by Figure 3. The region consist of 3 counties (Borsod-Abaúj-Zemplén, Heves és Nógrád) with 610 settlements in 13.428, 84 km^2 and 1.134.945 inhabitants (KSH, 2017). The region is bordered by Central Hungary and Northern Great Plain regions and Slovakia.

One of the most important factors for the regional / local tourism is the presence of attraction. The subject of this study was to count these attractions in the 610 settlements of the Northern Hungary region. Many of the settlements in the region were excluded from the investigation as a result of the first necessary screening. In fact, those settlements have been investigated further, where there has been tourism tax revenue and / or spent guest nights over the past decade. This was followed by an assessment of the tourist attraction based on scope. Individual settlements were awarded points if the destinations had at least a national level attraction (Table 1).

During the evaluation of attractions we also took into consideration the place image as tourist brands, destination image can appeal for tourists. Tourism marketing requires the handling of the destination as one product using three key issues: city identity, image and communication (Matlovičová- Kormaníková, 2014). Image building of cities is the task and the liability of local governments. (Matlovicova – Tirpakova - Mocak, 2019), During place or city branding planners have to concentrate on local actors, as well as on investors form outside (Tózsa, 2014)

The further categorization was carried out along the following lines.

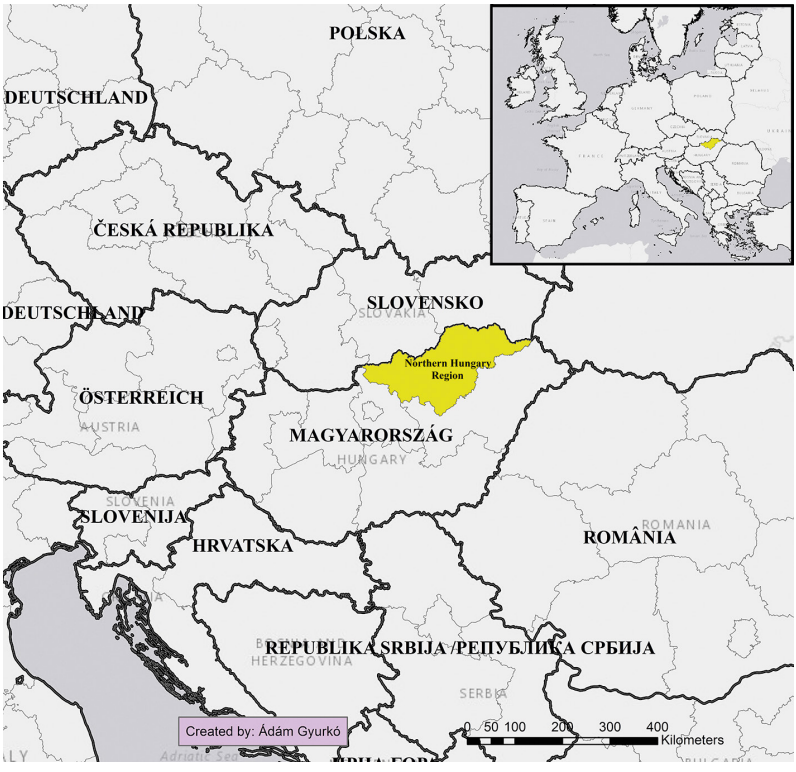

Figure 3
Location of Northern Hungary region
Source: Own work

Table 1 Scope of tourist attractions

Received points	Categories	Characteristic of categories
12,5	National attraction	Wide range of guest visit the place at national level, limited international interest due to the saturation or cultural features of the attraction.
15	Cross-border attractions	Significant foreign guests, mainly generated by the unique interest (e.g. festivals)
17,5	International attraction	An attraction with considerable tourist potential, attracting mass foreign tourists, mainly from neighboring countries
20	Global attraction	In our country, only a few such settlements exist. In Northern Hungary region, only Eger and the World Heritage sites (Hollókő old village and its surroundings, Tokaj-Piedmont historical wine-growing region, Aggtelek Karst and caves of the Slovak Karst).

Source: Own work

Figure 4 shows which settlements received points for attraction evaluation in the Northern Hungary region. Although the methodology treats world heritage sites as a priority category, however, writers did not always take this into consideration, since after the study settlements without measurable tourism were taken out of the global attraction category. These settlements were Imola, Mezőzombor, Szegi, Szinpetri, Tornanádaska. This was needed to ensure that the listed settlements should not become part of the category of tourism core area, as there are no real tourism-generating attraction and service providers besides the World Heritage Site.

The question might be whether the World Heritage Sites are representing global attraction category. It is important to emphasize that, based on world heritage sites, it is possible to expand domestic tourism supply and also important sales factors for global tourism, which are also part of international databases. (Tasnádi, 2002) Based on what has been described - and after screening - in this case, the settlements belonging to the biggest category can be said that they are important basis for the global tourism attraction of the region, so their relevance is unquestionable.

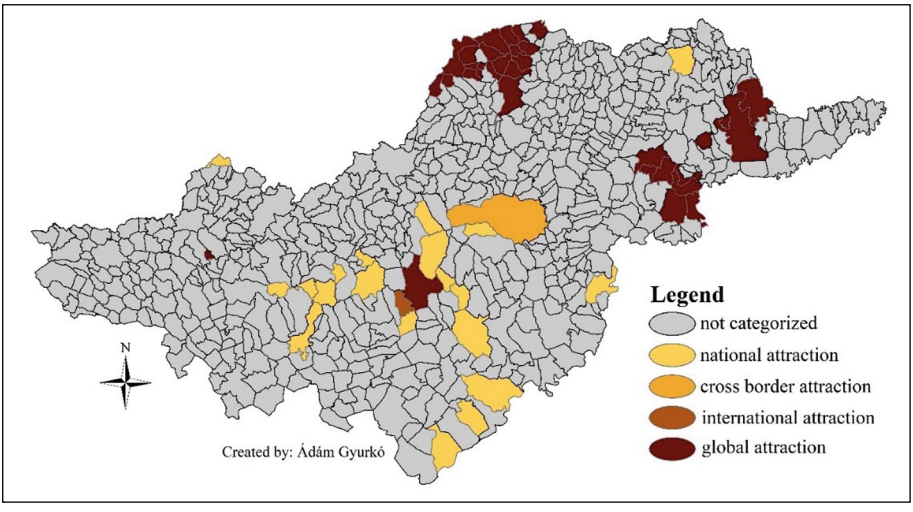

Figure 4
Tourist attraction rating of settlements in the Northern Hungary Region
Source: Own work

Determining tourist products

The second parameter survey was to take into account qualified service providers and objects in the region. In the region, the evaluation of the following service providers were justified.

- Rural hosts
- Members of the Wine Route
- Riding tourism providers
- Hungaricums that can be linked to products and world heritage that generate significant tourism

Tourism facilities have been taken into account, which enable settlements and regions to develop tourism products, analyzed parameters are the following.

- Waterway stops (ports, resting places) at rivers and lakeside trails
- Visitor centers established and operated in protected areas (national park, landscape protection area, nature conservation area)
- Educational paths to promote protected natural values
- Thermal spas
- Objects that form the basis of professional tourism (MICE supply)

Data from providers and about objects were first aggregated separately. The settlement reaching the highest score was the base (100%), from which proportion of points were given to other places. Then the merging of the two parameters was realized. Within the study the weight of the MICE and thermal spas was doubled, all other categories meant 1-1 points for the settlement.

Turnover indicator

When evaluating tourism indicators, it can be concluded that there is a contradiction between the capacity and the guest turnover of commercial and private accommodation, one reason could be the seasonality of tourism. Thus, from a professional point of view, the guest nights show actual tourism turnover (Aubert - Szabó, 2007). In this parameter analysis, the number of guest nights for commercial and private accommodation was taken into account at the settlement level. In order for the delimitation to show a fairly long-term content, and the outbreaks of a given year do not significantly affect the results, the number of guest nights from 2004 to 2013 were used.

The settlements were categorized according to absolute and thousand-person values. Within the parameter the values are counted. With the weight of 50-50%. When categorizing the data, it is an important factor how detailed the data is being manipulated. The primary rule is that a boundary has to be decided regarding what values are represented by the certain data. (Eral, 2003)

Tourism networks and development activities

The fourth parameter analysis of the core area is similar to the second one, which can also be divided into two major categories. In the first category, the settlements are organized in tourist networks. In the second, the European Union resources of

settlements for tourism development have been taken into account. The following network co-operations were considered, the existence of which means 1-1 points for settlements. The settlement that received the most points meant 100% base value, from which the other settlements gained proportional points.

- Thematic routes are the spatial organization of a product
- Tourism clusters
- Other regional cooperation, regional TDM organizations, Tourinform offices

Over the past decade, significant development resources have become available in the tourism sector. The main goals of these resources were attraction and accommodation development. The Northern Hungary region was the main target area of the ERFA tourism resources, receiving the largest source of funding, approximately 22%. For these reasons, tourism development resources are also part of the examination of the delimitation of the tourism core area. The tourism resources of the I. National Development Plan and the New Széchenyi Plan / New Hungarian Development Plan and the New Hungarian Rural Development Plan were summarized from 2004 to 2015 until the end of 2015, after which the data were classified into categories of values. This categorization was made on the basis of Earl Babbie's "Practice in Social Sciences Research".

Local Tourism Tax

One of the measurable factors of actual tourism is local tourist tax levied by local governments. Accordingly, it can be stated that tourism businesses are operating in settlements where tourism tax revenue is reported. Taxation is optional for local governments, but the collected tax also includes state financial aid, thus providing access to significant development resources for settlements.

This study has taken into account the collection of tourist tax revenues from 2004 to 2013 in order to avoid distortion of annual outlays and to make the delimitation more time-consuming to the frequent changes in tourism. The absolute and thousand people data of settlements have been concluded by 50-50% share. The results were classified into value categories based on Earl Babbie's "Practice in Social Sciences Research".

RESULTS AND DISCUSSION

The aim of the present study was to designate the tourism core areas of the settlements and adjacent territories in Northern Hungary region. The work of Antal Aubert and Géza Szabó meant base the objective investigation, who likewise defined the Southern Transdanubian region along five parameter analyzes. These test elements were described in more detail in the previous chapters. In the following, the results are summarized and the conclusions are drawn.

After a summary of the data and the weighting of the results, a quantified order of settlements emerged, where settlements could reach up to 100 points. For those who are familiar with domestic, regional tourism, it is not surprising that Eger achieved the highest score, 88.28 points. Of the 610 settlements in the region 436 received points, the remaining 174 did not receive any of the examined parameters, which may not be explained by bad tourist conditions but in many cases with the unworthy economic and social situation. The score of the settlements with the most points will be detailed in Figure 4 below.

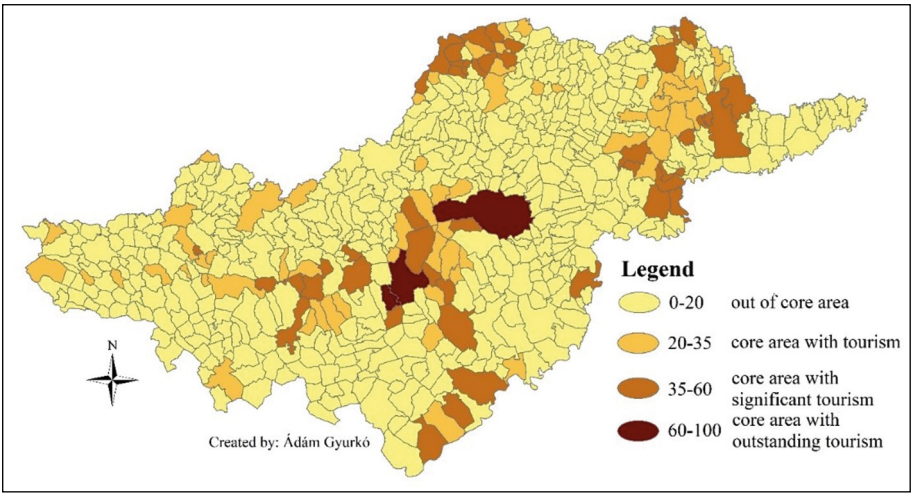

Figure 5
Settlement tourism core areas in the Northern Hungary region
Source: Own work

Figure 5 shows the result of the demarcation of touristic core areas of settlements in the Northern Hungary region. The results were divided into four categories by the writer of the present study, the first being the "non-core area settlement". Settlements classified in this category cannot provide a level of tourism results that would indicate actual tourism development in the area. There are a total of five hundred settlements in this category, of which 174 could not reach a single point. The second category, with a total of 64 settlements, belongs to the "core area settlement with tourism". The members of this category already have a measurable turnover indicator. Particularly small settlements, with the rise of rural tourism, are the seasonal destinations of territorial and regional tourism for tourists. In addition, Hatvan and Salgótarján belongs to this category, which also have real urban functions, thus enabling them to become tourist center in the future (Baranyi et al., 2014). The third group is the "core area settlement with significant tourism", where

tourism has a significant influence on the everyday, social and economic indicators of settlements. The settlements in this category - with some exceptions - were able to reach a point in all parameters. Thus, it can be stated in general that the members of the category are settlements with accommodation, tourist services and attractions. Accordingly, they are the decisive members of tourism in the region, which even generate nationwide guest turnover. The major cities in this category are Gyöngyös, Mezőkövesd, Sárospatak, Sátoraljaújhely and Tiszaújváros. The most important small settlements regarding tourism in this category include Hollókő, Mátraszentimre, Szilvásvárad, Tokaj. Following the summary of the results, writers have maintained a separate category for settlements that can be interpreted as a major tourist settlement. Based on the achieved scores, these settlements are Eger, Egerszalok and Miskolc. The three settlements listed are clearly the most important members of the region's tourism, which also generate cross-border guest turnover through their established tourism supply.

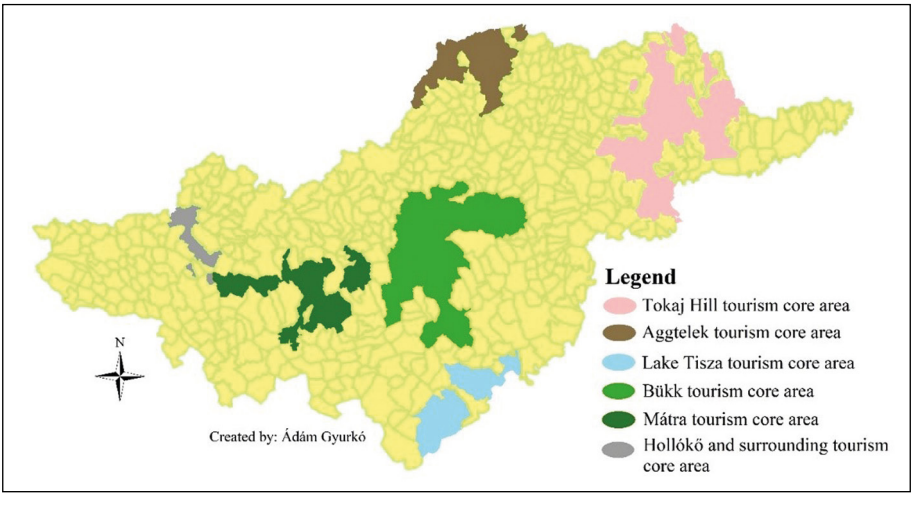

Figure 6
Regional tourism core areas in the Northern Hungary region
Source: Own work

Figure 6 shows the result of the impoundment of the Northern Hungarian region's regional tourism core areas. Besides the demarcation of settlement, it was also an objective to designate contiguous areas that show a combination of significant tourist settlements. The resulting demarcation justified the removal of 13 large-scale settlements, of which the largest settlement was Tiszaújváros. On the basis of the relatively few separate tourist settlements it can be stated that tourism in the region is concentrated and well defined. For the left out settlements, priority

should be the regional tourism cooperation in the future in order to present new tourist core areas. At present, there are 6 tourist areas in the Northern Hungary region, of which the area with the largest number of settlements and geographic areas is Tokaj-Piedmont tourism core area. The listed areas with their weight are shown in Table 2, which is the sum of the points reached by the settlements. This limitation has only emerged in the Northern Hungary region, but it is necessary to mention that the Lake Tisza region, which is cross-regional and Aggtele which is cross-border tourist core areas, so the actual extent of these areas are greater in reality.

Table 2 Tourism evaluation of selected tourism core areas

Touristical core area	Number of settlements	Place	Touristical value	Place	Summary
Tokaj Piedmont tourism core area	29	**1**	976,26 point	**1**	**1**
Bükk tourism core area	22	**2**	846,84 point	**2**	**2**
Aggtelek tourism core area	20	**3**	743,41 point	**3**	3
Mátra tourism core area	14	**4**	466,65 point	**4**	**4**
Hollókő and its surrounding core area	7	**5**	205,03 point	**5**	**5**
Lake Tisza tourism core area	5	**6**	173,86 point	**6**	**6**

Source: *Own work*

The tourism results of the tourism core areas defined by this study are shown in Table 2. On this basis it can be stated that the most important tourist core area of the Northern Hungary region is the Tokaj Piedmont area. This is followed by the Bükki tourism core area, which includes the three most important tourist resorts. The largest unexploited potential is in the Mátra area, as many of the towns with significant tourist potential have not been included in the category of core area. This is mainly due to the lack of accommodation and attractions. There is also a potential for the Lake Tisza, as the lake offers many opportunities to spend leisure time. However, the poor economic and social conditions of the region are still felt today in the highly sensitive tourism sector as well. In the future, it is certainly appropriate for these areas to establish a complex strategy to overcome these problems. One of the biggest obstacles for the development in Aggtelek and Hollókő that the area is poor with settlements with urban functions. Thus, their tourism potential is also very limited.

Table 3 The rankings of the first twenty settlements reached the highest point in the impoundment of the Northern Hungary region

	Name of the settlement	County	District	Tourism Core Area	Reached point
1.	Eger	Heves county	Eger	Bükk	**88,28**
2.	Miskolc	Borsod-Abaúj-Zemplén county	Miskolc	Bükk	**72,51**
3.	Egerszalók	Heves county	Eger	Bükk	**65,80**
4.	Tokaj	Borsod-Abaúj-Zemplén county	Tokaj	Tokaj-Hegyalja	**59,47**
5.	Hollókő	Nógrád county	Szécsény	Hollókőand its surrounding	**58,55**
6.	Szilvásvárad	Heves county	Bélapátfalva	Bükk	**56,14**
7.	Mátraszentimre	Heves county	Gyöngyös	Mátra	**54,41**
8.	Sárospatak	Borsod-Abaúj-Zemplén county	Sárospatak	Tokaj-Piedmont	**54,06**
9.	Mezőkövesd	Borsod-Abaúj-Zemplén county	Mezőkövesd	Bükk	**53,22**
10.	Aggtelek	Borsod-Abaúj-Zemplén county	Putnok	Aggtelek	**52,23**
11.	Gyöngyös	Heves county	Gyöngyös	Mátra	**51,32**
12.	Bogács	Borsod-Abaúj-Zemplén county	Mezőkövesd	Bükk	**50,88**
13.	Demjén	Heves county	Eger	Bükk	**50,75**
14.	Teresztenye	Borsod-Abaúj-Zemplén county	Edelény	Aggtelek	**50,73**
15.	Tolcsva	Borsod-Abaúj-Zemplén county	Sárospatak	Tokaj-Piedmont	**49,95**
16.	Poroszló	Heves county	Füzesabony	Lake Tisza	**49,88**
17.	Bodrogkeresztúr	Borsod-Abaúj-Zemplén county	Tokaj	Tokaj-Piedmont	**49,13**
18.	Noszvaj	Heves county	Eger	Bükk	**48,19**
19.	Sátoraljaújhely	Borsod-Abaúj-Zemplén county	Sátoraljaújhely	Tokaj-Piedmont	**47,14**
20.	Jósvafő	Borsod-Abaúj-Zemplén county	Putnok	Aggtelek	**47,06**

Source: own work

Table 3 shows the rankings of twenty settlements that have reached the most points in the core area. The town of Eger is located in the first place, which is the most outstanding tourist destination in the region, as it was the first in almost

all studies. The first great surprise for the authors in the ranking was the city of Gyöngyös, which is only 11th in comparison to its tourism potential, preceded by a number of smaller settlements, and not the first place in its tourism core area, since Mátraszentimre is in the 7th place. Surprisingly relatively good positions are Teresztenye (14th), Tolcsva (15th), Noszvaj (18th) and Bodrogkeresztúr (17th). These settlements are excellent examples asthe potential of rural tourism, as the pledge of their good performances is primarily sought not in attractions but in services provided by rural tourism.

CONCLUSIONS

Summarizing the results of the demarcation of the tourism core area in the Northern Hungary region revealed which settlements and regions are real tourism operators in the target area. Except for a few players, the emerging rankings did not cause any surprise, but the interesting thing about the results is that large areas of settlements and existing territorial delimitations, such as the highlighted holiday resorts, show significant differences. Due to such differences, the true value of this study shows that quantitative methods provide an excellent basis for performing comparative analyzes.

The aim of the study was to appoint the touristic core areas of Northern Hungary region by mathematic methods. From the results of the study it can be stated that there are six regional tourism core areas in the Northern Hungary region, in which there are still unused potential. The absolute winner of the settlement demarcation is Eger, which has grown into the most important tourist town of the region. The research also aimed the comparison of potential of the different areas. Among touristic core areas Tokaj-Piedmont became the first ranking in touristic potentials followed by Eger, Miskolc and Egerszalók from Bükk Mountain.

. In our days tourism is definitely a tool of regional development. Starting from this point we needed to state how many percent of the settlements is concerned by tourism. Taking into consideration the tourism and regional development, it can be stated that this sector is of the utmost importance for the region, since 110 settlements have been included in the core area, which accounts for about 20% of all settlements in the region. The daily, social and economic conditions of these settlements are greatly influenced by tourism. The tourism sector may become one of the cornerstones of the long-term development strategy of the region, with significant unused potential and tourism resources.

REFERENCES

AUBERT, A. (2001). A turizmus és a területfejlesztés stratégiai kapcsolata Magyarországon. (Strategic relation between tourism and regional development in Hungary) *Turizmus Bulletin* vol. 5 n° 1, pp. 5-17.

AUBERT A., GELÁNYI N., JÓNÁS-BERKI M. (2010), The Place and Role of Peripheries in Hungary's Changing Tourism. *Geographica Timisiensis* vol. 19 n° 2, pp. 257-267.

AUBERT, A.,–SZABÓ G. (2007), *A Dél-dunántúli régió turisztikai magterületeinek lehatárolása (Defining the tourist core areas in South Transdanubia region*). Xellum kft. Budapest, pp. 1-23.

BARANYI, A. – NYIZSALOVSZKI, R.- KONCZ, G. – KOVÁCS, GY.- TARALIK, K. – TŐZSÉR, A. (2014). *Társadalmi innovációk a felzárkóztatás szolgálatában: Hevesi és Bátonyterenyei kistérségek terület –és gazdaságfejlesztési lehetőségei és korlátai, (Social innovations for cohesion: Regional nad economic development possibilities and obstacles in Heves and Bátonyterenye microregions)* Gyöngyös, 200p.

BUCZEK, M – KOWALIKA, MITURA, T. (2018), Cross-Border Cooperation on the Polish-Slovak Borderland – Examples Of Joint Tourism Initiatives *Folia Geographica* 2018, vol. 60 n°2, pp. 62–82.

BUJDOSÓ, Z. (2016), *A Turizmus és a területfejlesztés kapcsolatrendszere Magyarországon (The Correlation Between Tourism and Regional Development In Hungary)*. In. Nyíregyházi Egyetem Turizmus És Földrajztudományi Intézet, pp. 70-74.

BUJDOSÓ, Z. (2018), *Comparison Of Tourism Administration In Two Central-European Countries* In: Dinya László, Csernák József (Ed..) 16th International Scientific Days Summaries Of Presentations And Posters, Gyöngyös: Líceum Kiadó, 2018. p. 26.

EARL B. (2003), *A társadalomtudományi kutatás gyakorlata. (Methodology of research of social sciences)* Balassi Kiadó, Budapest, pp. 137-170.

ENYEDI, GY. (2004), Regionális folyamatok a posztszocialista Magyarországon (Regional Proccesses In The Postsocialist Era In Hungary) *Magyar Tudomány,* vol. 49 n°9. pp 935-941.

JONES, C. – MUNDAY, M. – ROBERTS, A. (2003) Regional Tourism Satellite Accounts: A Useful Policy Tool? *Urban Studies* vol. 40 n°13, pp. 2777-2794.

KOVÁCS, B., GERLACH, V. (2017): A 2007-2013 közötti hazai fejlesztéspolitika turisztikai vetülete (Tourist Areas Of The National Development Policy Between 2007-2013) . *Turizmus Bulletin,* vol. 11 n° 3, pp. 39-46.

KOZMA, G,SZABÓ GY., MOLNÁR, E., PÉNZES, J. (2015), The Position of Environmental Protection in Municipal Council Committees of Local Governments in Hungary *Administraţie Şi Management Public.* Vol 24. n° 4, pp 44-55.

MATLOVIČ, R. – KLAMÁR, R. – MATLOVIČOVÁ, K. (2008), Development of Regional Disparities in Slovakia at the Beginning ff 21st Century Based on the Selected Indicators *Regionální Studia*, vol 18 n°2, pp.2-12.

MATLOVIČOVÁ K. – KORMANÍKOVÁ J. (2014). *CITY BRAND-IMAGE ASSOCIATIONS DETECTION. CASE STUDY OF PRAGUE*. Sgem 2014, Psychology & Psychiatry, Sociology & Healthcare, Education, Conference Proceedings, Volume II., Sociology and Healthcare, Albena, pp. 139-146.

MATLOVIČOVÁ K., HUSÁROVÁ M. (2017): Heritage Marketing a možnosti jeho využitia pri rozvoji turistickej destinácie. Prípadová Štúdia Hradu Čičva. (Potential of

the Heritage Marketing in Tourist Destinations Development Cicva Castle Ruins Case Study). *Folia Geographica* 2017, Vol. 59 n°1, pp. 5-35.

MATLOVICOVA, K. – TIRPAKOVA, E. – MOCAK, P. (2019). City Brand Image: Semiotic Perspective a Case Study of Prague. *Folia Geographica*, vol.61 n° 1, Pp. 120-142.

MCELROY, J. L. – DE ALBUQUERQUE, K. (1998). Tourism Penetration Index in Small Caribbean Islands In: Annals Of Tourism Research vol. 25, n° 1, pp 145-168.

NAGY, A. (2016), *A turizmus hatása a térgazdaság fejlődésére Magyaroroszágon (The effect of tourism on the development of regional economy in Hungary*) PhD dissertation, Gödöllő, pp. 57-67.

PÉTER, L. (2003), A turizmus és a területi tervezés, területfejlesztés, területrendezés kapcsolata Magyarországon. (The relation between regional planning, regional development and regional design in Hungary) *Falu város régió.* vol. 5 n°,1 pp. 13-26.

RUBOVSZKY, M., SZIGETI A., WALKÓ M. (2009), *A magyar vendéglátás és turizmus újkori története (The modern history of Hungarian hospitality)*. Szaktudás kiadó ház, Budapest, pp. 201-287.

PUCZKÓ, L., RÁTZ, T. (2005), *A turizmus hatásai (The effects of tourism*). Aula kiadó kft., Budapest, 266p.

REHÁK, G. (2011), *Turizmuspolitika Magyarországon különös tekintettel a Kádár-korszak első tíz évére (Tourism Policy in Hungary With Special Regards on The Kádár Era)*. Phd Dissertation, Debrecen, pp. 78-94.

SARFARA, Z., MAEDEH, S., REZA, M., ZAVADSKAS, M. (2015), Sustainable Tourism: A Comprehensive Literature Review on Frameworks and Applications, Economic Research-*Ekonomska Istraživanja*, vol. 28 n°1, 1-30, Doi: 10.1080/1331677x.2014.995895.

TASNÁDI, J. (2002), *A turizmus rendszere (The systems of tourism).* Aula kiadó, Budapest, 244p.

TÓTH, G. (2005), A magyarországi idegenforgalmi régiók (Tourist regions of Hungary) *Regional Statistics* vol. 45 n° 2, pp. 147-162.

TÓZSA, I. (2014) *A Településmarketing elmélete. (Method of toruism marketing)* In: Turizmus És Településmarketing. Budapesti Corvinus Egyetem Gazdaságföldrajz és Jövőkutatás Tanszék, Budapest, pp. 129-157.

VARGÁNÉ, GÁLICZ I. (2015)., *A turizmus gazdasági mutatóinak alakulása a 2007-2013 közötti időszakban (The change of tourism economic factors between 2007-2013).* Http://www.irisro.org/tarstud2014kotet/15varganegaliczivett.pdf retrived 23.08.2017

ZHANG, J. (2005/A), *DOCUMENTATION ON REGIONAL TOURISM SATELLITE ACCOUNTS IN* Denmark p. 88.

ZHANG, J. (2005/B), *Regional tourism satellite accounts for Denmark: accounting and modelling* In: 15th International input-output conference, Beijing, China, 27 June – 1July 2005.

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LAND USE CHANGE AND ITS IMPACT ON SURFACE RUNOFF FROM SMALL BASINS: A CASE OF RADIŠA BASIN

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Abstract
Land use changes in a basin frequently result in an increased surface runoff, which may induce the occurrence of floods or soil erosion. The paper thus aims to estimate and assess the change in surface runoff characteristics based on the analysis of land use change (between the years 1949 and 2017). The research area is represented by the small basin of Radiša watercourse (Western Slovakia). In order to estimate surface runoff, the SCS-CN method, modeling in geographic information systems (GIS) and recorded rainfall data were used. The land use was identified based on aerial imagery (orthophotos) from 1949 and 2017 showing quite significant changes. Arable land decreased the most by more than half (by 15.62%) while the share of forests increased by 4.55%, glades by 3.45% and built-up areas by 3.05%. As for the results of the SCS-CN method, the highest interval of surface runoff depth (27.1-64.4 mm) increased only slightly from 7.27% (in 1949) to 7.57% (in 2017). On the other hand, the lowest values of runoff depth (2.3-3 mm interval) covered most of the basin area in both years (60.65% in 1949 and 64.94% in 2017). The share of high runoff volume values (intervals 20.1-50 m^3 and 50.1< m^3) on the basin area decreased during the years 1949 and 2017 by 1.95% and by 1.05%, respectively. Based on the results, it can be concluded that the risk of surface runoff in the research area decreased over the studied period.

Key words
Land use, surface runoff, SCS-CN method, GIS, small basin, Slovakia

INTRODUCTION

Land use can be defined as the way in which the land has been used by humans usually with an emphasis on the functional role of land for economic activities. The land use pattern of a particular region is thus an outcome of natural and socio-economic factors and their utilization by man in time and space (Lambin et al. 2001; Vojtek, 2018).

In recent decades, there have been intensifying anthropogenic impacts on landscape causing the changes in land use due to various agricultural, forestry, water management, industrial, tourism activities and the like. (Ivanová et al. 2013, Boltižiar et al. 2016, Izakovičová et al. 2017, Munteanu et al. 2017, Lieskovský et al.

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2018). As a consequence, these human activities are subsequently responsible for the increased risk of soil erosion, disrupted hydrologic regime of the landscape or changes in biodiversity.

In a basin, land use changes influence the surface runoff (Chen et al. 2009), occurrence of flood situations (Solín et al. 2011, Jakubcová et al. 2016) or groundwater recharge (Ashraf et al. 2007), transfer of pollutants (Torma et al. 2019) and the like. In this respect, the analysis and assessment of land use and its change is inevitable for planning and management of water resources in a basin (Petrovič et al. 2017).

The technological advances in the field of remote sensing have enabled that land use changes can be studied in more detail referring to better accuracy and resolution of aerial/satellite images (Singh, 1989, Lu et al. 2004). On the other hand, geographic information systems (GIS) are considered a suitable geospatial technology for data storage, analysis and visualization.

Land use, in particular, affects the hydrological transformation of rainfalls in a basin (Bronstert et al. 2005). Two basic groups can be defined when dealing with the influence of land use on hydrological transformation. The first group is characterized by direct impact of land use on rainfall-runoff conditions where interception and evapotranspiration are the main processes. The other group is characterized by land use as the protective factor of soils. In this respect, a substantial part of the transformation of stormwater to runoff occurs in its horizons. Moreover, changes in the vegetation structure or deforestation may induce varied basin response. On one hand, it is a short-term response of a basin (e.g. dynamics and parameters of rainfall-runoff episodes) and on the other hand, it is a long-term response, such as changes in runoff patterns (Fohrer et al. 2001; Vojtek and Vojteková, 2016).

Surface runoff is thus a significant factor which may initiate the occurrence of floods, especially pluvial floods or sheetfloods, soil erosion or other hydrological hazards (Brath et al. 2006, Langhammer and Vilímek, 2008).

The aim of the paper is to estimate and assess the change in surface runoff characteristics based on the analysis of land use change between the years 1949 and 2017. Generally, land use change is considered to have a major role in influencing the creation, progress and concentration of surface runoff. The research area is represented by a small basin of Radiša watercourse (Western Slovakia). As for the estimation of surface runoff characteristics, the SCS-CN method, recorded rainfall data and modeling in GIS were applied.

THEORETICAL FRAMEWORK

The general principle of the SCS-CN method is to link the key parameters of land use and hydrological characteristics of soils into the CN (curve numbers) that reflect the runoff loss in a basin. Curve numbers are determined in the range from 0 to 100. The CN = 100 indicates that all rainwater which falls on the basin will drain

away as a surface runoff while CN = 0 means that all rainwater will infiltrate into the subsurface layers.

The SCS-CN method was first elaborated by Chow (1964) whose results were further developed and published in several methodologies and guides for runoff assessment (e.g. McCuen, 1982, Cronshey et al. 1986, Mishra and Singh, 2003).

In recent decades, a number of studies have focused on finding or reviewing the theoretical basis of this method in order to achieve its improvement (Hjelmfelt, 1991, Ponce and Hawkins, 1996, Yu, 1998, Mishra and Singh, 2003, Jun et al. 2015). In Slovakia or Czechia, this method was elaborated, for example, by Pasák et al. (1983), Antal (1996) or Janeček et al. (2002).

Furthermore, the SCS-CN method evolved beyond its original scope and it has been incorporated into many hydrological (rainfall-runoff) models as their integral part (Ali et al. 2011; Moghadasi et al. 2017; Petroselli and Grimaldi, 2018; Młyński et al. 2018). The role of GIS, which is widely used in connection with hydrological models, lies mainly in data pre-processing, parameters extraction or visualization of the model outputs (Mishra and Singh, 2004, Soulis and Dercas, 2007).

Due to the fact that hydrologic response of a basin is driven by the interaction of rainfall (i.e. triggering factor) with physical (terrain) pre-conditions i.e. elevation, land use and soil properties, it is more convenient for the surface runoff estimation process to be carried out using solely GIS tools. The CN-based runoff estimation technique can thus benefit from the main advantages of GIS to store, analyze, interpret and visualize data (Patil et al. 2008, Costache et al. 2014).

In scientific literature, the SCS-CN method has been widely applied across diverse regions with different land use, soil and terrain pre-conditions (e.g. Holman et al. 2003, Camorani et al. 2005, Kadam et al. 2012, Agarwal et al. 2013, Nagarajan, Basil, 2014). The findings of these studies suggest that the application of the SCS-CN method is appropriate, especially, for small basins and thus local spatial scale studies.

For instance, Gallay (2010) recommends using the SCS-CN method in small basins, as an alternative to rainfall-runoff models, for the assessment of vulnerability, capacity, integrated basin management or to create a basic idea about the rainfall-runoff conditions in a basin. Jeníček (2007) used the SCS-CN method for modeling the land cover impact on rainfall-runoff processes in the basin of Blatnica. Results of this study confirmed the assumption that the impact of land cover on runoff conditions in a basin decreases with increasing extremity of input rainfall. Soulis et al. (2009) used this method in two experimental heterogeneous basins of Little River (USA) and Lykorrema (Greece) using the two-CN system approach. Their results suggest that the determination of CN values using the two-CN system approach provides acceptable results and expands the capabilities of the classic SCS-CN method in heterogeneous basins.

In addition, the SCS-CN method is often compared to the Green-Ampt method (King et al. 1999, Unucka et al. 2010). The effect of combining these two methods, referred to as Curve Number for Green-Ampt (CN4GA), was described by Grimaldi et al. (2013).

Based on the aforementioned studies, the application of the SCS-CN method in small basins is relevant and plays an important role in computation and modeling of surface runoff characteristics.

RESEARCH AREA

The research area is represented by a small basin of the Radiša stream (Fig. 1). The Radiša stream has a length of 24.2 km and it creates a left tributary of the Bebrava River. The basin has an area of 110.33 km^2.

The reason for choosing this research area is that it has been subjected to several floods (e.g. flash floods from June 2013 and July 2014) as well as the research area is characterized in the updated preliminary flood risk assessment as having an existing and potential flood risk (Ministry of Environment of the Slovak Republic, 2018).

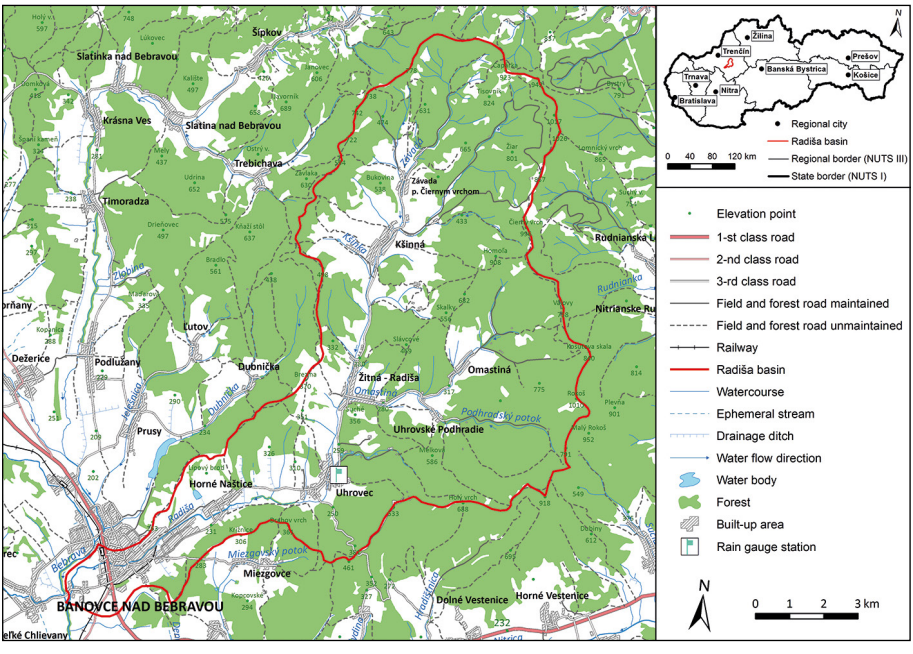

Figure 1
Location of the research area in Slovakia
Source: SVM50 - Geodetic and Cartographic Institute Bratislava

The research area is defined by the following geographical coordinates: 48°51'N and 48°42'N latitude, 18°14'E and 18°26'E longitude.

According to the geomorphological division of Slovakia (Mazúr and Lukniš, 1986), the research area is classified into two geomorphological units: Strážovské vrchy (mountain), which covers most of the basin area, and Podunajská pahorkatina (hills). Suchý vrch (peak) is the highest point in the basin with an altitude of 1027 m a.s.l. It is located in the northeastern part of the basin. The confluence of Radiša stream and Bebrava River represents the lowest point in the basin having an altitude of 190 m a.s.l.

Podunajská pahorkatina (hills) and its geomorphological sub-units Nitrianska pahorkatina (hills) and Nitrianska niva (plain) are dominated by slightly wavy relief and are formed mostly by Quaternary loess, fluvial and deluvial sediments (Pristaš et al. 2000). The geological bedrock of the Strážovské vrchy (mountain) is formed by Paleozoic migmatites, gneiss, paragneiss and granites and Mesozoic rocks such as quartzite, limestone and dolomite (Maheľ et al. 1981).

The research area lies in temperate climate zone and average annual rainfall are approximately 700-800 mm/year.

The Radiša basin is included in the following administrative units: Western Slovakia (NUTS II), Trenčín Region (NUTS III) and Bánovce nad Bebravou District (NUTS IV). Altogether, six municipalities are located in the research area: Kšinná, Žitná-Radiša, Omastiná, Uhrovské Podhradie, Uhrovec, Horné Naštice and part of the town of Bánovce nad Bebravou.

Most of the population is concentrated in the Bánovce nad Bebravou town. As of December 31, 2018, the Bánovce nad Bebravou town had 18,082 inhabitants. The population of the rest of the municipalities represents 14% of the total population in the research area. The largest rural municipality is Uhrovec with 1511 inhabitants while the smallest municipality is Omastiná with 36 inhabitants (Statistical Office of the Slovak Republic, 2018).

DATA AND METHODS

In order to achieve the aim of the paper, several methods, different input data and specialized software were applied.

Digital elevation model (DEM)

As a basis for the creation of DEM, the Basic Map of the Slovak Republic at a scale of 1:10,000 with the contour interval of 2 m was used. Subsequently, Topo to Raster interpolation method in ArcGIS software was applied to create the DEM. This method is designed, especially, for creating hydrologically correct DEMs (Hutchinson, 1988). Different types of vector data can be used for the Topo to Raster interpolation method – in this case the input data was contours, elevation points, wa-

tercourses and water bodies. The spatial resolution of the DEM was set to 10x10 m. This pixel size was chosen in order that the value is between the mean and lowest value of contours distance, as suggested by Hengl (2006).

The created DEM was used to perform the calculation of flow accumulation raster using the Hydrology Tools in ArcGIS software. The flow accumulation raster then enters the computation of another surface runoff characteristics, such as depth and volume.

Soil texture and determination of hydrological soil groups

The source data for digitizing soil texture types and their representation in the research area was obtained from the map portals and WMS services of National Agricultural and Food Centre/Soil Science and Conservation Research Institute (VÚPOP) in Bratislava and National Forest Centre (NLC) in Zvolen.

According to the infiltration and drainage characteristics of soils (Chow, 1964), the soil texture types can be generally classified into four hydrological soil groups. However, only three hydrological soil groups were identified in the research area based on the map of soil texture types.

Group B – soils having moderate infiltration rates when thoroughly wetted and a moderate rate of water transmission was assigned to loamy-sand, sandy-loam and loam soil texture types. Group C – soils having low infiltration rates when thoroughly wetted and a low rate of water transmission was assigned to clay-loam soil texture type. Soils in the built-up areas were classified into the group D which is characterized by soils having very low infiltration rates when thoroughly wetter and a very low rate of water transmission.

Land use analysis and interpretation

As for the identification and interpretation of land use categories in the research area, the following aerial images (orthophotos) were used:

- Black-and-white aerial images from 1949 provided by the Topographic institute Banská Bystrica; original scale: 1:25,000; pixel size: 50 cm.
- True color orthophotos from 2017 provided by the Geodetic and Cartographic Institute (GKÚ) Bratislava and National Forest Centre (NLC) in Zvolen; original scale: 1:5,000; pixel size: 25 cm.

The digitization of land use categories was performed manually by the so-called "on screen" method in ArcGIS software at a scale of 1:2,000. The minimum mapping unit (MMU) for the identification and digitization of land use categories was set to 100 m^2. Moreover, the size and share of land use categories on the basin area was quantified.

Maximum daily rainfall estimation using statistical methods

The estimation of maximum daily rainfall with different return periods was based on the set of annual maxima of daily rainfall for 35 years (1981-2015) which were recorded at the Uhrovec rain gauge station, which is localized in Fig. 1 – geographical coordinates: 48°44'44"N latitude, 18°20'29"E longitude; elevation: 193 m a.s.l.

The empirical curve was constructed based on the recorded rainfall data. In order to calculate the estimations of maximum daily rainfall with T-year return periods, three theoretical curves were constructed: Pearson type III distribution, log-normal distribution and Gumbel distribution. As for the estimation of their parameters, two methods were applied: method of moments and method of quantiles.

Application of the SCS-CN method and computation of surface runoff characteristics

The determination of curve numbers is based on the following tasks:

- Definition of hydrological soil groups in the basin,
- Selection of soil moisture conditions expressed by the Antecedent Moisture Condition (AMC),
- Definition of hydrological characteristics of land use categories and their respective curve numbers.

According to Chow (1964), the Antecedent Moisture Condition (AMC) index is expressed as the antecedent moisture content in the soil five days prior to the beginning of the studied rainfall-runoff event. In this study, the AMC III and average conditions were selected. The reason is that only the highest 1-day rainfall in the period 1981-2015 represents 65.3 mm which is more than the defined value of 53< mm (i.e. total rain in previous five days) for the AMC III, as suggested by Chow (1964).

The curve numbers were defined by the combination of the official CN tables (Chow, 1964), map of hydrological soil groups and maps of land use categories (Table 1). Based on these inputs, the CN grid was computed with the use of the HEC-GeoHMS extension for ArcGIS software.

It is well-known that the surface runoff occurs after a certain loss which is characterized as the summation of interception, surface retention and infiltration. This loss is defined as the initial abstraction. Based on the experimental measurements, its size was estimated to 20% of the potential retention ($I_a = 0.2S$) and this value is recommended to be used when applying the SCS-CN method (Cronshey et al. 1986). Using the raster calculator tool in ArcGIS software, the potential retention

capacity of the basin was calculated. The following equation was used for defining the potential retention capacity (*S*):

$$S = 25.4 \left(\frac{1000}{CN} - 10 \right)$$

where *CN* is the curve numbers in the research area.

Table 1 Curve numbers for different land use categories in the research area

Land use category (LUC)	Hydrological soil group		
	B	C	D
Forest	55	70	77
Glade	66	77	83
Grassland	58	71	78
Gardening area	65	76	82
Arable land	75	83	87
Watercourse and water body	100	100	100
Built-up area	74	82	86
Quarry	85	89	91
Road (maintained)	84	90	92
Railway	84	90	92

According to Cronshey et al. (1986), the surface runoff depth (*Q*) can be calculated with the use of the following equation:

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

where *S* is the potential retention of the basin and *P* is the maximum daily rainfall with the selected T-year return period. In this study, the maximum daily rainfall with 100-year return period, which was calculated applying the log-normal distribution (method of moments), was chosen and the value of 64.38 mm was used in this equation.

Contributing areas (*Ca*) in the basin is another surface runoff characteristics which was calculated. In this parameter, each cell is inserted the number of connected cells in the direction of flow above this cell and their size is calculated. To calculate contributing areas (*Ca*), the following equation was applied:

$$C_a = AR \, x \, CS \, (m^2) \, / \, 1000000$$

where *AR* is the accumulation raster, which was calculated based on the DEM, and *CS* is the selected cell size (pixel) with the value of 100 m^2 (10x10 m).

Based on the previous calculations, the surface runoff volume (*V*) was determined using this equation:

$$V = Q \, x \, C_a \, x \, 1000$$

where *Q* is the surface runoff depth and *Ca* is the contributing areas.

RESULTS

By performing the methods, the below described results were achieved.

DEM (hypsometry), soils and land use

As for the hypsometry of the research area (Fig. 2), the highest share was recorded by elevations in the interval from 300 to 400 m a.s.l. (23.85% out of the basin area) which is followed by the interval from 400 to 500 m a.s.l. (19.75% out of the basin area) and interval from 200 to 300 m a.s.l. (19.00% out of the basin area). On the other hand, the equally lowest share (1.24% out of the basin area) was recorded by the hypsometric intervals <200 m a.s.l. and 900< m a.s.l.

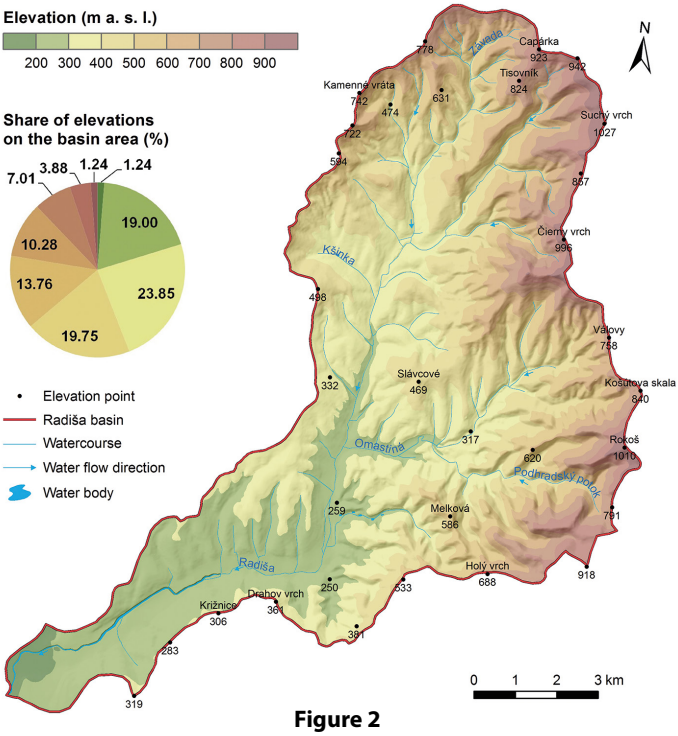

Figure 2
Hypsometry in the research area
Source: Basic Map of the Slovak Republic 1:10,000 - Geodetic and Cartographic Institute Bratislava

The resulting soil map contains four soil texture types: loamy-sand (0.11% out of the basin area), sandy-loam (43.35% out of the basin area), loam (46.14% out of the basin area) and clay-loam (5.73% out of the basin area) (Fig. 3). As for the hydrological soil groups, the highest share was recorded by the hydrological soil group B (89.24% out of the basin area). The share of the hydrological soil group C is 5.73% and the share of hydrological soil group D is 5.03% (Fig. 3).

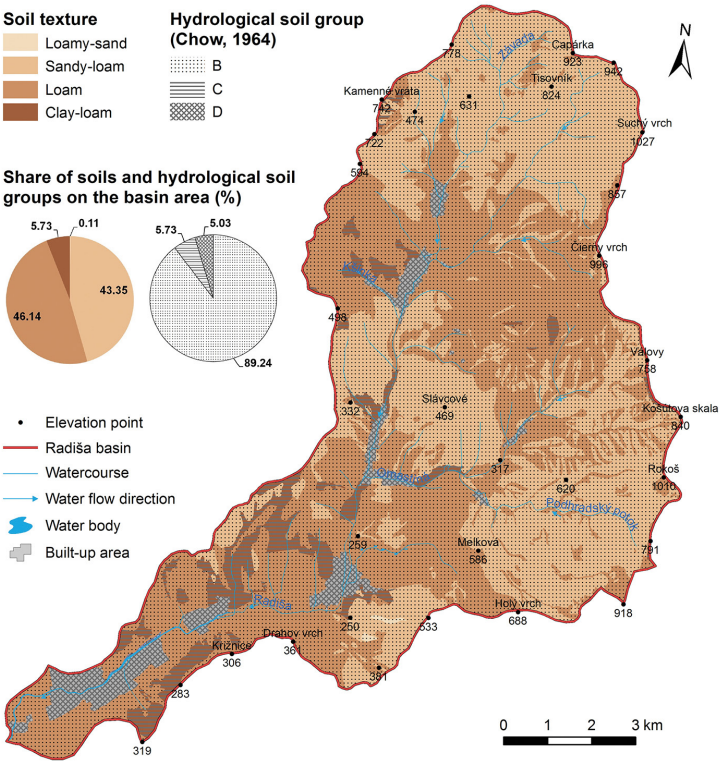

Figure 3

Soils texture types and hydrological soil groups in the research area

Source: National Agricultural and Food Centre/Soil Science and Conservation Research Institute (VÚPOP) in Bratislava; National Forest Centre (NLC) in Zvolen

The resulting land use maps contain nine (year 1949) and ten (year 2017) land use categories (Fig. 4). As can be seen in Fig. 4, arable land decreased the most by more than half (by 15.62%) during the period 1949-2017. As a result of decreased interest in soil cultivation, part of the arable land was naturally subsided

by meadows and grasslands which share increased by 2.88%. The highest share in each studied year was recorded by forests, particularly, 62.98% (year 1949) and 67.53% (year 2017). Moreover, the share of forests increased by 4.55% during the studied period. The share of glades, which usually accelerate the surface runoff, increased by 3.45%. Due to urbanization, industrialization processes and population increase, the built-up areas increased by 3.05%, which is more than half compared to the year 1949. The expansion of the settlement structure initiated the construction and expansion of local and forest roads which share also increased by more than half (by 1.14%).

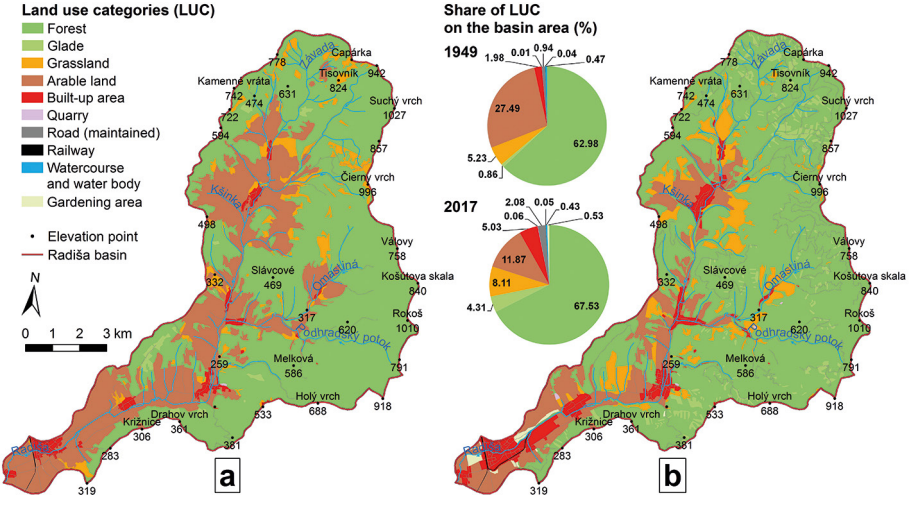

Figure 4
Land use in the research area: a - year 1949, b - year 2017
Source: Topographic institute Banská Bystrica; © GKÚ, NLC; r.2017

Maximum daily rainfall

The resulting probability values of three theoretical curves (Fig. 5) were compared with the empirical curve of probability and the optimal agreement between them was determined i.e. the most suitable theoretical distribution for the determination of T-year maximum daily rainfall from a given set of values was chosen. In this case, it is the log-normal distribution where the parameters were estimated by the method of moments. The value of maximum daily rainfall with 100-year return period for this distribution is 64.38 mm.

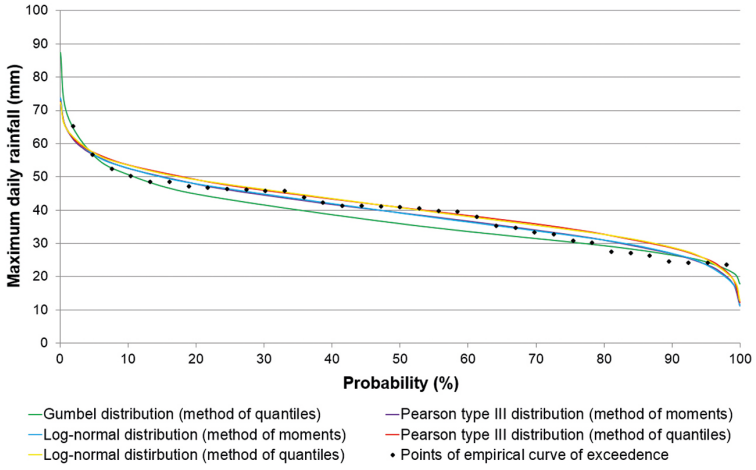

Figure 5
Empirical and theoretical curves of probability
Source: Slovak Hydrometeorological Institute in Bratislava

Curve numbers

The computed curve numbers were classified into 3 intervals based on their runoff potential (Fig. 6).

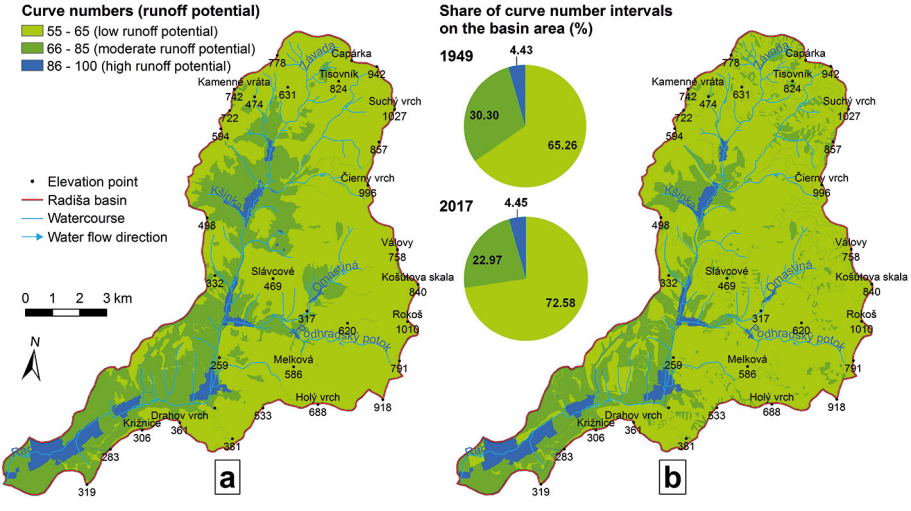

Figure 6
Curve numbers (runoff potential) in the research area: a - year 1949, b - year 2017
Source: own processing

The high runoff potential is characterized by 86-100 curve number interval which share on the basin area was almost the same in the studied years (4.43% in 1949 and 4.45% in 2017). The low runoff potential, represented by the 55-65 curve number interval, had the biggest share in both years (65.26% in 1949 and 72.58% in 2017) and this category increased by 7.32%. This can be interpreted by the increase in forest and grassland areas during the studied period and thus having better effect on water retention and infiltration. On the other hand, the 66-85 curve number interval (moderate runoff potential) recorded a decrease by 7.33% when comparing the years 1949 and 2017.

Surface runoff depth

The resulting surface runoff depth ranges from 2.3 to 64.4 mm depending on the retention capacity of different surfaces (Fig. 7).

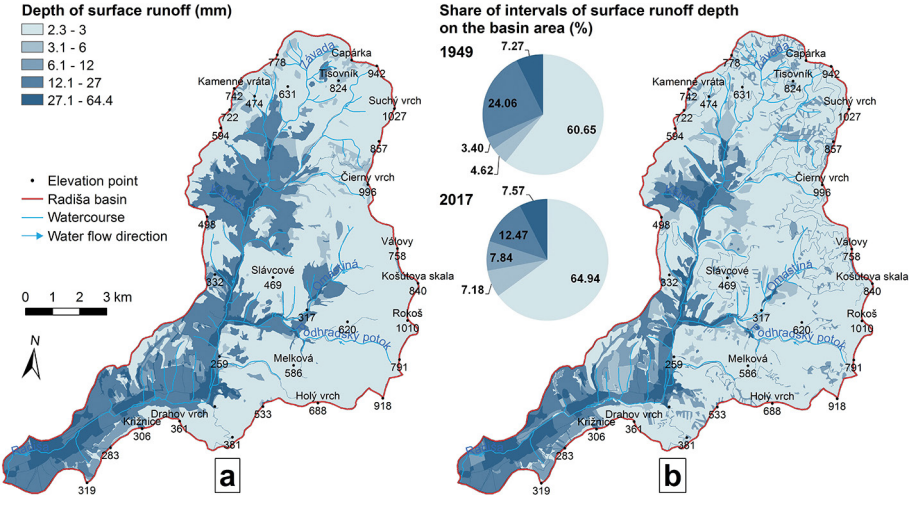

Figure 7
Surface runoff depth in the research area: a - year 1949, b - year 2017
Source: own processing

The lowest values in the 2.3-3 mm interval recorded an increase by 4.29% covering most of the basin area in both studied years (60.65% in 1949 and 64.94% in 2017). The areas with the lowest values of runoff depth more or less correspond to the forested area with high potential of water interception and having predominantly sandy-loam or loam soil texture with better infiltration rates. The most exposed to surface runoff (as well as to potential flooding) are built-up areas which is also documented by high values of runoff depth (27.1-64.4 mm interval) which

share on the basin area was approximately the same in both studied years (7.27% in 1949 and 7.57% in 2017). Furthermore, the runoff depth interval of 12.1-27 mm mostly corresponds to arable land which may also have lower potential of water interception especially when being improperly cultivated. The other two intervals of runoff depth recorded and increase by 2.56% (3.1-6 mm interval) and by 4.44% (6.1-12 mm interval).

Surface runoff volume

This surface runoff characteristics provides information on runoff volume (m^3) which would be formed on the surface of each cell. The runoff volume in the resulting raster (Fig. 8) was divided into seven intervals. The highest share can be seen in the first interval of runoff volume (<1 m^3) in both years (23.69% in 1949 and 25.48% in 2017). These areas mostly correspond to the mountain ridges. Moreover, high share of runoff volume was recorded also in 2.1-5 m^3 interval in both years (23.09% in 1949 and 24.86% in 2017). On the other hand, the last two intervals of runoff volume correspond mostly to river valleys or areas with moderate or high runoff potential. Their share on the basin area decreased during the studied years by 1.95% (20.1-50 m^3 interval) and by 1.05% (50.1< m^3 interval).

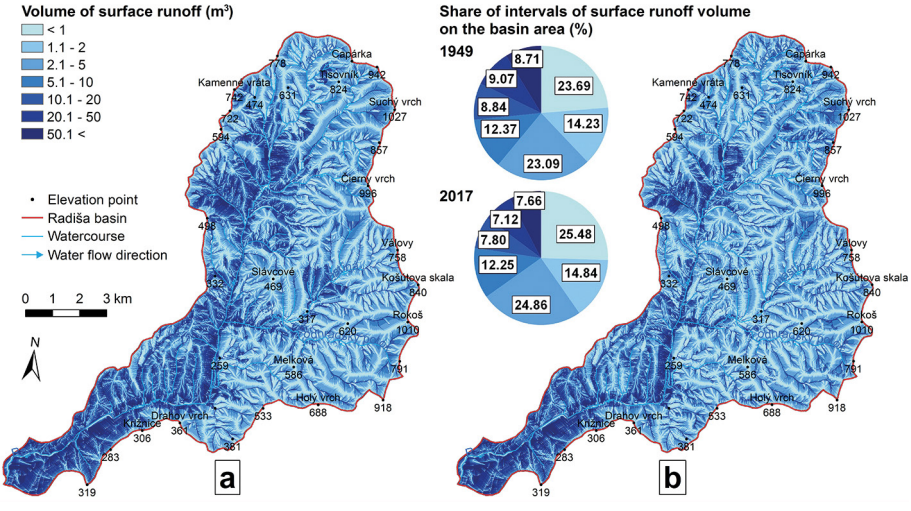

Figure 8
Surface runoff volume in the research area: a - year 1949, b - year 2017
Source: own processing

DISCUSSION

In this section, possible limitations and sources of uncertainty to the achieved results and presented methods are addressed.

The first point regards the accuracy of input data for the performed methods, which plays an essential role in achieving accurate results. In particular, it is the quality of DEM which is crucial for the process of surface runoff modeling. In case of large-scale maps (such as topographic map at a scale of 1:10,000 which was used in this study) for DEM creation, the possible source of uncertainty arises from its generalization. However, when comparing the contour-based DEM from this study and satellite-based DEMs, such as ASTER GDEM (30 m resolution) or SRTM (90 m resolution), the satellite-based DEMs have usually lower spatial resolution. For that reason, they are not so appropriate for the local spatial scale studies focused on detailed runoff modelling where higher spatial resolutions are necessary, as suggested by Šúri et al. (2003). In order to improve the accuracy of results, the best choice would be to use photogrammetrical or Light Detection and Ranging (LiDAR) data which are more accurate and provide the possibility to create high-resolution DEMs, but their acquisition is costly (Sanders 2007).

Regarding the estimation of maximum daily rainfall with T-year return periods using recorded rainfall data and statistical methods, there are several uncertainties which may affect the achieved results. One of the uncertainties may arise from the quality of observed rainfall data. The set of direct observations should be uninterrupted, homogeneous and longer than 20 years according to Makeľ et al. (2003), which was fulfilled in this study. However, Solín and Martinčáková (2007) suggest that a reliable estimation of maximum daily rainfall with 100-year return period for a rain gauge station would require 500-year long observation data. Obviously, none of the rain gauge stations in Slovakia meets this condition. For that reason, the use of statistical methods is inevitable. However, this brings the statistical uncertainty which is connected, for example, with the choice of theoretical curve of probability, method for parameters estimation or deviations resulting from the length of observation data. For that reason, as suggested by Mitková et al. (2004), several types of theoretical distributions and methods for parameters estimation should be used in order to choose the theoretical curve which best balances the empirical values.

With regard to the SCS-CN method for estimating surface runoff, the obtained curve numbers vary with different land use categories. Therefore, land use plays an essential role in affecting and determining the runoff depth/volume in a particular basin. In this respect, the limitation can be seen in the use of manual (sort of simple and subjective) interpretation of land use categories in GIS based on aerial images from the studied years. However, due to aerial images having different original scale, pixel resolution and color, it was not possible to use more sophisticated

and less time consuming land use mapping and classification techniques, such as object-based or pixel-based methods (Lechner et al. 2012). Moreover, it was more difficult to manually interpret the land use categories from the 1949 aerial image than from the newer 2017 orthophoto. The reason is that the older aerial image has lower resolution and worse scale (1:25,000) because it was taken from higher altitude and in black-and-white color.

The results achieved in this study support the findings of Dang and Kumar (2017) who also concluded that higher the curve numbers, the higher the runoff i.e. the increase in impervious areas leads to growing runoff depth and volume which may potentially induce flood situations. In addition, the results suggest that attention should be focused, especially, on the protection of built-up areas where high values of runoff depth and volume occur. This was also confirmed by Petroselli et al. (2019) who studied the impact of different hydrologic and hydraulic approaches on flood mapping for the Uhrovec cross section.

The last comment questions the use of more advanced hydrological (rainfall-runoff) models (such as MIKE-SHE) instead of using solely GIS tools for surface runoff modeling. In this regard, it has to be stated that each hydrological model has certain uncertainties and limitations, either in data input or calibration techniques, which was also stressed, for example, by Moretti and Montanari (2008). Moreover, hydrological models are usually more demanding for data input or computational time as well as some of them are less affordable. On the other hand, we tried to justify rather straightforward and less demanding methods for surface runoff estimation, which are based on GIS and remote sensing data.

CONCLUSIONS

The research area was represented by a small basin where the runoff is affected, especially, by the way the land is used. The change in land use during the studied period of 68 years is evident in the share of land use categories. The share of arable land recorded the most significant decrease (by 15.62%). On the other hand, the share of forests increased by 4.55%, glades by 3.45% and built-up areas by 3.05%. This mostly positive land use change in terms of surface runoff, such as increase in forest areas and decrease in arable land, from 1949 to 2017 influenced the results of modeling which point to the fact that the risk of surface runoff decreased in the research area, as evidenced also by the comparison of runoff depth and volume between the studied years.

The SCS-CN method, which was applied in GIS environment, proved its efficiency since the computation and spatial modeling of runoff characteristics revealed vulnerable areas where the exposure to floods or soil erosion is enhanced by high surface runoff depth and volume. These areas also correspond to the areas with an existing and potential flood risk defined in the updated preliminary flood risk as-

sessment (Ministry of Environment of the Slovak Republic, 2018). The results of this study can be useful especially for integrated river basin (flood risk) management and planning. Moreover, the presented runoff maps are considered suitable input variables for assessing flood potential (susceptibility) in the basin and our future research will be directed also towards this issue. Overall, an attempt was made in this study to contribute to the issue of surface runoff estimation and assessment using rather straightforward GIS-based methods which could be simply used and verified in other similar small basins.

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REFERENCES

AGARWAL, R., GARG, P.K., GARG, R.D. (2013). Remote Sensing and GIS Based Approach for Identification of Artificial Recharge Sites. *Water Resources Management*, 27, 7, 2671-2689.

ALI, M., KHAN, S.J., ASLAM, I., KHAN, Z. (2011). Simulation of the impacts of land-use change on surface runoff of Lai Nullah Basin in Islamabad, Pakistan. *Landscape and Urban Planning*, 102, 4, 271-279.

ANTAL, J. (1996). *Agrohydrológia*. Nitra: VES VŠP.

ASHRAF, M., KAHLOWN, M.A., ASHFAQ, A. (2007). Impact of small dams on agriculture and groundwater development: A case study from Pakistan. *Agricultural Water Management*, 92, 1-2, 90-98.

BOLTIŽIAR, M., OLAH, B., GALLAY, I., GALLAYOVÁ, Z. (2016). Transformation of the Slovak cultural landscape and its recent trends. In Halada, Ľ., Bača, A., Boltižiar, M., eds., *Landscape and landscape ecology*: proceedings of the 17th International Symposium on Landscape Ecology. Bratislava: Institute of Landscape Ecology SAS, pp. 57-67.

BRATH, A., MONTANARI, A., MORETTI, G. (2006). Assessing the effect on flood frequency of land use change via hydrological simulation (with uncertainty). *Journal of Hydrology*, 324, 141-153.

BRONSTERT, A., CARRERA, J., KABAT, P., LÜTKEMEIER, S. (eds.). (2005). *Coupled Models for the Hydrological Cycle. Integrating Atmosphere, Biosphere and Pedosphere*. Berlin, Heidelberg: Springer-Verlag.

CAMORANI, G, CASTELLARIN, A, BRATH, A. (2005). Effects of land-use changes on the hydrologic response of reclamation systems. *Physics and Chemistry of the Earth*, 30, 8-10, 561-574.

CHEN, X, XU, Y., YIN, Y. (2009). Impact of land use change scenarios on storm-runoff generation in Xitiaoxi basin, China. *Quaternary International*, 208, 1, 1-8.

CHOW, V.T. (1964). *Handbook of Applied Hydrology*. New York: McGraw-Hill Book Company.

COSTACHE, R., FONTANINE, I., CORODESCU, E. (2014). Assessment of surface runoff depth changes in Sărătel River basin, Romania using GIS techniques. *Central European Journal of Geosciences*, 6, 3, 363-372.

CRONSHEY, R., McCUEN, R.H., MILLER, N., RAWLS, W., ROBBINS, S., WOODWARD, D. (1986). *Urban Hydrology for Small Watersheds (TR-55)*. Washington: Natural Resources Conservation Service.

DANG, A.T.N., KUMAR, L. (2017). Application of remote sensing and GIS-based hydrological modelling for flood risk analysis: a case study of District 8, Ho Chi Minh city, Vietnam. *Geomatics, Natural Hazards and Risk*, 8, 2, 1792-1811.

FOHRER, N., HAVERKAMP, S., ECKHARDT, K., FREDE, H.G. (2001). Hydrologic response to land use changes on the catchment scale. *Physics and Chemistry of the Earth*, 26, 7-8, 577-582.

GALLAY, I. (2010). Využitie modelovania povrchového odtoku pri hodnotení zraniteľnosti krajiny vo vzťahu k vybraným prírodným hrozbám. *Geografický časopis*, 62, 2, 109-125.

GRIMALDI, S., PETROSELLI, A., ROMANO, N. (2013). Curve-number/Green-Ampt mixed procedure for streamflow predictions in ungauged basins: parameter sensitivity analysis. *Hydrological Processes*, 27, 8, 1265-1275.

HENGL, T. (2006). Finding the right pixel. *Computers & Geosciences*, 32, 9, 1283-1298.

HJELMFELT, A.T. Jr. (1991). Investigation of curve number procedure. *Journal of Hydraulic Engineering*, 117, 6, 725-737.

HOLMAN, I.P., HOLLIS, J.M., BRAMLEY, M.E., THOMPSON, T.R.E. (2003). The contribution of soil structural degradation to catchment flooding: a preliminary investigation of the 2000 floods in England and Wales. *Hydrology and Earth System Sciences*, 7, 755-766.

HUTCHINSON, M.F. (1988). Calculation of hydrologically sound digital elevation models. In *Third International Symposium on Spatial Data Handling*. Sydney: International Geographical Union, pp. 117-133.

IVANOVÁ, M., MICHAELI, E., BOLTIŽIAR, M., FAZEKAŠOVÁ, D. (2013). The analysis of changes ecological stability of landscape in the contrasting region of the mountain range and a lowland. In *Ecology, Economics, Education and Legislation*: 13th International Multidisciplinary Scientific Geoconference SGEM 2013, Albena, Bulgaria, pp. 925-938.

IZAKOVIČOVÁ, Z., MEDERLY, P., PETROVIČ, F. (2017). Long-Term Land Use Changes Driven by Urbanisation and Their Environmental Effects (Example of Trnava City, Slovakia). *Sustainability*, 9, 9, 1553.

JAKUBCOVÁ, A., GREŽO, H., HREŠKOVÁ, A., PETROVIČ, F. (2016). Impacts of Flooding on the Quality of Life in Rural Regions of Southern Slovakia. *Applied Research in Quality of Life*, 11, 1, 221-237.

JANEČEK, M., DOSTÁL, T., DUFKOVÁ KOZLOVSKY, J., DUMBROVSKÝ, M., HŮLA, J., KADLEC, V., KONEČNÁ, J., KOVÁŘ, P., KRÁSA, J., KUBÁTOVÁ, E., KOBZOVÁ, D., KUDRNÁČOVÁ, M., NOVOTNÝ, I., PODHRÁZSKÁ, J., PRAŽAN, J., PROCHÁZKOVÁ, E., STŘEDOVÁ, H., TOMAN, F., VOPRAVIL, J., VLASÁK, J. (2002). *Ochrana zemědělské půdy před erozí*. Praha: ISV.

JENÍČEK, M. (2007). Modelování vlivu krajinného pokryvu na srážko-odtokové procesy metodou CN křivek. In *Povodně a změny v krajině*. Praha: PřF UK, pp. 41-50.

JUN, L., CHANGMING, L., ZHONGGEN, W., KANG, L. (2015). Two universal runoff yield models: SCS versus LCM. *Journal of Geographical Sciences*, 25, 3, 311-318.

KADAM, K.A., KALE, S.S., PANDE, N.N., PAWAR, N.J., SANKHUA, R.N. (2012). Identifying potential rainwater harvesting sites of a semi-arid, Basaltic Region of Western India, using SCS–CN method. *Water Resources Management*, 26, 9, 2537-2554.

KING, K.W., ARNOLD, J.G., BINGNER, R.L. (1999). Comparison of Green-Ampt and curve number methods on Goodwin Creek Watershed using SWAT. *Transactions of the ASAE*, 42, 4, 919-925.

LAMBIN, E.F., TURNER, B.L., GEIST, H.J., AGBOLA, S.B., ANGELSEN, A., BRUCE, J.W., COOMES, O.T., DIRZO, R., FISCHER, G., FOLKE, C., GEORGE, P.S., HOMEWOOD, K., IMBERNON, J., LEEMANS, R., LI, X., MORAN, E.F., MORTIMORE, M., RAMAKRISHNAN, P.S., RICHARDS, J.F., SKÅNES, H., STEFFEN, W., STONE, G.D., SVEDIN, U., VELDKAMP, T.A., VOGEL, C., XU, J. (2001). The causes of land-use and land-cover change: moving beyond the myths. *Global Environmental Change*, 11, 4, 261-269.

LANGHAMMER, J., VILÍMEK, V. (2008). Landscape changes as a factor affecting the course and consequences of extreme floods in the Otava river basin, Czech Republic. *Environmental Monitoring and Assessment*, 144, 1-3, 53-66.

LECHNER, A.M., LANGFORD, W.T., BEKESSY, S.A., JONES, S.D. (2012). Are landscape ecologists addressing uncertainty in their remote sensing data? *Landscape Ecology*, 27, 9, 1249-1261.

LIESKOVSKÝ, J., KAIM, D., BALÁZS, P., BOLTIŽIAR, M., CHMIEL, M., GRABSKA, E., KIRÁLY, G., KONKOLY-GYURÓ, E., KOZAK, J., ANTALOVÁ, K., KUCHMA, T., MACKOVČIN, P., MOJSES, M., MUNTEANU, C., OSTAFIN, K., OSTAPOWICZ, K., SHANDRA, O., STYCH, P., RADELOFF, V.C. (2018). Historical land use dataset of the Carpathian region (1819–1980). *Journal of Maps*, 14, 2, 644-651.

LU, D., MAUSEL, P., BRONDÍZIO, E., MORAN, E. (2004). Change Detection Techniques. *International Journal of Remote Sensing*, 25, 12, 2365-2407.

MAHEĽ, M., KAHAN, Š., GROSS, P., VAŠKOVSKÝ, I., SALAJ, J. (1981). *Geologická mapa Strážovských vrchov 1:50 000*. Bratislava: Geologický ústav Dionýza Štúra.

MAKEĽ, M., TURBEK, J., PODOLINSKÁ, J., ŠKODA, P. (2003). *Stanovenie N-ročných prietokov a N-ročných prietokových vĺn na väčších tokoch (Odvetvová technická norma MŽP SR 3112-1:03)*].

MAZÚR, E., LUKNIŠ, M. (1986). *Geomorfologické členenie SSR a ČSSR. Časť Slovensko*. Bratislava: Slovenská kartografia.

McCUEN, R.H. (1982). *A Guide to Hydrologic Analysis Using SCS Methods*. New Jersey: Prentice-Hall.

MINISTRY OF ENVIRONMENT OF THE SLOVAK REPUBLIC, (2018). Predbežné hodnotenie povodňového rizika v Slovenskej republike – aktualizácia 2018. Retrieved from: http://www.minzp.sk/files/sekcia-vod/hodnotenie-rizika-2018/phpr_sr2018.pdf. Accessed on 1 June 2019.

MISHRA, S.K., SINGH, V.P. (2003). *Soil Conservation Service Curve Number (SCS-CN) Methodology*. Dodrecht: Kluwer Academic Publishers.

MISHRA, S.K., SINGH, V.P. (2004). Long-term hydrological simulation based on the soil conservation service curve number. *Hydrological Processes*, 18, 7, 1291-1313.

MITKOVÁ, V., KOHNOVÁ, S., PEKÁROVÁ, P. (2004). Porovnanie odhadov maximálnych sezónnych prietokov v profile Dunaj – Bratislava. *Acta Hydrologica Slovaca*, 5, 1, 34-41.

MŁYŃSKI, D., PETROSELLI, A., WAŁEGA, A. (2018). Flood frequency analysis by an event-based rainfall-runoff model in selected catchments of southern Poland. *Soil and Water Research*, 13, 3, 170-176.

MOGHADASI, N., KARIMIRAD, I., SHEIKH, V. (2017). Assessing the impact of land use changes and rangeland and forest degradation on flooding using watershed modeling system. *Journal of Rangeland Science*, 7, 93-106.

MORETTI, G., MONTANARI, A. (2008). Inferring the flood frequency distribution for an ungauged basin using a spatially distributed rainfall-runoff model. *Hydrology and Earth System Sciences*, 12, 1141-1152.

MUNTEANU, C., KUEMMERLE, T., BOLTIŽIAR, M., LIESKOVSKY, J., MOJSES M., KAIM, D., KONKOLY-GYURO, E., MACKOVČIN, P., MÜLLER, D., OSTAPOWICZ, K., RADELOFF, V.C. (2017). Nineteenth- century land-use legacies affect contemporary land abandonment in the Carpathians. *Regional Environmental Change*, 11, 8, 2209-2222.

NAGARAJAN, M., BASIL, G. (2014). Remote sensing- and GIS-based runoff modeling with the effect of land-use changes (a case study of Cochin corporation). *Natural Hazards*, 73, 3, 2023-2039.

PASÁK, V., JANEČEK, M, ŠABATA, M. (1983). *Ochrana zemědělské půdy před erozí*. Praha: SZN.

PATIL, J.P., SARANGI, A., SINGH, O.P., SINGH, A.K., AHMAD, T. (2008). Development of a GIS Interface for Estimation of Runoff from Watersheds. *Water Resources Management*, 22, 9, 1221-1239.

PETROSELLI, A., GRIMALDI, S. (2018). Design hydrograph estimation in small and fully ungauged basins: a preliminary assessment of the EBA4SUB framework. *Journal of Flood Risk Management*, 11, S1, 197-210.

PETROSELLI, A., VOJTEK, M., VOJTEKOVÁ, J. (2019). Flood mapping in small ungauged basins: A comparison of different approaches for two case studies in Slovakia. *Hydrology Research*, 50, 1, 379-392.

PETROVIČ, F., STRÁNOVSKÝ, P., MUCHOVÁ, Z., FALŤAN, V., SKOKANOVÁ, H., HAVLÍČEK, M., GÁBOR, M., ŠPULEROVÁ, J. (2017). Landscape-ecological optimization of hydric potential in foothills region with dispersed settlements – a case study of Nová Bošáca, Slovakia. *Applied Ecology and Environmental Research*, 15, 1, 379-400.

PONCE, V.M., HAWKINS, R.H. (1996). Runoff Curve Number: Has It Reached Maturity?. *Journal of Hydrologic Engineering*, 1, 1, 11-19.

PRISTAŠ, J., ELEČKO, M., MAGLAY, J., FORDINÁL, K., ŠIMON, L., GROSS, P., POLÁK, M., HAVRILA, M. IVANIČKA, J., HATÁR, J., VOZÁR, J., MELLO, J., NAGY, A. (2000). *Geologická mapa Podunajskej nížiny – Nitrianskej pahorkatiny 1:50 000*. Bratislava: Geologický ústav Dionýza Štúra.

SANDERS, BF. (2007). Evaluation of on-line DEMs for flood inundation modeling. *Advances in Water Resources*, 30, 8, 1831-1843.

SINGH, A., (1989). Digital Change Detection Techniques Using Remotely Sensed Data. *International Journal of Remote Sensing*, 10, 6, 989-1003.

SOLÍN, Ľ., FERANEC, J., NOVÁČEK, J. (2011). Land Cover Changes in Small Catchments in Slovakia During 1990–2006 and Their Effects on Frequency of Flood Events. *Natural Hazards*, 56, 1, 195-214.

SOLÍN, Ľ., MARTINČÁKOVÁ, M. (2007). Niekoľko poznámok k metodológii tvorby povodňových máp Slovenska. *Geografický časopis*, 59, 2, 287-307.

SOULIS, K.X., DERCAS, N. (2007). Development of a GIS-based spatially distributed continuous hydrological model and its first application. *Water International*, 32, 1, 177-192.

SOULIS, K.X., VALIANTZAS, J.D. (2012). SCS-CN parameter determination using rainfall-runoff data in heterogeneous watersheds. The two-CN system approach. *Hydrology and Earth System Sciences*, 16, 1001-1015.

STATISTICAL OFFICE OF THE SLOVAK REPUBLIC, (2018). DATAcube. Počet obyvateľov podľa pohlavia – obce (ročne). Retrieved from: http://datacube.statistics.sk/. Accessed on 1 June 2019.

ŠÚRI, M., CEBECAUER, T., HOFIERKA, J. (2003). Digitálne modely reliéfu a ich aplikácie v životnom prostredí. *Životné prostredie*, 37, 1, 30-35.

TORMA, S., KOCO, Š., VILČEK, J., ČERMÁK, P. (2019). Nitrogen and phosphorus transport in the soil from the point of view of water pollution. *Folia Geographica*, 61, 1, 143-156.

UNUCKA, J., HOŘÍNKOVÁ. M., ŘÍHOVÁ, V., ADAMEC, M. (2010). Porovnání metod SCS-CN a Green-Ampt pomocí metod citlivostní analýzy na základe změny indexu předchozí srážky. In *XXII sjezd České geografické společnosti*, Ostrava: ČGS, pp. 215-221.

VOJTEK, M. (2018). Analysis and assessment of land cover changes and landscape stability in the Nitra river basin (Slovakia). In *Useful Geography: Transfer from Research to Practice : Proceedings of 25th Central European Conference*. Brno: Masaryk University, pp. 227-236.

VOJTEK, M., VOJTEKOVÁ, J. (2016). GIS-based Approach to Estimate Surface Runoff in Small Catchments: A Case Study. *Quaestiones Geographicae*, 35, 3, 97-116.

YU, B. (1998). Theoretical justification of SCS-CN method for runoff estimation. *Journal of Irrigation Drainage Division*, 124, 6, 306-310.

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CONSUMER BEHAVIOUR OF SENIORS VISITING SHOPPING MALLS: CASE STUDY FROM BRATISLAVA

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Abstract
Seniors represent an important group of consumers for two reasons. The first reason is their specific consumer behaviour, differing from any other generation of consumers. The second reason is their growing number in many countries, including Slovakia. Consequently, increased attention has recently been paid to this group of consumers. The paper aims to evaluate the consumer behaviour of seniors visiting shopping malls in Bratislava (Slovakia) from the spatial context by using GIS tools. The consumer behaviour of seniors (60+) was analysed in terms of the changing distance between the address of residence and shopping mall, in the context of two variables: monthly income and time spent at a shopping mall. The study results show that distance continues to play a significant variable in understanding the consumer behaviour of seniors.

Key words
Seniors, consumer behaviour, shopping malls, Bratislava

INTRODUCTION

Studying the consumer behaviour of the post-productive population may be considered as being of current interest, as in the context of demographic changes we are likely to see an increase in marketing emphasis toward this age group in the near future, with this age group becoming crucial given its growing consumer potential (OECD, 2017), not just in developed countries, but also developing countries. Despite the radically different quantitative dimension of disposable income

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of Slovak pensioners compared to the countries of Western Europe (Michálek and Výbošťok, 2019), the gaping regional differences within the territory (Bratislava) and the rest of Slovakia must also be emphasised (Káčerová and Ondačková, 2015). At the same time it is important to note that in the coming years the share of seniors will grow in proportion to the population due to demographic developments, both in Slovakia as well as in other countries of Central and Eastern Europe. Analyses forecast that within 15 years it will be seniors who will form most consumption in the developed world (McKinsey, 2016). Given the above, the understanding and studying of this group of consumers forming the "silver economy" will attract growing interest of the public and the scientific community (Klimczuk, 2016).

In this context, a specific situation is arising in the post-socialist countries of Central and Eastern Europe, where the absolute increase in seniors will be dramatic and, between regions, greatly differentiated (Káčerová and Ondačková, 2015; Ondáčková et al., 2018). Concurrently, it can be assumed that the different qualities, preferences and perceptions of these seniors, compared to their Western European counterparts, will require special emphasis on their study (Kunc et al., 2013). Will the focus, in the post-socialist countries, turn to senior consumers, as it has in some developed countries today (e.g. Japan)? Against this background, it will be in the interest of retail management, shopping malls and retail chains to modify their strategies in the retail landscape in order to appeal to this growing consumer and unique group of seniors, who to a certain degree remain an ignored market segment. Since research shows that seniors exhibited different qualities (e.g. more time and experience), possibilities and also requirements for goods (Ford et al., 2016), technical assistance or shop environment (Angell et al., 2012; Luck and Benkenstein, 2015), it will be important to adapt shopping malls, which are becoming increasingly popular in Slovakia (CBRE, 2019).

Spatial features, as part of the comprehensive and distinctive consumer behaviour of seniors, represent yet another area that has been the subject of relatively little research in this regard. Despite the relatively little interest in researching the spatial tendencies of this population group in Slovakia, it is necessary to point out the overall importance of such study (Križan et al., 2018; Križan and Lauko, 2014). The reason is precisely the uniqueness of the consumer behaviour of seniors in many aspects, which naturally determines their different spatial behaviour.

OBJECTIVES

The paper aims to provide a spatial analysis of the consumer behaviour in post-productive consumers in selected shopping malls in Bratislava (Slovakia). The shopping malls analysed rank among the most attractive and most visited malls: Aupark, Avion Shopping Park (Avion SP), Bory Mall, Central, Eurovea. The paper focuses on spatial data analysis through geographic information systems (GIS), tak-

ing account of four aspects. The first aspect is the quantitative change in the number of respondents due to the changing address-to-mall distance. Subsequently, it is analysis of the main shopping zones of the respondents for each of the shopping malls analysed. The third aspect examined is an analysis of the links between the address-to-mall distance and respondents' spending at shopping malls. The last aspect is the impact the distance has on the time spent at a shopping mall.

THEORETICAL FRAMEWORK

Consumer behaviour can be characterised as a process that individuals or groups pass through in the selection, purchase, use and disposal of goods, services, ideas or experiences to satisfy their needs and desires (Solomon et al., 2018). Recently, in addition to "traditional" disciplines such as sociology and economics, there has been an increase in the number of scientific disciplines (not just social) looking into consumption and consumers. Such expansion of research is linked to the study of consumer behaviour as a response to changes that result from or are part of globalisation, something that reflects also geography.

The semantic definition of the term 'senior' as well as the age determination is rather problematic. In the retail context, the term 'senior' has many synonyms such as old consumer, retiree, silver surfer, mature consumer and many others (Zniva and Weitzl, 2016). The bottom age limit of seniority can be 55 years (e.g. Kohinoki and Marjanen, 2013), 60 years (e.g. Myers and Lumbers, 2008; United Nations, 2017). The most widely used age limits in this context are the milestones of 55 and 65 years of age, and depending on the study (and its objectives) the bottom limit may range 45 to 69 years of age (Zniva and Weitzl, 2016).

The rapid increase in the population of seniors can be seen long-term throughout the world, including in the Slovak population. These unprecedented demographic changes will have and already have had a number of implications. The outcome is, in particular, the economic and commercial development focused on this growing market segment, also termed the "silver economy", "silver consumers", or "silver market" (Lesáková, 2013; Klimczuk, 2016). Understandably, the growing number of seniors is closely linked to their growing share in the consumer market. Projections indicate that seniors aged 60 or more are expected to annually spend $15 trillion in 2020, generating more than a third of global consumption growth (Dobbs et al., 2016).

Today we see a move toward equal interest among the scientific community's in research into the consumer behaviour of teenagers (Arslan et al., 2010; Spilková and Radová, 2011; Muratore, 2016; Uddin and Khan, 2016; Valaei and Nikhashemi, 2017; Pooler, 2018) and seniors or post-productive consumers (Pettigrew et al., 2005; Myers and Lumbers, 2008; Lesáková, 2013; Tomazelli et al., 2017; Križan et al., 2018). In practice, though, the emphasis remains on toward young consumers (Moschis,

2003), who are often more readable than consumers of an advanced age (Myers and Lumbers, 2008). Against this background, we are analogously witnessing weaker adaptation of products and services in practice in connection to seniors, though the situation in the retail sector is somewhat better (McKinsey, 2016).

The consumer behaviour of seniors cannot be perceived homogeneously and generalisations are hard to reach. The reason for this lies not just in the number of variables characterising a given individual at present, but also in past events linked to such an individual's life, determining his/her current perception (Moschis, 2012). For instance, seniors may be parents, grandparents, great-grandparents, and at the same time be economically active in different ways or not at all, where all these factors hold implications directly or indirectly for their consumer behaviour.

A particular topic of consumer behaviour research is, as indicated in Ahmad (2002), the age or the aging, which must be viewed in this context as multidimensional (biological, psychological, social aging) and not only as a simplified chronological sequence (age measured by years lived). The "cognitive age" is of specific significance (Szmigin and Carrigan, 2000; Myers and Lumbers, 2008). Paradoxically, as shown in the overview study of Zniva and Weitzl (2016), the chronological age dominates despite its explicit limitations. For this reason, the concept of an average consumer requires a careful and critical approach, as it is a greatly simplified concept that does not reflect actual consumer behaviour (Szmigin and Carrigan, 2000; Incardona and Poncibò, 2007; Myers and Lumbers, 2008). Analogously, generalisations working exclusively with the chronological measurement of age require a sensitive approach.

Consumer behaviour in post-socialist countries, such as Slovakia, is characterised by certain peculiarities (e.g. Zagata, 2012; Križan et al., 2015; Bilková et al., 2016). This concerns not just the time lag in the diffusion of trends and gradual efforts to pursue convergence in today's European Union (Ganesh, 1998), which may be seen for instance in the currently rising preference for organic food (Dabija et al., 2018). These are different value properties (Lebedeva et al., 2018), preferences and perceptions (Bilková et al., 2016; Kunc et al., 2013) in contrast to consumers of advanced age, for example in Western Europe, which stem from a different historical development and other aspects of the retail environment (Križan et al., 2018; Kunc and Križan, 2018; Spilková, 2018).

The specifics of the consumer behaviour of seniors are, viewed through the heterogeneity of this demographic group (Myers and Lumbers, 2008), a mystery naturally transpiring also in post-socialist countries with some specific features (Lebedeva et al., 2018). The transformation of the retail sector, which implied changes in consumer behaviour in these countries, also played a role (Spilková, 2012). Angell et al. (2012) emphasises the importance of the shopping environment, shop design, and for a certain fraction of seniors also social interaction with employees or shop customers. On the other hand, Luck and Benkenstein (2015)

found that the overcrowding of shops has a negative impact on the satisfaction of the elderly in connected to the infringed personal space. In reference to the interaction between seniors and shop staff, the competence and approach of employees must be taken into consideration as a relevant variable (Pettigrew et al., 2005). At the same time, older customers usually prefer employees of equal age (Wägar and Lindqvist, 2010). Research to date indicates that seniors are, due to their life experience and relative abundance of time, less prone to the impulsive shopping common among teenagers (Muratore, 2016). The relative abundance of time among older consumers also means different methods of decision-making in shops (McKinsey, 2016). Ford et al. (2016) notes that seniors represent a sensitive consumer segment inadequately considered by producers, which is evident from, for instance, older consumers' interaction or manipulation with packaged goods.

The spatial characteristics of consumer behaviour of the elderly reflect their specific needs manifested in space. The outcome is the involvement of geographers in the interdisciplinary issue of consumer behaviour (Bilková et al., 2016). Consumer behaviour research (of seniors) is usually presented in this context by local case studies (e.g. Marjanen, 1994; Spilková and Hochel, 2008; Bilková and Križan, 2014; Trembošová et al., 2016).

DATA AND METHODS

Primary data for the research was obtained through a questionnaire survey conducted in months of April and May 2017. The analysis concerned post-productive consumers aged 60 years or more at the date of conducting the survey. Respondents (n = 334) were questioned in five shopping malls (Tab.1) of Bratislava (Fig. 1). In addition to the condition linked to the permanent residence in Bratislava, we deducted those respondents whose permanent address location failed to correspond to the concentric zones of the particular shopping malls determined by us.

Table 1 Number of respondents by address–to-mall distance (n = 334)

	2 km	5 km	10 km	15 km	Total
Avion SP	16 (27.12%)	18 (30.51%)	18 (30.51%)	7 (11.86%)	59 (100%)
Aupark	27 (32.93%)	26 (31.71%)	21 (25.61%)	8 (9.76%)	82 (100%)
Bory Mall	6 (9.23%)	12 (18.46%)	33 (50.77%)	14 (21.54%)	65 (100%)
Central	20 (27.78%)	31 (43.06%)	18 (25.00%)	3 (4.17%)	72 (100%)
Eurovea	18 (32.14%)	26 (46.43%)	12 (21.43%)	-	56 (100%)
Total	87 (26.05%)	113 (33.83%)	102 (30.54%)	32 (9.58%)	334 (100%)

Source: *Own calculation*

Of the total number of 334 respondents, 40.5% were men and 59.5% were women. The average age of respondents was 68.9 years, with a median age of 69 years. In terms of the educational structure, the least numerous group was represented by seniors with basic education (3.3%). The most numerous level of education among seniors was secondary education (56.2%), followed by university education (40.5%).

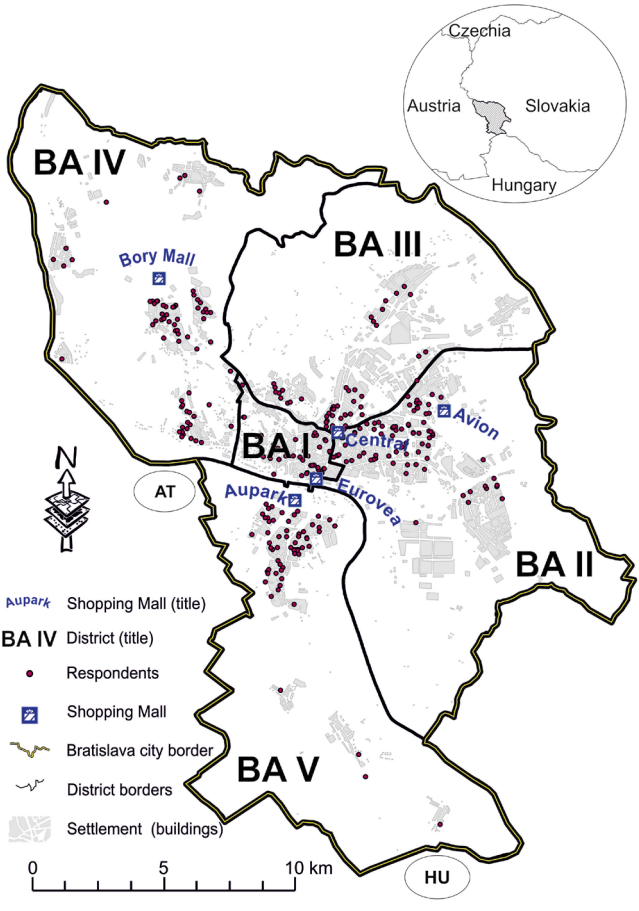

Figure 1
Territorial definition and spatial distribution of respondents
Source: Author's survey, 2017

The questionnaire survey consisted of a broad range of questions, while the paper works with only a few selected attributes such as, primarily, the permanent address location (street and number), the average time spent by respondents at shopping mall, the average monthly income, the share of monthly income spent at

shopping mall, and denomination of the most important factor in choosing a preferred shopping mall.

The data obtained from the questionnaire was geocoded and concentric zones were created for each of the five shopping malls (Fig. 2). Replies were subsequently grouped by the respondent's address location in relation to the shopping mall where the respondent was questioned (Tab.1).

The paper used the questionnaire survey method by using a controlled interview with respondents (Rochovská et al., 2014). The data was processed in the GIS environment, using the spatial analysis with the aid of Kernel density (Tierno et al., 2013) and Multiple Ring Buffer zones (Križan et al., 2018). The purchasing zone analysis is perceived within this paper as a spatial distribution of potential shopping mall consumers. In terms of methodology, this analysis can be performed through Kernel density, which is a function performing a parameter-free estimate of the density of a different variable (Rosenblatt, 1956). In other words, it expresses the relationship between the frequency of occurrence of an element in a particular territory, based on the distance between individual elements in space. Primarily, the elements analysed have the same weighting, but we can define for them any selected weightings. As an example we can state the definition of a greater weighting for population in retirement age whose visit to the pharmacy in question is more likely. Depending on the weighting we define for the elements, this is reflected in the frequency of the given element occurring in the space. Despite several types of nuclear density estimation function (cf. Silverman, 1986), their choice is irrelevant for the survey quality and output analysis according to W. Härdle (1991), as they offer high reliability. The Kernel density calculation can be done in the ArcGIS, using the Kernel Density tool, which is part of the Spatial Analyst tool kit. Its result is a map output showing the different concentration of a given phenomenon in space, which in general may be interpreted in terms of colour intensity, the greater intensity of colour of the territory, the higher the concentration.

Impact of commute distance of seniors

Distance, along with other aspects, is one of the key elements when consumers are choosing a shopping mall (Marjanen, 1994), as confirmed by our survey, where 31.74% of the respondents identified accessibility (or a synonym of the term) as the most important factor in choosing a shopping mall. When analysing the spatial characteristics, it is necessary to consider also the allocation of shopping malls (Fig. 1), where in particular Bory Mall and partially Avion SP feature, in contrast to other malls, the character of a suburban shopping mall, reflected in the specific relationship between the number of respondents and distance (Tab. 1). Above all, this concerns the growing number of visitors in relation to the distance from the Bory Mall. The cause here is likely to be the allocation of the majority consumer base.

On the other hand, in terms of its location, the Eurovea shopping mall is considered part of the historical centre of Bratislava (Križan et al., 2015). Our analysis showed a non-linear relationship between increasing distance and descending number of respondents, with the anomaly of the Bory Mall caused by its very marginal location with regard to Bratislava as well as by other specifics.

Aupark shopping mall reaped the largest share of respondents – residents in its immediate vicinity (relative to the shopping mall) of 0 to 2 km, where the distance of 2 to 5 km included the shopping malls Eurovea, Central, Avion SP, and Bory Mall in the distance of 5 to 10 km (Tab.1). The spatial distribution of respondents per surveyed shopping mall and their location in the framework of the given distance zone is shown in Fig. 2, where the tendencies and distributions in space described above can be observed.

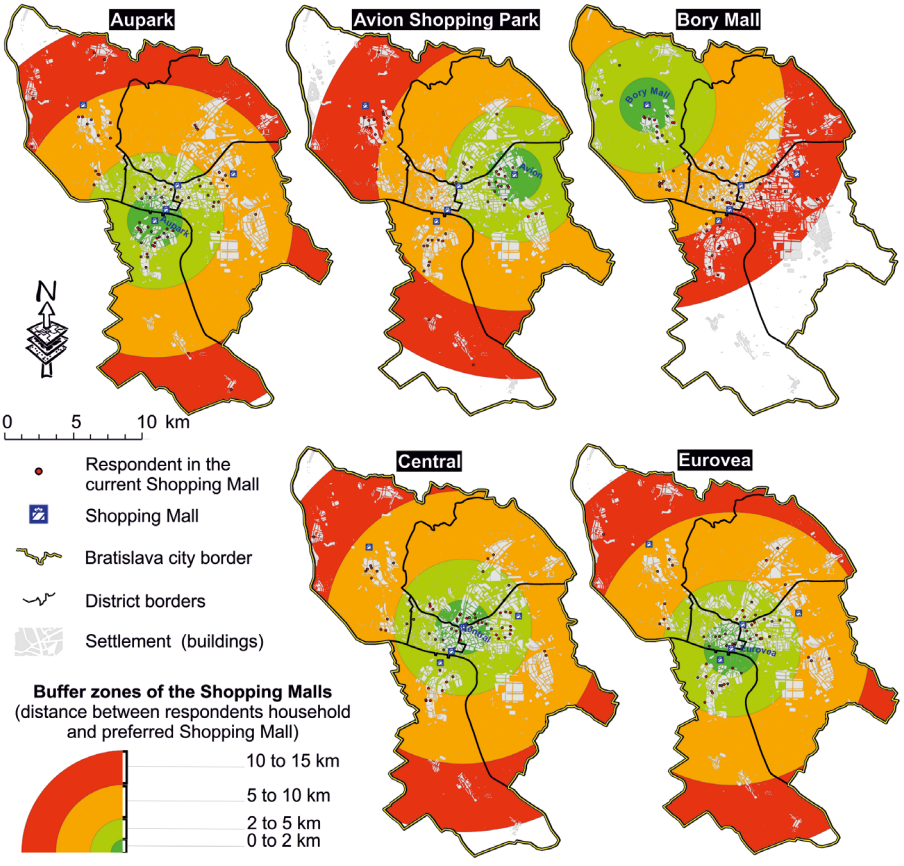

Figure 2
Concentric zones of surveyed shopping malls in Bratislava
Source: Author's survey, 2017

Shopping areas of seniors in Bratislava

When analysing the shopping zones with regard to the shopping malls in question, we assumed representativeness of the survey sample on the basis of which the zones were delimitated, from where the visitors came, for each of the shopping malls in question using the Kernel density tool (Fig. 3).

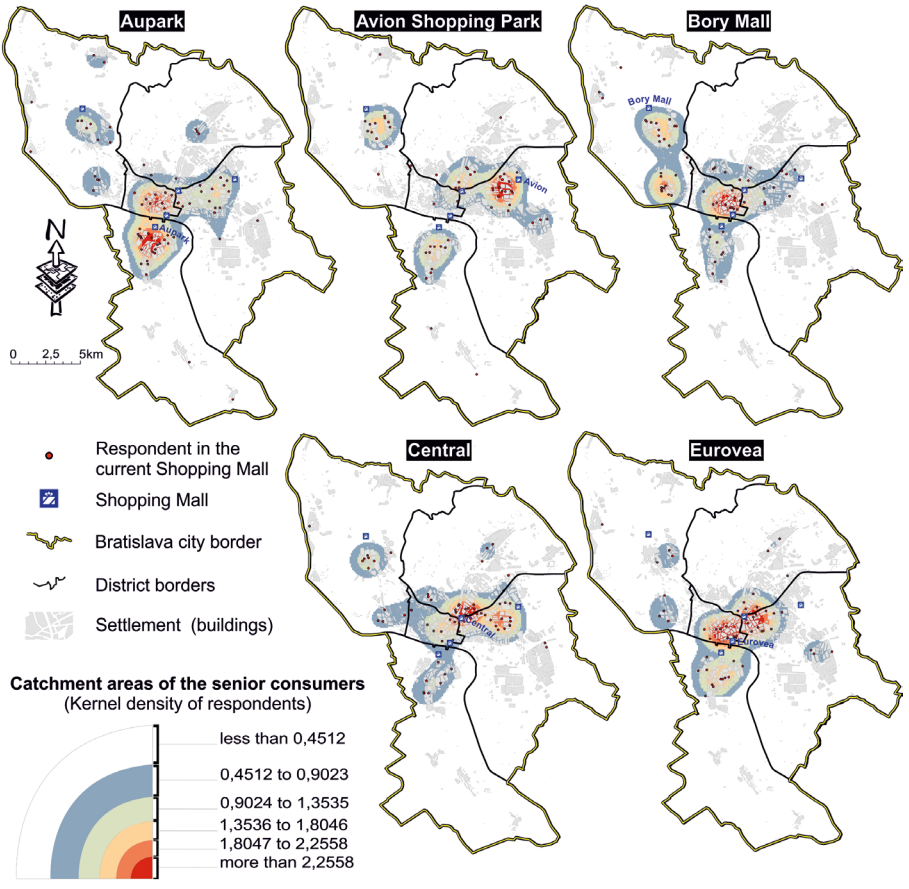

Figure 3
Shopping zones of selected shopping malls of Bratislava
Source: Author's survey, 2017

Based on the Kernel density analysis of the respondents' residence addresses, a shopping zone was deemed to constitute a locality with a coefficient value exceeding 1.3535. Subsequently we arrived to the following conclusions. The shopping zones for the Eurovea shopping mall are primarily the city districts of Staré Mesto, Nové Mesto, the adjacent district of Ružinov and Petržalka. In the

case of the Central mall, these were the city districts of Staré Mesto, Nové Mesto and Ružinov. As for the Aupark shopping mall it was Petržalka, Staré Mesto and Ružinov. The source city districts of the Avion SP were Ružinov, Petržalka, Dúbravka and Nové Mesto. In the case of the Bory Mall it was Staré Mesto, Karlova Ves and Dúbravka (Fig. 3). The results obtained correlate with more detailed research by Bilková and Križan (2014) concerning urban districts, underlining the justification of the above statements.

These findings can be used to optimise the (absent) direct public transport routes between the sources of shopping zones and the shopping malls (Bory Mall, Avion SP). The results can likewise be applied to more targeted addressing of marketing adverts to potential senior visitors to the shopping malls in question.

Distance of residence as an indicator of seniors' consumer behaviour

The issue of income receives much attention, as it is one of the most important factors affecting consumer behaviour (Vadim, 2009), along with other factors such as education, age, etc. (Li and Houston, 2001).

In this section we analysed the relationship between the average monthly income of seniors at the given distance zone from the visited shopping mall (Fig. 2). In this context, the values obtained, with the exception of the seniors in Aupark shopping mall, show no relevant statistical dependence or tendency. Senior respondents at Aupark shopping mall are an exception, showing a linear dependence between the increasing distance from their home and the respondent's average monthly income. It is also interesting to note that, given the average Slovak pension of €425 for February 2017, all the monitored groups receive a significantly above-average pension income. We see the cause in the context of consumer behaviour, as low-income groups of seniors, in our opinion, come up against higher prices in shopping malls. The second cause lies in regional differences, with a higher average pension income being a typical feature for the Bratislava region and its background in comparison with the rest of Slovakia.

The opposite situation arose in analysing the share of spending at a shopping mall from the respondents' monthly income in distance zones from the shopping mall. Here, there is a noticeable relationship between distance and consumer's spending, when the average spending of respondents for all shopping malls, other than those for Aupark shopping mall, grew in line with the address-to-mall distance. Paradoxically, respondents at the Aupark shopping mall demonstrated exactly the opposite relation, where the share of spending in the seniors' income declined with the increasing address-to-mall distance. These results indicate a significant impact of distance on the senior consumer behaviour, while contrasting results for the Aupark shopping mall indicate intriguing features of this long-term successful shopping mall (Sikos, 2010; Kunc et al., 2016).

The respondents' role was to express an opinion on a hypothetical question: There are two shopping malls and are approximately equidistant. A. Will the size of the shopping mall decide on the purchase? B. Will the additional services of the shopping mall decide on the purchase? We used the Likert scale: strongly agree, agree, disagree, strongly disagree, no opinion. More than half of the seniors (57%) strongly agree and agree that the size of shopping mall (gross leasable area) is decisive for the selection of the purchase location in a hypothetical case (Fig. 4A). Even more important for the selection of purchases from two approximately equally distant shopping malls are additional services (restaurants, cinema, banks, doctor, etc.). Almost 2/3 of the respondents totally agree or agree with this statement. Only 20% of respondents disagree or totally disagree (Fig. 4B).

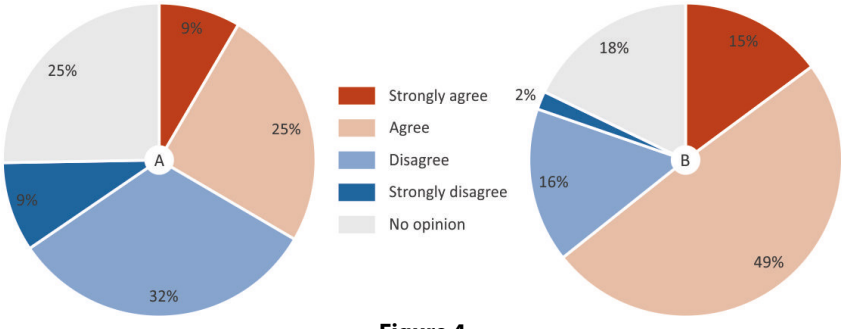

Figure 4
Perceptions of seniors for the selection of the purchase location in the case of two shopping malls that are approximately equidistant
(A - The size of the shopping mall will decide on the purchase; B - The additional services of the shopping mall will decide on the purchase)
Source: Author's survey, 2017

We used a paired sign test to assess the statistical significance of the findings. Based on its results we can say that visitors for purchase location prefer additional services rather than size of shopping mall at a significance level of 5%. Up to 47% of respondents gave higher ratings to additional services compared to shopping mall size, 42% of people rated services and size in the same way, and 11% of respondents considered shopping mall size a decisive factor in choice. These findings (based on the assessment of significance level) lead to the conclusion that that additional services are a significantly more important factor for purchasing than the size of a shopping mall if the shopping mall are equidistant from each other.

Another task was to find out which factor of shopping mall choice is the most important for seniors. Of all the answers (which we grouped into six classes: distance, tenant mix, services, feelings, price and others), we found that up to 41% of them consider the accessibility (distance) of a shopping mall as the most important factor.

The second most important factor is the additional services (27%). The price is in the third place of importance, feelings have a greater impact than tenant mix (Fig. 5). The Chi-square test was used to determine that the frequencies were statistically significant and and it was confirmed that the differences found were not due to chance.

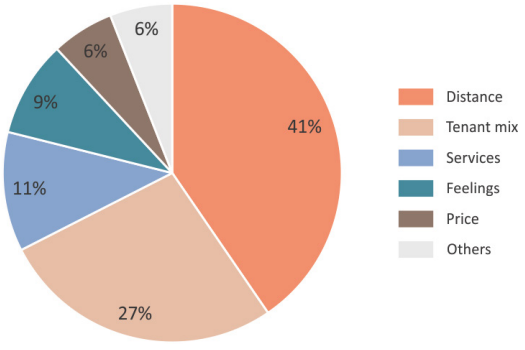

Figure 5
Factors influencing the shopping mall choice for purchasing
Source: Author's survey, 2017

Impact of distance on the time respondents spend at a shopping mall

The amount of time spent at shopping malls depends on a number of objective (availability, price of goods, etc.) and subjective (personal preference, ancillary services, etc.) factors (Križan et al., 2015). At present, consumers frequently place emphasis on subjective factors when they are in preference of more distant shopping malls for a certain subjective reason (Handy and Clifton, 2001).

The analysis of the average time spent by seniors at a given shopping mall with regard to their place of residence showed that the shopping malls in question indicated two distinctive features in the behaviour of their consumers. Seniors living in the immediate distance (0 to 2 km), as well as those living at the maximum distance analysed (10 to 15 km) from the shopping mall visited, achieve in total below-average values of time spent at the shopping mall compared to other zones (Tab. 2). On the other hand, seniors living in distance zones of 2 to 5 km as well as 5 to 10 km indicate significantly above-average values of average time spent at shopping malls (Tab.2). We view this specific feature in the consumer behaviour of seniors in the context of their residence as interesting, and in our opinion it reflects different reasons for visiting a shopping mall in relation to their overall accessibility.

In terms of the average time spent by seniors at shopping malls, Aupark and Bory Mall achieve the highest values, with respondents staying the shortest time at Central and Avion SP (Tab. 2). The Aupark leadership may be seen as yet another specific feature underlining the success of this shopping mall, while the higher

values behind the Bory Mall indicate rather the phasing out of some sort of a "discovery" stage of this, at the time of our survey, relatively new shopping mall in Bratislava.

Table 2 Time (in min.) of seniors spent at shopping malls in relation to the address-to-mall distance (n = 334)

	2 km	5 km	10 km	15 km	average
Avion SP	79.38	82.50	91.11	71.33	81.57
Aupark	91.48	88.27	95.95	61.25	88.65
Bory Mall	75.00	86.67	94.15	80.00	87.60
Central	71.05	87.17	80.83	84.17	81.16
Eurovea	69.50	90.19	91.66	-	83.86

Source: *Own calculation*

CONCLUSIONS

In the paper we analysed selected spatial aspects of consumer behaviour of the post-productive population (seniors) visiting five selected shopping malls (Avion SP, Aupark, Bory Mall, Central, Eurovea) in Slovakia's capital city, Bratislava. Despite the limitations of our research relating to the size of the research sample and the possibility to generalise the findings for other locations, we consider our results to be relevant and enriching information about consumer behaviour of this growing and unique market segment of consumers.

From the analysed aspects of consumer behaviour of seniors, it emerged that the distance or accessibility of a shopping mall is one of the fundamental factors determining seniors' decision-making. Paradoxical, in this context, is our finding that the shopping zones of some shopping malls (Bory Mall, Avion SP) defined for the selected category of consumers (seniors) currently lack a direct public transport connection. With regard to the share of expenditure spent at a shopping mall out of the monthly income of respondents, we found that in the case of all shopping malls, with the exception of Aupark shopping mall, this spending increased in line with the distance of the seniors' place of residence from the mall. The distinctive position of Aupark as a successful and specific shopping mall (Sikos, 2010; Kunc et al., 2016) is also underlined by the linear dependence between the increasing address-to-mall distance and the average monthly income of the respondent. The amount of time spent by seniors at a shopping mall proved to be significantly determined by distance, with the main reason for variability being seen in the different reasons for visiting the shopping mall. The paper confirmed the results of several studies (e.g. Marjanen 1997, Handy and Clifton, 2001) that distance remains a significant variable in understanding consumer behaviour. The research results

correlate with other local studies (Bilková and Križan, 2014; Križan et al., 2015), which can be evaluated positively in relation to the nature of our findings. On the other hand, it should be noted that some studies hold out different results. The time and money it takes to reach the consumer space and the price of the target product affect the consumption behavior at the same time. With the rapid development of urban transportation, the distance and time cost for consumers to buy products are greatly reduced. Therefore, the impact of traffic factors on the formation of consumer spatial clustering is decreasing (Fan et al., 2019). The reason may be different methodology as well as real different behavior of seniors consumers in different economies. Motorization of seniors in Slovakia reaches a low level and therefore the distance for making purchases may have a greater impact on the choice of the shopping location than in other cities.

Given the research objectives, it must be openly noted that the characteristics, preferences and perceptions of the analysed seniors as well as the results we have reached reflect the particularities of the urban environment in the post-socialist countries of Central and Eastern Europe (Kunc et al., 2013). This aspect must therefore be taken into account when contrasting our results with others.

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REFERENCES

ANGELL, R., MEGICKS, P., MEMERY, J. et al. (2012). Understanding the older shopper: a behavioural typology. Journal of Retailing and Consumer Services, 19(2), 259-269.

ARSLAN, T. V., SEZER, F. S., ISIGICOK, E. (2010). Magnetism of shopping malls on young Turkish consumers. Young Consumers: Insight and Ideas for Responsible Marketers, 11(3), 178-188.

BILKOVÁ, K., KRIZAN, F., BARLÍK, P. (2016). Consumers preferences of shopping centers in Bratislava (Slovakia). Human Geographies, 10(1), 23-37.

BILKOVÁ, K., KRIŽAN, F. (2014). Delimitácia nákupných zón vybraných nákupných centier v Bratislave. Geografické informácie, 18(2), 5-15.

CBRE, (2017). Shopping centre index Slovakia 2017. Retrieved from: https://www.cbre.sk/en/research-and-reports/. Accessed on 30 March 2019

DABIJA, D. C., BEJAN, B. M., GRANT, D. B. (2018). The impact of consumer green behaviour on green loyalty among retail formats: A Romanian case study. Moravian Geographical Reports, 26(3), 173-185.

DOBBS, R., REMES, J., WOETZEL, J. (2016). Emerging demographics are the new emerging markets. In Harvard Business Review. Retrieved from: https://hbr.org/2016/07/emerging-demographics-are-the-new-emerging-markets. Accessed on 30 March 2019.

FAN, T., GUO, N., REN, Y. (2019). Consumer clusters detection with geo-tagged social network data using DBSCAN algorithm: a case study of the Pearl River Delta in China. GeoJournal, 1-21, doi: /10.1007/s10708-019-10072-8.

FORD, N., TROTT, P., SIMMS, C. (2016). Exploring the impact of packaging interactions on quality of life among older consumers. Journal of Marketing Management, 32(3-4), 275-312.

GANESH, J. (1998). Converging trends within the European Union: Insights from an analysis of diffusion patterns. Journal of International Marketing, 6(4), 32-48.

HANDY, S., L., CLIFTON, K., J. (2001). Local shopping as a strategy for reducing automobile travel. *Transportation*, 28(4), 317-346.

HÄRDLE, W. (1991). Smoothing techniques with implementation in S. New York: Springer Verlag.

INCARDONA, R., PONCIBÒ, C. (2007). The average consumer, the unfair commercial practices directive, and the cognitive revolution. Journal of consumer policy, 30(1), 21-38.

JANSENBERGER, E., STAUFER-STEINNOCHE, P. (2004). Dual Kernel Density Estimation as a Method for Describing Spatio-Temporal Changes in the Upper Austrian Food Retailing Market. In Toppen, F. a Prastacos, P. (eds.): Agile 2004 - 7th Conference on Geographic Information Science. Conference Proceedings. Heraklion: Crete University Press, 551-558.

KÁČEROVÁ, M., ONDAČKOVÁ, J. (2015). The process of population ageing in countries of the Visegrad Group (V4). Erdkunde, 69(1), 49-68.

KLIMCZUK, A. (2016). Comparative analysis of national and regional models of the silver economy in the European Union. International Journal of Ageing and Later Life, 10(2), 31-59.

KRIŽAN, F., BILKOVÁ, K., KITA, P., KUNC, J., BARLÍK, P. (2015). Nákupné centrá v Bratislave a atribúty ovplyvňujúce preferencie spotrebiteľov. Geografický časopis, 67(4), 341-357.

KRIŽAN, F., BILKOVÁ, K., KUNC, J., MADAJOVÁ, M. S., ZEMAN, M., KITA, P., BARLÍK, P. (2018). From school benches straight to retirement? Similarities and differences in the shopping behaviour of teenagers and seniors in Bratislava, Slovakia. Moravian Geographical Reports, 26(3), 199-209.

KRIŽAN, F., LAUKO, V. (2014), Geografa maloobchodu. Úvod do problematiky. Bratislava: Univerzita Komenského.

KUNC, J., KRIŽAN, F. (2018). Changing European retail landscapes: New trends and challenges. Moravian Geographical Reports, 26(3), 150-159.

KUNC, J., KRIŽAN, F., BILKOVÁ, K., BARLÍK, P., MARYÁŠ, J. (2016). Are there differences in the attractiveness of shopping centres? Experiences from the Czech and Slovak Republics. Moravian geographical reports, 24(1), 27-41.

KUNC, J., MARYÁŠ, J., TONEV, P., FRANTÁL, B., SIWEK, T., HALÁS, M., KLAPKA, P., SZCZYRBA, Z., ZUSKÁČOVÁ, V. (2013). Časoprostorové modely nákupního chování české populace. Brno: Masarykova univerzita.

LEBEDEVA, N., DIMITROVA, R., BERRY, J. (Eds.). (2018). Changing Values and Identities in the Post-Communist World. Springer.

LESÁKOVÁ, D. (2013). Silver consumers and their shopping specifics. Oeconomia Copernicana, 4, 103-114.

LI, H. S., HOUSTON, J. E. (2001). Factors affecting consumer preferences for major food markets in Taiwan. Journal of food distribution research, 32(1), 97-109.

LUCK, M., BENKENSTEIN, M. (2015). Consumers between supermarket shelves: The influence of inter-personal distance on consumer behavior. Journal of Retailing and Consumer Services, 26, 104-114.

MARJANEN, H. (1997). Distance and store choice: With special reference to out-of-town shopping. In Reponen, T., ed., Management Expertise in the New Millennium: In Commemoration of the 50th Anniversary of Turku School of Economics and Business Administration. Turku: School of Economics and Business Administration, pp. 113-128.

MCKINSEY&COMPANY (2016). Getting to know urban elderly consumers. Retrieved from: https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/getting-to-know-urban-elderly-consumers. Accessed on 30 March 2019.

MICHÁLEK, A., VÝBOŠŤOK, J. (2019). Economic Growth, Inequality and Poverty in the EU. Social Indicators Research, 141(2), 611-630.

MOSCHIS, G. P. (2003). Marketing to older adults: an updated overview of present knowledge and practice. Journal of Consumer Marketing, 20(6), 516-525.

MOSCHIS, G. P. (2012). Consumer behavior in later life: Current knowledge, issues, and new directions for research. Psychology & Marketing, 29(2), 57-75.

MURATORE, I. (2016). Teens as impulsive buyers: what is the role of price? International Journal of Retail & Distribution Management, 44(11), 1166-1180.

MYERS, H., LUMBERS, M. (2008). Understanding older shoppers: a phenomenological investigation. Journal of Consumer Marketing, 25(5), 294-301.

OECD, (2017). Incomes of older people. In Pensions at a Glance 2017: OECD and G20 Indicators. Paris: OECD Publishing.

ONDAČKOVÁ, J., KÁČEROVÁ, M., MLÁDEK, J., POPJAKOVÁ, D., VANČURA, M. (2018). Population age structure transformation in the capitals of the Visegrad Group countries. Geographia Polonica, 91(3), 281-299.

PETTIGREW, S., MIZERSKI, K., DONOVAN, R. (2005). The three "big issues" for older supermarket shoppers. Journal of Consumer Marketing, 22(6), 306-312.

POOLER, J. A. (2018). Demographic targeting: the essential role of population groups in retail marketing. London: Routledge.

ROCHOVSKÁ, A., KÁČEROVÁ, M., ONDOŠ, S. (2014). Výskumné metódy v humánnej geografii a ich aplikácie. Bratislava: Univerzita Komenského

ROSENBLATT, M. (1956). Remarks on some nonparametric estimates of a density functios. Annals of Mathematical Statistic, 27(3), 832-837.

SIKOS, T. (2011). Competition between Aupark Shoppping Center and Avion Shopping Park. Romanian Review of Regional Studies, 7(2), 79-90.

SILVERMAN, B.W. (1986). *Density estimation for statistics and data analysis.* London: Chapman and Hall.

SOLOMON, M. R., MARSHALL, G. W., STUART, E. W. (2018). Marketing: Real people, real decisions. Hoboken: Pearson.

SPILKOVÁ, J. (2012). Geografie maloobchodu a spotřeby: věda o nakupování. Praha: Karolinum.

SPILKOVÁ, J. (2018). "Tell me where you shop, and I will tell you who you are": Czech shopper profiles according to traditional, large-scale and alternative retail options. Moravian Geographical Reports, 26(3), 186-198.

SPILKOVÁ, J., HOCHEL, M. (2008). Toward the Economy of Pedestrian Movement in Czech and Slovak Shopping Malls. Environment and Behavior, 41(3), 443–455.

SPILKOVÁ, J., RADOVÁ, L. (2011). The formation of identity in teenage mall microculture: A case study of teenagers in Czech malls. Czech Sociological Review, 47(3), 565-587.

SZMIGIN, I., CARRIGAN, M. (2000). The older consumer as innovator: does cognitive age hold the key?. Journal of Marketing Management, 16(5), 505-527.

TIERNO, N. R., BAVIERA-PUIG, A., BUITRAGO-VERA, J. (2013). Business opportunities analysis using GIS: the retail distribution sector. Global Business Perspectives, 1(3), 226-238.

TOMAZELLI, J., BROILO, P. L., ESPARTEL, L. B., BASSO, K. (2017). The effects of store environment elements on customer-to-customer interactions involving older shoppers. Journal of Services Marketing, 31(4/5), 339-350.

TREMBOŠOVÁ, M., DUBCOVÁ, A., KRAMÁREKOVÁ, H. (2016). Consumers shopping behaviour in the Nitra city. In International Scientific Days 2016: The Agri-Food Value Chain: Challenges for Natural Resources Management and Society, Nitra: Slovak University of Agriculture in Nitra, pp. 836-850.

UDDIN, S. F. KHAN, M. N. (2016). Exploring green purchasing behaviour of young urban consumers: empirical evidences from India. South Asian Journal of Global Business Research, 5(1), 85-103.

VADIM, K., D. (2009). Income as a factor of consumer behaviour of Latvian inhabitans in economics and tourism. In The Berlin International Economics Congress. Berlin: ICD.

VALAEI, N., NIKHASHEMI, S. R. (2017). Generation Y consumers' buying behaviour in fashion apparel industry: a moderation analysis. Journal of Fashion Marketing and Management: An International Journal, 21(4), 523-543.

WÄGAR, K., LINDQVIST, L. J. (2010). The role of the customer contact person's age in service encounters. Journal of Services Marketing, 24(7), 509-517.

ZAGATA, L. (2012). Consumers' beliefs and behavioural intentions towards organic food. Evidence from the Czech Republic. Appetite, 59(1), 81-89.

ZNIVA, R., WEITZL, W. (2016). It's not how old you are but how you are old: A review on aging and consumer behavior. Management Review Quarterly, 66(4), 267-297.

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SPATIAL DIVERSIFICATION OF THE SOCIAL SPHERE DEVELOPMENT IN THE CARPATHIAN-PODILLIA REGION

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Abstract
The article is devoted to the problem of the social sphere functioning of the areas in the Carpathian-Podillia region, in particular the emphasis is placed on the differentiation of the levels of its individual components, the dynamics of their changes and the complex analysis of functionality. The state of this sphere directly influences the economy and culture of the country and the region, and therefore the sectors of education, health care, culture, housing and communal services, etc. play a significant role in the economic development of the territory. Territorial boundaries of the research are defined within Transcarpathian, Lviv, Ivano-Frankivsk, Chernivtsi, Vinnytsia, Khmelnytskyi and Ternopil regions, among which there are established economic, labor-resource and informational-communicative connections, which also should be considered as the strong side of such cooperation. Also there were applicators in each of the suggested groups, demonstrating the functionality of the corresponding component of the social sphere (in some cases, two of them, in others five). At the first stage, we evaluated and analysed each component of the social sphere separately, based on selected applicators, which are reflected in thematic cartographic models. According to the results of the research, within the areas of the Carpathian-Podillia region there is a balanced development of the social sphere and its constituent parts. Lviv region is clearly by a high level of organization of the educational sphere, culture, trade and mass catering, as well as communication. For most areas of the region (Vinnytsia, Transcarpathian, Ivano-Frankivsk, Ternopil, Khmelnytskyi) there is a very narrow amplitude of summary indicators, which can confirm that in the consolidated form, the level of functioning of the social sphere does not have a significant difference in these regions. Hypertrophic development of one or two indicators is detected in each of the evaluated areas, while the majority of them are at a low level. The indicators of low level of social sphere formation in Chernivtsi region are justified. A summary table is prepared on the level of functionality of the social sphere according to the selected criteria within the specified regions. The conducted study allows determining the strategic directions of the social sphere development in the Carpathian-Podillia region in general as well as its individual areas. In addition, a comparative analysis of the social sphere development level to the indicators of the Western Ukrainian region and Ukrainian based on the statistics from the State Statistics Service of Ukraine is provided.

Key words
Carpathian-Podillia region, geospatial organization, social sphere, components of the social sphere, matrix of functioning level.

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INTRODUCTION

The modern stage of Ukrainian society development is oriented on social values that in the current environment reflects growing social weight of the creation of socially necessary product. The state of this sphere directly affects the economy and culture of the country; on this basis, one could claim that people engaged in education, health care, culture, housing and communal services etc. play a significant role in the economy. The example of the leading countries of the world shows that in addition to much attention to material production, a lot of effort are applied to priority social development, the prerequisites for social orientation of the economy are formed, to carry out state policy in the name of human as the main generator of civilization progress.

ANALYSIS OF THE RESEARCH

The problem of the development and functioning of the constituent elements of the social sphere is the research area of a large number of national and foreign scientists. V.I. Kutsenko and Y.V. Ostafiichuk consider the social sphere as a sphere of human activity, the result of which are services that meet the needs of society as well as individual members and are associated with the creation of added value (Kutsenko, Ostafiichuk 2005, Kutsenko 2008). N.G. Pigul points out that the organizational mechanism for building a social sphere should be based on clearly defined functions, principles and tasks that will allow more effective implementation of the state social policy in order to improve the quality of life of the population (Pigul, 2013). Y. Oliinyk and A. Stepanenko consider the study of the social space of territorial communities and their social locality as an important direction in the study of social geography (Oliinyk, Stepanenko, 2012). L.M. Niemec considers the social sphere from the point of view of the spatial-temporal organization of society in terms of globalization influences; innovation-investment image of territories, model development and social-geographic zoning for optimization of the society territorial organization and ensuring optimal living conditions of the population, participation in the regions development of strategies (Niemec, 2003). We have also considered this problem partialy while assessing the employment of population in the social sphere of the Carpathian-Podillia (Kuzyshyn 2015, 2017, 2018, Nemets 2003, Topchiev, Malchikova, Yavorskaya 2015).

The assessment of territorial development in connection with elements of the social sphere is the objective of modern studies of human geography. As a result of the analysis, there was emphasized the need for a dynamic comparison of the research results of the regional development factors (Pachura, Nitkiewicz, Matlovicova, Matlovic 2018). If in the late 90's of the XX century – beginning of XXI century the main attention was given to the study of the microscale phenomena of social orientation (Bontis, 2004), then at the beginning of the XXI century begins the

period of expanding the study space to the regions and states (Stahle 2008; Cooke, Clifton, Oleaga 2005). Most frequently this area of scientific interest involves the use of regional endogenous potential and the assessment of competitive advantages (Shiuma, 2008; Malhotra, 2008).

With the increasing significance of the social sphere functioning, there is a need for a detailed analysis of the level of its components formation and the achievement of the complexity in providing the relevant services. The relevant issues seem to have the need to determine the current state of formation and demand of individual elements of the social sphere, as well as the level of their provision in a specific region, which allows determining its rating position in the region. To do this, we need to analyse a system of indicators that will allow us to form a comprehensive view of the social sphere of the Carpathian-Podillia region.

PURPOSE, TASK AND METHODS OF RESEARCH

The aim of the article is to assess the development of selected dimensions of the social sphere in the Carpathian-Podillia region, as well as to show their spatial diversity. For this purpose, statistical information was used over the period from the 90's of the twentieth century to 2016. This allowed to determine the dynamic trends of the functioning of the social sphere and its components.

To conduct research, we have selected a system of indicators, which served the criteria for evaluating certain elements of the social sphere. It should be emphasized that they evaluated the functionality of certain elements regarding not quantity, but quality – provision, availability, demand of a certain social sphere element, which in our opinion reflects the real state of formation of social sphere and allows differentiating its components in terms of the functionality formation.

On the basis of the conducted component analysis, it is planned to rank the regions of the Carpathian-Podillia region in terms of the functioning of the elements of the social sphere. The method of matrix analysis was used to conduct the research, which allowed to analyse the state of functioning and differentiation of the level of social sphere elements in the context of the mentioned administrative units.

For the characteristics of each social sphere element of the region there is a corresponding rank (from 1 to 7), according to the indicator occupied by the region (the rank is higher, provided that it has the higher corresponding absolute index). Fewer points provide a better ranking.

Several blocks of criteria were used during the formation of matrix. They were grouped into: *educational sphere*: 1 – the coverage of children by preschool institutions; 2 – number of students of comprehensive educational institutions per 10 thousand people; 3 – the number of students of vocational schools per 10 thousand people; 4 – the number of students of higher educational institutions

with I-IV levels of accreditation per 10 thousand people; *cultural sphere*: 5 – availability of library funds per 100 people; 6 – availability of club membership per 100 people; 7 – attendance of museum institutions per 100 people; 8 – attendance of theatres per 100 people; 9 – attendance of concert events per 100 people; *sphere of health care*: 10 – availability of doctors per 10 thousand people; 11 – availability of average medical personnel per 10 thousand people; 12 – availability of hospital beds per 10 thousand people; 13 – planned capacity of outpatient clinics per 10 thousand people; *housing and communal services*: 14 – availability of housing space; 15 – an indicator of the level of private houses; *trade and mass catering*: 16 – availability of trade areas, 17 – retail turnover of enterprises per person (thousand UAH); 18 – retail of alcoholic beverages per person (l); *connection*: 19 – number of subscribers of mobile communication; 20 – number of cable connection subscribers; 21 – the share of households having access to the Internet.

The processing of such data served as the basis for the formation of cartographic models that form a spatial representation of individual components of the social sphere and form an integrated mapping of the territorial balance of the social sphere of the regions in the Carpathian-Podillia region of Ukraine.

In the process of research, methods of analysis and synthesis, dialectic and scientific abstraction, statistical method and method of matrix analysis were used.

RESULTS AND DISCUSSION

Territorial boundaries of the research are defined within Transcarpathian, Lviv, Ivano-Frankivsk, Chernivtsi, Vinnytsia, Khmelnytskyi and Ternopil regions (the area covers 19.1% of the territory of Ukraine and is home to 23.5% of the country's population). These areas have a compact location, which positively affects their cooperation and high interdependence.

Sufficiently well-established business, labour, information and communication should also be considered as the strong side of such cooperation. During the XX century in the areas of this region, employment in industrial sphere, agriculture and forestry dominated. However, at the same time, there were traditions of high interest in education, culture and tourism (many families in Western Ukraine have a tendency of joint rest on weekends, regular visits to cultural, festival and other mass events, as well as a peculiar commitment to supply the junior ones with proper education). In the late 90's of the XX century these areas of the economy have intensified their development in the region, but only tourism can be associated with the income industry. The proximity to the border with the European states and the facilitated communication with the Eurospace also had its positive effects (the features of globalization and Europeanisation in the areas of the region under study have increased due to personal visits to the countries of the European Union).

However, historically, these territories were formed not as one, because in different historical periods they were part of various state institutions. Only during the XIX and XX centuries these area remained parts of the Republic of Poland, Romania, the Czech Republic, the Russian Empire, and the Soviet Union, and each of the states had personal views on the formation of this territory, including the positions of the social space. Western states promoted the upmarket character of this direction, the Russian Empire did not consider it necessary to develop the social sphere in the colonized territories.

To a certain extent, such territorial attachment also affected the ethnic composition of the population in the mentioned areas, which can be defined as diverse. Within the limits of not only the investigated region, but also Ukraine in general, the most poliethnic regions include Transcarpathian and Chernivtsi (the share of ethnic Ukrainians reaches 60-75%). Monoethnic areas with the domination of ethnic Ukrainians include Ternopil, Ivano-Frankivsk regions (the share of ethnic Ukrainians is over 95%). Indirectly, these features also affect the functioning of the social sphere.

Consideration of social sphere elements should be carried out in the sectorial version of the assessment, but taking into consideration a certain territorial level.

The level of social sphere development is determined by the demand for services, and those, in their turn, vary according to the real possibilities of society at one or another stage of development. In today's conditions of an unstable economic situation in the country, the demand for many types of services has decreased due to low profits of the population, although there is an increase in interest in certain types of services (information, advertising, recreation, including tourism, health care, etc.).

The social sphere has certain territorial differences in the level of development and structure. Significantly higher level of its development and a wider sectorial structure is in cities compared to rural areas, in more economically developed industrial regions than in less developed agricultural areas.

The educational sphere is an important element in the formation of the social environment, the formation of an enlightened society and is a prerequisite for the preservation of intellectual society. Key indicators that characterize this area of the social sphere are qualitative characteristics of the educational space of the study area, for example, the coverage of children by preschool institutions, the number of students in general education institutions per 10 thousand people, the number of students of vocational schools , the number of higher education institutions students of I-IV accreditation levels per 10 thousand people. Such indicators allow us to assess the state of the educational environment in a certain area. During 1995-2016, in the areas of the Carpathian-Podillia region, the rate of coverage of children in pre-school institutions increased (from 31 preschoolers /

100 children of the corresponding age in 1995 to 62 preschoolers / 100 children of the corresponding age in 2016), which even exceeded the average Ukrainian index starting from 2010 (*Statistical Collection ´Regions of Ukraine´, 2017. Part 1)*. Higher level of security is characteristic of the Podilsk regions. From 1995/1996 academic year up to 2013/2014 the number of students of comprehensive educational institutions in the amount of 10 thousand people decreased (from 1464 to 1039 students per 10 thousand population) and only during 2016/2017 academic year there was a tendency for an increase in the number of students in accordance to the number of residents (1067 students per 10 thousand population). It should be noted that this indicator has more positive numbers than the average in Ukraine. Over the period of 2000-2016 there was a decrease in the number of students of vocational education institutions per 10 thousand people from 104 to 81 students (but it is worth mentioning that these indicators are more positive than in Ukraine in general). The highest indicator is characteristic of the Lviv region (in 2016 - 107 students of vocational schools per 10 thousand people). As to the indicator of the number of higher educational institutions students in the Carpathian-Podillia region there was an increase in the number of students per 10 thousand people from 2000/2001 academic year to 2005/2006 academic year, but in subsequent academic years their number decreased faster than in Ukraine in general (*Statistical Collection ´Regions of Ukraine´, 2017. Part 1)*.

However, if we evaluate the educational sphere in a comprehensive way according to the criteria we have selected for our ranking, the matrix table confirms that the most prevailing this sphere is in Lviv region, and indicators of Vinnytsia, Ternopil and Chernivtsi regions are also high, while in other areas of the region there are problems with certain assessment components of the educational environment development, or generally low efficiency of their functioning (Table 1). In comparison with the average indicators of Ukraine and indicators characteristic of all areas of the Western Ukrainian region, this area always presented higher indicators of coverage of children by preschool institutions, the highest number of students and learners in general and vocational schools. Only a decrease in the number of students in higher education institutions in this region is higher than in Ukraine in general (this can be justified by the outflow of students to European, first of all, Polish educational institutions).

Culture covers institutions and establishments that produce cultural goods, offer spiritual values to the population etc. (libraries, theatres, clubs, museums, film studios, television, radio, newspaper and magazine publishing houses). Their placement is also associated with the peculiarities of people's resettlement: there is the higher concentration of cultural objects in large populations settlements. In the areas of the Carpathian-Podillia region there are over 5,7 thousand libraries, 6,4 thousand club facilities and cultural buildings (*Statistical Collection ´Regions of*

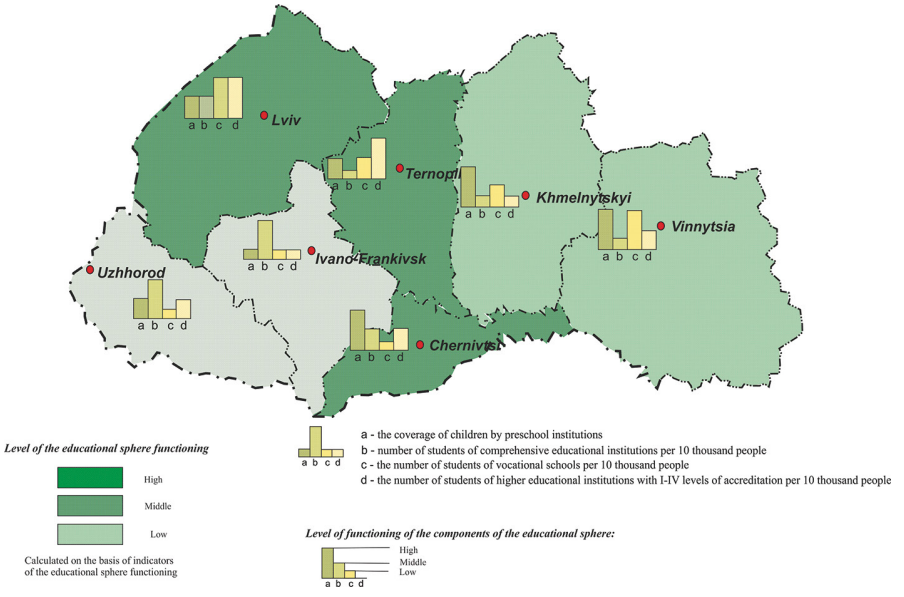

Figure 1
The indicators of the educational sphere functioning in the Carpathian-Podillia region
Source: Statistical Yearbook ´Regions of Ukraine´, 2017. Part 1

Ukraine´, 2017. Part 1). They are placed according to the administrative division (in settlements – centres of administrative-territorial units, in urban microdistricts) and on a production principle – on the basis of enterprises, educational institutions, etc. For our analysis, we selected two areas – the availability of these institutions, which were evaluated through the index of availability of certain institutions for population and the population attendance of cultural and art establishments.

The indicator of the availability of cultural institutions, in particular library funds and club facilities in the Carpathian-Podillia region, is higher than the average in Ukraine and in the Western Ukrainian region in general. Although since 2000 these figures are deteriorating in Ukraine, the decline rate in the region under study is not so significant. Thus, the average indicator of the availability of library funds in the region comprises 688 copies per 100 people, and in most regions (Vinnytsia, Lviv, Ternopil, Khmelnytskyi) it exceeds 700. During the estimated period (2000-2016), the deterioration of the availability of library literature was most noticeable for Vinnytsia, Transcarpathian and Khmelnytskyi regions (reducing the number of copies per number of inhabitants to 25%). At the same time, attention was paid to this issue in Lviv region and the amount of literature in libraries even increased (by almost 25% in the number of book copies per number of inhabitants; probably this could be connected with the increase in the number of students in higher educational establishments of Lviv, which had been the main users of libraries).

If on average in Ukraine the provision of places in clubs is 10 places per 100 people, in this region it exceeds 15 (in Ternopil regions – 18 and Khmelnytskyi regions – 24). Another positive thing is that during 2000-2016 the availability of club facilities in almost all regions remained at the same level as in 2000 (except for the Transcarpathian region only, where this indicator decreased to 10 places per 100 local inhabitants). Of course, a more qualitative picture of the assessment of this indicator would be if the employment rate of places and the use of club facilities in terms of regional areas were evaluated, and at present, such statistics are not available.

Among the museum establishments of the Carpathian-Podillia region (161 establishments, almost 28 % of the total Ukrainian indicator) dominate regional history, historical, memorial museums. Most of them are situated in regional centres (the leader is Lviv), and among the regions as a whole the leader is Ternopil region – 30. The rate of attendance of museums in the regions of the area is higher (in 2016 – 46 visits per 100 people) than in Ukraine in general (37 visits per 100 people) and continues to grow. Higher indicators from the average regional rate were recorded in Transcarpathian and Lviv regions (48 and 75 visits per 100 inhabitants), the lowest – in Chernivtsi (31 visits per 100 inhabitants) (*Statistical Yearbook of Ukraine for 2016, 2017. Kyiv, 2017*). The reason for such a significant amplitude can be both quantitative indicators of museums as well as the practical interest of tourists and recreationists to this form of rest. If we evaluate the trend of museums attendance in 2000-2016, it should be noted that in all areas without exception there was an increase in interest to these attraction objects (particularly, in the Transcarpathian region this indicator has more than tripled, in Lviv and Khmelnytskyi has grown by 2.5 times).

The largest number of professional theatres functions in the Lviv region (9 out of 112, which operate in Ukraine). There are 27 professional theatres in the region in general. Regarding attendance, despite the established stereotype that the population of western Ukraine are theatre fans, the indicators are lower than in Ukraine – 11 visits per 100 inhabitants (with the exception of the Lviv region – 18 visits per 100 inhabitants) (*Statistical Yearbook of Ukraine for 2016, 2017. Kyiv, 2017*). It should be noted that this indicator includes a significant tourist component, because many Ukrainian and foreign tourists consider it mandatory to visit theatres during their travel programs. In terms of the dynamics of the Melpomene centers attendance, Khmelnytskyi region demonstrated the most positive dynamics during 2000-2016 (attendance has increased almost twice), and in the Transcarpathian region the same indicator has deteriorated almost twice.

Concert and festival activities today are an integral part of the cultural leisure of the population. However, within the region there are quite significant fluctuations of indicators characterizing the interest of the population to this element of organized cultural leisure. In general, there is a tendency in the region to increase

interest in concert events among the population – if in 2000 such events were visited by 5 people per 100 local residents, in 2016 this figure increased to 7. But depending on the region there are different fluctuations. While in Lviv region, during this period, there is actually an increase in attendance at concert events (from 5 to 11 visits per 100 local inhabitants), these indicators remain stable in Ivano-Frankivsk region (1-3 visits per 100 local inhabitants). In other areas, attendance rates are within the range of 6-8 visits per 100 local residents, which is higher than in Ukraine generally.

Assessing the level of functioning of the cultural sphere components, it should be noted that their highest level is characteristic of the Lviv and Khmelnytskyi regions, high and relatively balanced - in Vinnytsia and Ternopil regions. If we analyse the dynamics of individual indicators, then from 2000 to 2016 in the areas of the Carpathian-Podillia region there is a deterioration and lagging behind the average Ukrainian indicator and indicator of the Western Ukrainian region in general regarding the availability of library funds, but there is an increase in the availability of places in clubs, there is an interest in visiting museums and the attendance of theatrical at concert events decreases.

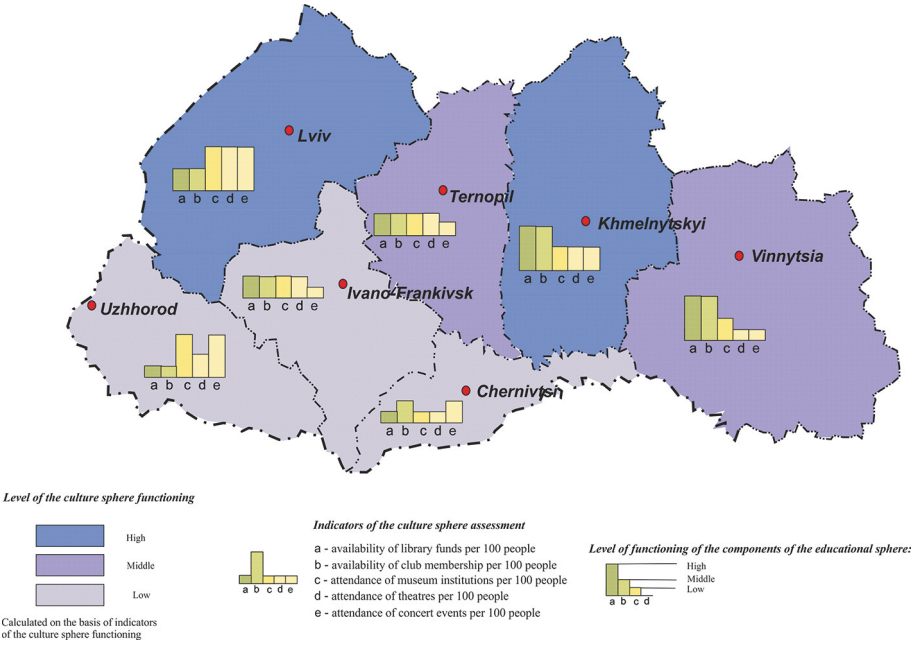

Figure 2
The indicators of the culture sphere functioning in the Carpathian-Podillia region
Source: Statistical Yearbook of Ukraine for 2016, 2017

The health-improving complex includes a system of medical and recreational institutions that provide health care (disease prevention, treatment), health improvement and recreation. There are 50000 doctors of all specialties in the health-care institutions within the region (almost 27 % of the total Ukrainian indicator) and more than 100 thousand of medical staff (more than 27 % of the total Ukrainian indicator). The availability of doctors in the region under study is one of the highest in the country, but the percentage of sick people is constantly increasing due to unfavourable living conditions, inappropriate nutrition, and so on. Thus, from 2000 to 2016, the availability of doctors per 10 people in the Carpathian-Podillia region increased from 45 to 50 specialists (in Ukraine this figure is significantly lower). The indicator of the availability of average medical personnel is also at the high level (more than 100 per 10 thousand population) as well as the amount of hospital beds (more than 77 per 10 thousand population). The highest rates are characteristic for Ivano-Frankivsk, Lviv and Ternopil regions.

The situation with the planned capacity of outpatient clinics is quite tense (all medical institutions conducting an outpatient appointment – out-patient clinics, out-patient departments, clinics, out-patient departments of hospitals, medical health centres, etc.). The situation improves since 2010, but lags behind the all-Ukrainian indicators. Only in two regions of the area (Vinnytsia and Transcarpathian) the planned capacity of outpatient clinics is higher than the average in Ukraine.

The medical field, according to selected criteria, has the highest index of functionality in the Ivano-Frankivsk, Lviv and Ternopil regions. Quite qualitative medicine can function in the Khmelnytskyi region. In other regions, the rating positions of the medical sector are rather low and, accordingly, indicate the problem of its development.

Housing and communal services satisfy the needs of people in housing, provide functioning of dwelling houses, hotels, small enterprises and institutions. This direction of the social sphere provides maintenance and repair of the housing stock and communal infrastructure. The entire housing fund in the Carpathian-Podillia region comprises 256 million square meters, which is more than 26 % of the state's housing stock. The city housing stock has a higher level of gas, hot and cold water supply, and sewerage than in the rural areas. Within the studied region, the main residential areas are concentrated in rural areas (more than 55 % of the total regional index). Today, in order to improve the living conditions of the population, considerable attention is paid to the development of investment (at the expense of private costs of individuals and legal entities) and individual housing construction. The average availability of housing stock in the region is higher (25.8 m^2 / person) than in Ukraine in general (22.9 m^2 / person). Among the areas of the region, the highest level of housing availability is characteristic of Vinnytsia (almost 30 m^2 /

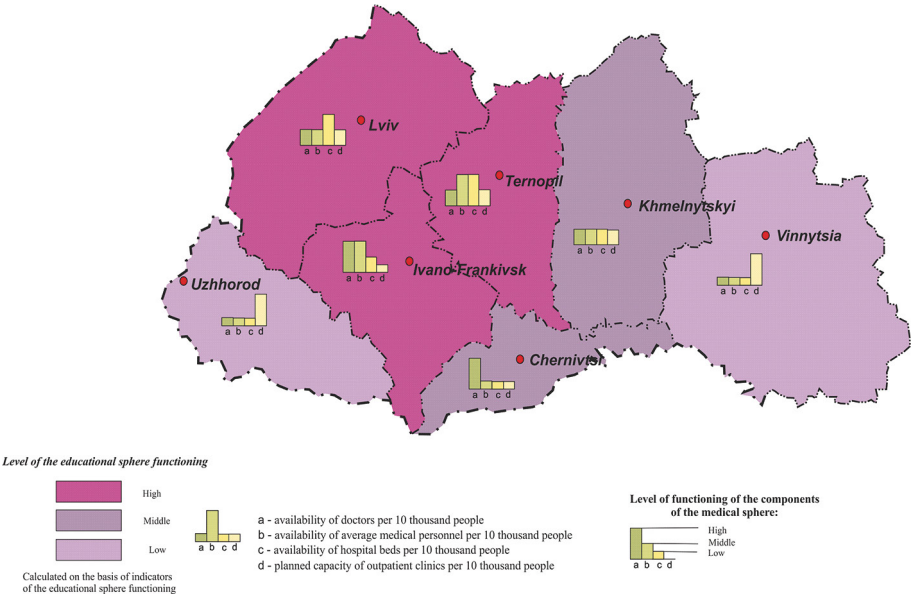

Figure 3
The indicators of the medical sphere functioning in the Carpathian-Podillia region
Source: Statistical Yearbook of Ukraine for 2016, 2017

person) and Khmelnytskyi region (27 m^2 / person), the lowest is in the Lviv region (23 m^2 / person).

Communal infrastructure is an integral part of residential and household needs of the population and enterprises. It covers electricity, heat supply, gas supply, water supply, sewage, improvement and sanitary cleaning of the territory. Among indicators that characterize the arrangement of apartments in the Carpathian-Podillia region, the indicators of natural gas supply, sewage and centralized water supply are the highest. According to the index of natural gas supply, the highest indicator is characteristic of Ternopil, Chernivtsi and Khmelnytskyi regions (in all, over 93 % of the total regional indicator). The best water supply is typical for Lviv and Ternopil regions, sewage services and hot water supply – for the same areas. Centralized heating is best arranged in Ternopil and Khmelnytskyi regions.

With a consolidated assessment of the indicators that ensure the quality of the housing and communal complex functioning of these territories, the ranking of the highest positions are typical for the Ternopil and Khmelnytskyi regions, while Lviv, Ivano-Frankivsk and Vinnytsia regions are close to the average.

The trade space has the highest level of availability per inhabitant in Lviv and Ivano-Frankivsk regions, high enough in Ternopil, Khmelnytskyi and Transcarpathian regions.

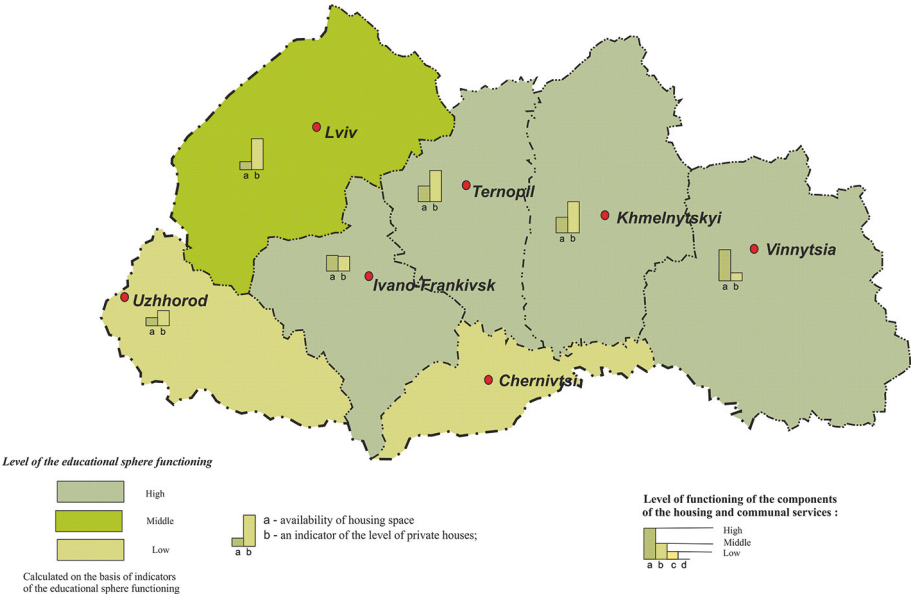

Figure 4
The indicators of the housing and communal services functioning in the Carpathian-Podillia region
Source: Statistical Yearbook of Ukraine for 2016, 2017

In the total volume of commodity circulation, groceries make up 65 %, non-food products – 35 %. The highest indicators of retail turnover per person is in Lviv region (13,5 thousand UAH / person, the indicator exceeds the average Ukrainian), and the lowest – in Ternopil region (7,6 thousand UAH / person). In addition to the traditional enterprises of the industry, a network of specialized stores, fast food catering establishments develope. The most dynamic retail turnover is developing within the Lviv region – over the research period, the indicator in this area has grown by more than 22 times (although there is a certain inflation component, but it is worth noting that this is also a sign of the welfare increase for the population of this territory). Also, a significant increase in retail turnover is characteristic of Ternopil, Khmelnytskyi and Chernivtsi regions.

An interesting indicator is the consumption of alcoholic beverages (in the calculation of pure alcohol l liter per person, which reflects the social consciousness and the popularity of a healthy lifestyle in the regions), according to which the minimum indices are characteristic for predominantly Podilsk regions (Vinnytsia and Ternopil – within 1.3 l / person) , and the maximum – for the Lviv region – 2,7 l / person (however, a significant proportion of tourists that are visitors to the region and connoisseurs of gastronomic interests of the Carpathian region should be taken into account for this area).

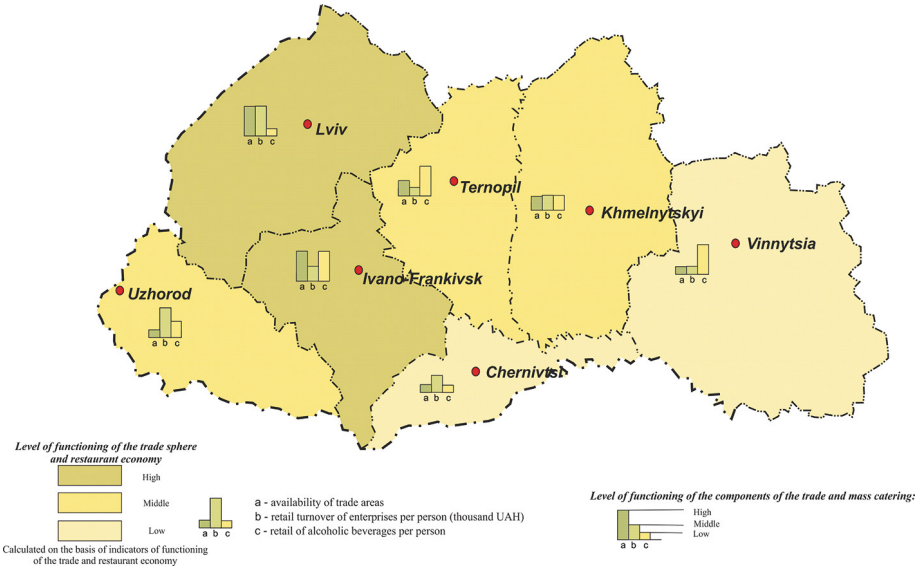

Figure 5
The indicators of the trade and mass catering functioning in the Carpathian-Podillia region
Source: Statistical Yearbook of Ukraine for 2016, 2017

According to the indicators characterizing the trade sector and mass catering, it can be noted that there is a very small amplitude between the regions, which allows us to assert the practically same level of functioning of the trading sphere. The highest level of formation is characteristic of the areas of the Carpathian region (Lviv, Ivano-Frankivsk and Transcarpathian regions), and the least intensively this sector is developing in Vinnytsia and Chernivtsi regions.

Communication as a branch of economy consists of enterprises, lines and nodes, which provide the process of transmitting information over a distance (ie, telecommunication). This includes communication departments, telephone and telegraph stations, post office, radio broadcasting, television, etc.

From the beginning of the XXI century along with the media (radio and television), an individual connection is developing extremely fast. At the same time, its traditional form – phone connection – is improving, interlacing with other types (satellite, radio). Another group of the latest telecommunication facilities widely uses video equipment and computers. This is telefax, e-mail, Skype, etc.

Due to accessibility to new forms and types of communication, there is a significant difference in the background of the regions. For example, Lviv region is the leader. Transcarpathian and Vinnytsia regions have rather high index characteristics as well. We have also monitored the dynamics of mobile communication users over the period of 2000-2016. Despite the intensity of this direction development,

it had a significant positive dynamics only within the Lviv region, while in other regions the indicator remained practically unchanged over the estimated period. The number of cable communication users in all areas of the region is decreasing, which can be connected to two indicators – switching to satellite TV or using more affordable and inexpensive technologies (frequency tuners, internet technologies, etc.). Actually, Internet access is the direction of communicative communication, which is actively progressing in all areas of the Carpathian-Podillia region without exception. Most actively it has developed in the Transcarpathian region – over 2000-2016 the number of users increased by almost seven times, in Ivano-Frankivsk – by 4.5 times, in other regions – by 2-3 times.

If one is to estimate the region's share of the indicator of the mobile subscribers number or the number of cable television subscribers, it is slightly more than 10 %, which corresponds to the correlation index of the population share in the Ukrainian index.

Relying on the indicator we have chosen for characterizing the sphere of communication, it should be noted that its most comprehensive development is observed in the Lviv region; rather high level of functioning is characteristic of the Transcarpathian and Vinnytsia regions. The least balanced sector of the social sphere is noted in the Khmelnytskyi region.

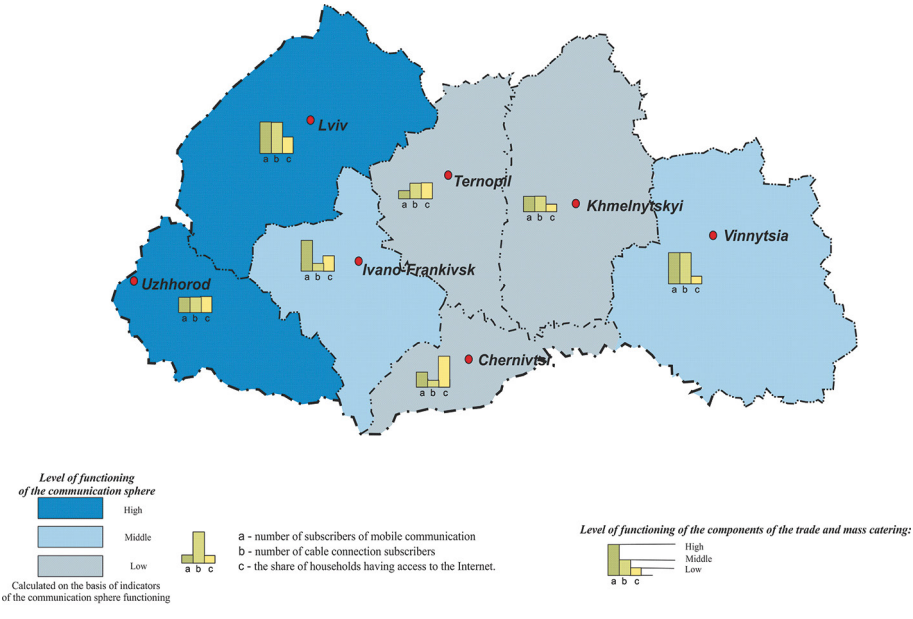

Figure 6

The indicators of the communication sphere functioning in the Carpathian-Podillia region

Source: Statistical collection ´Regions of Ukraine´, 2017. Part 2. Kyiv.

As a result of the analysis, the method of clustering was used through multivariate statistical analysis. On the basis of indicators generalization of blocks-criteria, an algorithm for assessing the functioning of the social sphere of the areas of the Carpathian-Podillia region was formed:

1) the initial mass of information was analysed according to the indicators, which can be considered as two sub-masses - indicators-stimulators and indicators-destimulators;
2) for each of the six groups of indicators, the actual ranking is performed on the basis of absolute indicators, which are given in Statistical Collection ´Regions of Ukraine´, 2017. Part 1; Statistical Collection ´Regions of Ukraine´, 2017. Part 2; Statistical Yearbook of Ukraine for 2016, 2017;
3) for each region, a certain amount of rating indicators is determined, which gives its own semi-quantitative assessment of the social functionality in the regions according to the factors of stimulation;
4) in the format of a graph-tree, one can demonstrate the distribution of regional areas according to the level of social sphere formation and functionality;
5) the suggested meaning assessment of the final regions grouping according to the indicators of the functioning of the social sphere.

This methodological approach to qualitative rating indicators allows us to form a coherent picture of the problem and to evaluate the social sphere functioning of the areas of the region under study. It shows satisfactory results provided that there is a significant amount of evidence in the output masses of information and their statistical homogeneity and equilibrium.

On the basis of the analysis, one can see (Table 1) that the most balanced social sphere functions in Lviv region. This is due to the high level of organization of the educational sphere at the level of pre-school, general and higher education, the cultural sphere, which is monitored due to the demand of cultural institutions and their updating, the sphere of trade and mass catering that ensure the availability of food products and services for the local population and tourists, as well as communication (using of new and existing forms of communication by population) - these indicators provided the leading position of the region.

The general picture of the assessment shows that the majority of regions (Vinnytsia, Transcarpathian, Ivano-Frankivsk, Ternopil, Khmelnytskyi) have similar indicators of social development, but each of them often has its own advantages in the development of the social sphere elements. This does not allow to assert a balanced functioning level of the social sphere within these territories. Thus, for Vinnytsia region, the high development of the sphere of education, culture, housing and communal services and communications, but the low level of functioning of the medical staff sector and trade. Transcarpathian region is character-

Table 1 Ranking of parts of Carpathian-Podillia region according to the level of social sphere elements formation, indexes of 2016*

Regions	CRITERIA FOR EVALUATION / RANK																					
	Educa-tional sphere				Cultural sphere					Medical s phere				Housing and communal services		Trade and mass catering			Communi-cation			Combined ranking of the region	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	total	rank
Vinnytsia	1	7	2	4	1	2	3	6	5	6	6	6	2	1	5	7	6	1	2	1	6	80	4
Transcarpathian	4	1	6	7	7	6	2	4	2	7	7	7	1	6	4	5	2	3	3	3	1	88	6
Ivano-Frankivsk	6	2	5	5	5	4	5	4	7	1	1	4	6	3	3	2	5	2	2	6	4	82	5
Lviv	5	4	1	1	4	5	1	1	1	3	3	1	5	7	2	1	1	6	1	2	3	58	1
Ternopil	3	5	3	2	3	3	3	3	6	4	2	2	4	4	1	3	7	2	6	4	5	75	2
Khmelnytskyi	1	6	4	6	2	1	4	3	3	5	4	3	3	2	3	4	4	4	5	5	7	79	3
Chernivtsi	2	3	5	3	6	4	6	5	4	2	5	5	7	5	6	6	3	5	4	7	2	95	7

** Calculated for Statistical Collection ´Regions of Ukraine´, 2017. Part 1; Statistical Collection ´Regions of Ukraine´, 2017. Part 2; Statistical Yearbook of Ukraine for 2016, 2017.*

ized by a high development of the sphere of communication and trade, and other areas of social sphere are rather problematic. Ivano-Frankivsk region has a good level of functioning of medical services, housing and communal services and trade. Ternopil region shows good indicators for the functioning of the components of the educational sphere, culture, medicine, housing and communal services. Khmelnytskyi region is marked by good development of the sphere of culture, medicine, housing and communal services. As for the Chernivtsi region, in comparison with other regions of the Carpathian-Podillia region, this region has only high level in the sphere of education, while in the other groups of indicators there are unbalanced and low indicators. The suggested clustering of the regions of the research area (Table 1) shows their place according to the balance indicators of the social sphere functioning.

CONCLUSIONS

The social sphere of Ukraine in general and its major regions are experiencing the period of diversification of its components. The current assessment of the social sphere components is based on sectoral analysis. With significant potential, the regions of Ukraine do not always use their potential properly.

In the process of consideration of each social sphere component of the Carpathian-Podillia region, we analysed the main groups of criteria. This allowed determining the differentiation of levels of social sphere formation of the region in general. We have selected six main groups of indicators that allow us to consider the level of social sphere formation in the studied region – education, culture, medical sphere, housing and communal conditions, communication, trade and mass catering. In each of the suggested groups there were its own applicators, demonstrating the functionality of the corresponding component of the social sphere (in some cases, two of them, in others five). At the first stage, we have evaluated and analyzed each component of the social sphere separately, based on selected applicators, which are reflected in thematic cartographic models. At the next stage, we have carried out their generalization and have conducted the cluster analysis, which is reflected in the corresponding table.

On the background of the regional indicator of the social sphere functioning and formation Lviv region is marked by a high level of education (in particular, the number of pupils and students is high per 10 thousand local people), culture (increased interest of local people in visits to theatres, museums and concert events), trade and mass catering (indexes of shopping malls per number of inhabitants and expenses incurred by residents during the year in the trade network), as well as communications (number of users and availability of mobile and stationary communication) – these indicators provided the leading positions of the region. For most areas of the region (Vinnytsia, Transcarpathian, Ivano-Frankivsk, Ternopil, Khmelnytskyi) there is a very narrow amplitude of total indicators, which can be a confirmation that in the consolidated form the social sphere does not have a significant difference in these areas. Thus, Vinnytsia region is characterised by a high level of coverage of children by pre-school institutions and the number of students in the labor professions, the provision of population by library funds per 100 people as well as club facilities per 100 people, residential areas, and also has the highest number of cable television and mobile communication users in the region. The Transcarpathian region is a leader in terms of the number of students in general educational institutions, the attendance of the population of museum institutions, the planned capacity of outpatient clinics and the availability of the Internet for the population. The Ivano-Frankivsk region is characterized by high indicators of the number of students of general educational institutions, the coverage of population by doctors and average medical personnel, and the indicator of the number of mobile communication subscribers. Ternopil region is characterized by a high rate of number of students of higher educational institutions of I-IV levels of accreditation; high rates of population provision by middle medical personnel and hospital beds, as well as a high level of welfare in private dwellings. Khmelnytskyi region is a leader in coverage of children by pre-school institutions, availability of

library funds for the population and the number of places in club facilities, as well as availability of housing areas. The weakness of the social sphere of Chernivtsi region according to the criteria we have chosen is based on the low positions of the cultural sphere, housing and communal services as well as medical sphere.

The conducted study allows determining the strategic directions of the social sphere development in the Carpathian-Podillia region in general as well as in separate areas. On this basis, it is possible to create programs of regional development of the social sphere for the regional development needs.

REFERENCES

BONTIS N. (2004). National Intellectual Capital Index: A United Nations Initiative for the Arab Region. *Journal of Intellectual Capital* 5 (1), pp.13- 39.

COOKE P., CLIFTON N., OLEAGA M. (2005). Social capital, firm embeddedness and regional development, *Regional Studies*, 39:8, 1065-1077, DOI: 10.1080/00343400500328065

KUTSENKO V.I., OSTAFIICHUK J.V. (2005). *Transformation of the social sphere of Ukraine: regional aspect*. Oriony, Kyiv. (in Ukrainian: Трансформації соціальної сфери України: регіональний аспект).

KUTSENKO V.I. (2008). *Social sphere: reality and contours of the future (issues of theory and practice)*, TOV Ltd ´Publishing House ´Aspect-Polygraph´, Nizhyn. (In Ukrainian: Соціальна сфера: реальність і контури майбутнього (питання теорії і практики): ТОВ ´Видавництво ´Аспект-Поліграф´, Ніжин). ISBN 978-966-340-254-3, 818 p.

KUZYSHYN A.V. (2015). *Characteristics of the social sphere of Western Ukrainian regions in the light of employment*. Lviv Social and Geographical School: history, theory, Ukrainian studies: Materials of the All-Ukrainian Conference with participation of foreign scientists, dedicated to the 70-anniversary of Department of Economic and Social Geography of Lviv Ivan Franko National University (November 19-20, 2015). (in Ukrainian: Характеристика соціальної сфери західноукраїнських областей в світлі зайнятості населення.)

KUZYSHYN A.V. (2017). The Analysis of the Regional Dimension of Human Development in Ukraine. W: *Prace Komisji Geografii Przemysłu Polskiego Towarzystwa Geograficznego*. Vol 31. Kraków, pp. 111-119.

KUZYSHYN A.V. (2018). Territorial features of the social sphere in the Carpathian-Podilsk region. W: *Scientific records of Ternopil National Pedagogical University. Series: Geography*. 44 (1). 64-71. (in Ukrainian: Кузишин А.В., 2018. Територіальні особливості соціальної сфери в Карпатсько-Подільському регіоні. Наукові записки Тернопільського національного педагогічного університету. Серія: Географія. 44(1). 64-71).

MALHOTRA Y. (2000) Knowledge assets in the global economy: assessment of national intellectual capital. Journal of Global Information Management 8(3), pp. 5-15.

NEMETS L.N. 2003. *Sustainable development: socio-geographical aspects (on the example of Ukraine)*. Fact, Kharkiv. (in Ukrainian: Устойчивое развитие: социально-географические аспекты (на примере Украины)).

PACHURA P., NITKIEWICZ T., MATLOVICOVA K., MATLOVIC R. (2018). Identification of Intellectual Capital Performance Using Data Envelopment Analysis, pp. 115 – 130. In: Stejskal J., Hajek P., Hudec O. (eds, 2018): *Knowledge Spillovers in Regional Iinnovation Systems*. A Case Study of CEE Regions. Https:I/doi.org110. loo?/978-3-319 -67029-4.

STAHLE P. (2008). National intellectual capital as an economic driver: perspectives on identification and measurement. In: Ahonen G. (ed). *Inspired by knowledge in organizations.* Essays in honour of Professor Karl-Erik Sveiby in his 60th birthday. Publications of the Swedish School of Economics and Business Administration, No 182, Helsingfors, pp. 94-121.

Statistical Collection ´Regions of Ukraine (2017). Part 1. Kyiv. (in Ukrainian: Статистичний збірник ´Регіони України´).

Statistical Collection ´Regions of Ukraine (2017). Part 2. Kyiv. (in Ukrainian: Статистичний збірник ´Регіони України´).

Statistical Yearbook of Ukraine for 2016 (2017). Kyiv. (in Ukrainian: Статистичний щорічник України за 2016 рік.).

TOPCHIEV O.G., MALCHIKOVA D.S., YAVORSKAYA V.V. (2015). Regional studies: geographical bases of regional development and regional politics. OLDOI-PLUS, Kherson. (in Ukrainian: Топчієв О.Г., Мальчікова Д.С., Яворська В.В. Регіоналістика: географічні основи регіонального розвитку і регіональної політики), 372 p.

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TOURIST RESOURCES ASSESEMENT IN PĂDUREA CRAIULUI MOUNTAINS

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Abstract
Considering the expansion and the increase of the impact of tourism on the natural environment, the present study deals with the assessment of the touristic resources of the Pădurea Craiului Touristic Destination, Bihor County, Romania. Thus, 73 objectives regarding the availability of turning a profit through tourism were analysed, ranked and systematised based on a methodology developed by the present study. The results obtained represent a valuable support for further scientific and practical steps in what the sustainable management and economic capitalisation of space is concerned.

Key words
Touristic destination, touristic assessment, touristic resources, touristic infrastructure.

INTRODUCTION

Tourism represents an essential economic component which has lately been in a continuous development state as a result of the socio-economic mutations determined by globalisation (Lechner, 2009) and by the change of the society from an industrial one to an informational one based on knowledge. Therefore, the assessment of the touristic resources in a given area are constituted in a main requirement which has a major impact in the development of the local economies (Ilieș et al., 2016; Liu, 2006; Johnson, 2010; Mgonja et al., 2015).

The aim of the assessment of the touristic heritage is the understanding of the development potential of an area as well as its limitations induced by the real capacity of the territory to sustain the touristic circulation with all its connected effects. In the sense of a sustainable development (Andronache et al., 2019; Herman et al., 2019; Wendt et al., 2019), the assessment of the touristic resources need to take into account both the advantages of a touristic destination (Herman et al., 2019; Matlovičová, Husárová, 2017) as well as its ruggedness defined by the

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ability to control, respectively to integrate the negative effects generated by the touristic activity into the operational mechanism of the society (Lee, 2013; Matlovicova et al. 2019; Goodwin and Santilli, 2009).

On this background, several quantification / assessment methodologies of the touristic potential were developed at a touristic objective, local, territorial administration unit level, etc. (Cetin et al., 2018; Lee et al., 2013; Hoang et al., 2018; Trukhachev, 2015).

Nevertheless, due to the complexity of tourism in general and especially its potential, new personalised approaches are imposed considering the assessment of the touristic potential taking into account the management, promotion and capitalisation through a sustainable and responsible tourism, in accordance to the needs of the local community (Matlovičová K., et al., 2016a; 2016b, 2014a; 2014b).

Such an approach was applied to the Pădurea Craiului Destination in Bihor County, Romania. The studied area is located in Apuseni Mountains, respectively Pădurea Craiului Mountains between Crișul Repede River in the north and Crișul Negru River in the south.

From an administrative point of view, the destination is spread over 12 territorial administrative units (Aștileu, Bratca, Bulz, Căbești, Dobrești, Măgești, Pomezeu, Remetea, Roșia, Șuncuiuș, Vadu Crișului and Vârciorog) with a surface of 975 km^2, defined in 2012, through 60 municipalities comprising a population of 38,432 inhabitants. The largest municipalities, considering the number of inhabitants is Dobrești (5,260 inhabitants), Bratca (5,158 inhabitants), Vadu Crișului (4009 inhabitants) while the smallest ones were Vârciorog (2304 inhabitants), Bulz (2104 inhabitants) and Căbești (1848 inhabitants).

PURPOSE AND RESEARCH METHODOLOGY

The study regarding the assessment of the touristic resources of Pădurea Craiului Destination imposed the study of the speciality literature and the on site study of 73 objectives (39 natural objectives and 34 anthropic ones) which have a considerable share in the touristic phenomenon in order to carry out the present study and may be further turned into profit. From a methodologic point of view in order to carry out the present study, 10 defining indicators were used (interest, attractiveness, maintenance, accessibility, integrity, visibility, additional options, protection, touristic infrastructure and impact), each comprising four value levels of approach (Table 1). Based on the indicators, a scale was created for the touristic heritage with a range comprised between: 0.325 and 0.525 points (minor role); 0.526 and 0.725 points (medium role); 0.726 and 0.925 points (major role).

Table 1 Criteria used for the quantification of the touristic heritage

No	Assessment Criteria	The value of the level of approach			
		I	II	III	IV
		0.25	**0.50**	**0.75**	**1**
1	**Interest**	0.25	0.50	0.75	1
2	**Attractiveness**	0.25	0.50	0.75	1
3	**Accessibility**	0.25	0.50	0.75	1
4	**Additional options**	0.25	0.50	0.75	1
5	**Integrity**	0.25	0.50	0.75	1
6	**Visibility**	0.25	0.50	0.75	1
7	**Maintenance**	0.25	0.50	0.75	1
8	**Protection**	0.25	0.50	0.75	1
9	**Touristic infrastructure**	0.25	0.50	0.75	1
10	**Negative impact**	1	0.75	0.50	0.25
	Total	0.325	0.525	0.725	0.925

In order to identify, analyse and spatially interpret the obtained values, the ArcGis 10.6 software was used, respectively the spatial interpolation method. The purpose of this method is to estimate and compare the data around a reference point as well as creating prognoses when a piece of information or a value is missing (Xiao et al., 2016; Li și Heap, 2014; Hart and Zandbergen, 2014). The spherical model a the semivariogram was chosen to carry out the present study (Bilai et al., 2013; Johnson, 2010; Johnston et al., 2001; Moody, 2012; O'Connor, 2010; 2019; Oliver, 1990; Romocea et al., 2018).

RESULTS AND DISCUSSION

Following the general assessment of the touristic heritage concerning the perspective of capitalization through tourism, resulted that it has a medium potential on a minor to medium and large scale of values. The analysis of the potential of the touristic heritage highlighted the existence of a series of dysfunctionalities concerning the additional options (0.35 points; minor role), visibility (0.42 points; minor role) and interest (0.43 points; minor role). A better situation was highlighted by the indicators regarding accessibility (0.87 points; major role), negative impact (0.82 points; major role) and touristic infrastructure (0.80 points; major role) (Figure 1, Table 1).

Table 2 Criteria used for the quantification of the touristic heritage

No.	Assessment Criteria	Natural resources			Anthropic resources			Natural and anthropic resources		
		Total points	Total points / objective	Role	Total points	Total points/ objective	Role	Total points	Total points / objective	Role
	Interest	19.5	0.5	minor	12	0.35	minor	31.5	0.43	minor
2	**Attractiveness**	29.25	0.75	major	18,5	0.54	medium	47.75	0.65	medium
3	**Accessibility**	34	0.87	major	30	0.88	major	64	0.87	major
4	**Additional options**	14.75	0.37	minor	11.5	0.33	minor	26.25	0.35	minor
1	**Integrity**	26.25	0.67	medium	22.25	0.65	medium	48.5	0.66	medium
6	**Visibility**	19.5	0.5	minor	11.75	0.34	minor	31.25	0.42	minor
7	**Maintenance**	27.5	0.7	medium	25.25	0.74	major	52.75	0.72	medium
8	**Protection**	32.25	0.82	major	22.5	0.66	medium	54.75	0.75	major
9	**Touristic infrastructure**	31.75	0.81	major	27.25	0.8	major	59	0.8	major
10	**Negative impact**	33.5	0.85	major	27	0.79	major	60.5	0.82	major
	Total	268.25	6.87	medium	208	6.11	medium	476.25	6.52	medium

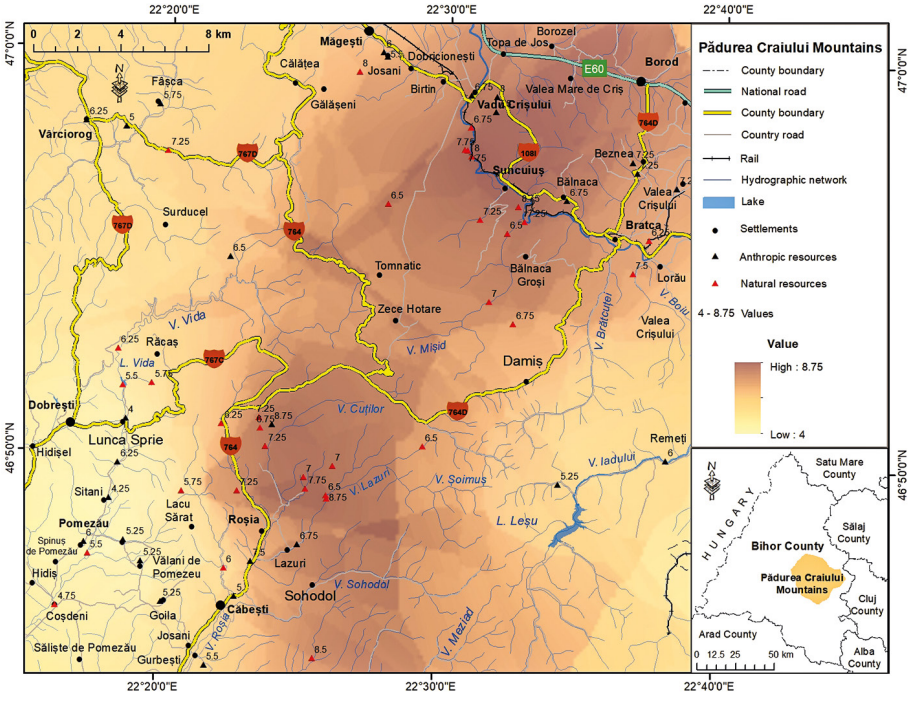

Figure 1
Map for the assessment of touristic resources in Pădurea Craiului Mountains

The analysis on category types of the potential of touristic resources highlights the importance of natural touristic resources (268.25 points; 6.8 points per objective), in relation to the anthropic touristic resources (208 points; 6.11 points per objective). Nevertheless, according to the assessment scale both resources categories, natural and anthropic, are comprised in the category of medium role resources considering the management promotion and capitalisation through tourism (Figure 1, Table 2).

The analysis of the touristic potential considering their role in the touristic capitalisation highlights three types of resources: I. resources with a minor role (9 touristic resources, 1 natural and 8 anthropic); II. Medium role resources (50 touristic resources, 29 natural and 21 anthropic); III. Major role resources (9 touristic resources, 9 natural and 5 anthropic).

The analysis of the points obtained after the assessment of the touristic heritage of the Pădurea Craiului Touristic Destination highlights, hierarchically, the following objectives: Farcu Mine (8.75 points); Vântului Cave (0.75 points), Runcuri Traditional House (0.75 points), Meziad Cave (0.85 points); Gălășeni Cave (0.8 points); Crișul Repede Gorge (0.8 points) and Petru Hașaș Pottery Workshop (0.8 points). On the

opposite site there are the Wooden Church of Lunca Sprie (0.4 points); The Water Mill of Sitani (0.25 points); Dobsa Manor (0.475 points); The Water Mill of Căbești (0.5 points) and The Water Mill of Vârciorog (0.5 points).

The spatial analysis of the potential of the touristic heritage highlights the existence of two spatial agglomerations, where the touristic resources are stands out through number, density and increased aesthetic-cultural value. The first agglomeration is located in the north-eastern part of Pădurea Craiului Mountains along the Crișul Repede River, comprising a series of natural resources of a major importance with real possibilities of capitalisation through tourism. Among these resources there are Vadu Crișului Cave, Vântului Cave, Bătrânului Cave, The Great Meander or Mișidul Gorge with Moanei-Lesiana carst system. The second agglomeration is located in the south-eastern part of Pădurea Craiului Mountains, within the hydrographic basin of Roșia Valley. This is individualise both through caves as natural resources, Farcu Mine, Ponor Griddle, Gruieț, Doboș, Craiului Cave, Albioarei Gorge, Cuților or Lazurilor, as well as through man made objectives The workshop of the artist of the horn violin Dorel Codoban, The water mill of Roșia, or the Traditional House Complex, all with a major value. After the spatial repartition of the values obtained from the assessment of the touristic heritage of Pădurea Craiului Mountains, an availability in future investments is observed in a bipolar concentrated system, respectively in two major centers located in the north-eastern part of the studied area, along the Crisul Repede River and respectively the south-eastern part of Pădurea Craiului Mountains along Roșia Valley and its affluences (Sohodol, Șoimuș, Lazuri, Cuților and Mișid).

CONCLUSIONS

Increasing the anthropic impact together with the increase of the number of populations together with its needs has led to the appearance of a major number of changes in the structure and functionality of the natural environment. Systemically observed the natural environment is similar to a living organism, therefore any change brought forth or induced in a subsystem, part of the geosystem, is reflected through other changes at the level of its other constituting subsystems in its tendency to self-regulate. Up to a point, the system has its own mechanisms to help it adapt in order for it to function properly. Considering that the studied area is a structural part, an important subsystem of the natural environment with a major role in the preservation and protection of biodiversity, the problem of promoting and capitalising it through tourism arises which is in complete accordance with the principle of development.

Therefore, the present study concerning the assessment of touristic resources, is very important, as it constitutes a strategic tool for the possibilities to promote and capitalise the analyse area through tourism. Moreover, an assessment meth-

odology for the 73 objectives (39 natural, 34 anthropic) was created consisting in the use of 10 defining indicators (interest attractiveness, maintenance, accessibility, integrity, visibility, additional options, touristic infrastructure and impact). The assessment of the touristic resources was carried out on two levels, the first level being based on points given for each objective while the second one was carried out on a spatial level which imposed an integrated analysis on a spatial level depending on the nominal value of each touristic resource. Taking into consideration all of the above, both the functional aspects as well as the dysfunctionalities were highlighted in what the capitalisation possibilities of each touristic resource is concerned considering them as a structural element. The creation of groups and ranks and the carrying out of a spatial analysis of the touristic resources were made based on the obtained results. The touristic resources with the largest number of points were highlighted, then the creation of groups for all the assessed resources was carried out on three typologies depending on their role, in order to finally using the ArcGis 10.6 software to carry out a spatial analysis which highlighted the existence of two areas of maximum importance considering the touristic resources and the value they have in tourism.

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REFERENCES

ANDRONACHE, I., MARIN, M., FISCHER, R. et al., (2019). Dynamics of forest fragmentation and connectivity Using particle and fractal Analysis. *Scientific reports*, 9(1), 1-9.

BIALI, G., STĂTESCU, F., LUCIAN, P. V. (2013). Mapping nitrate levels in groundwater using GIS. *Environmental Engineering & Management Journal*, 12, 4, 807-814.

CETIN, M., ZEREN, I., SEVIK, H. et al. (2018). A study on the determination of the natural park's sustainable tourism potential. *Environmental Monitoring and Assessment*, 190, 3.

GOODWIN, H., SANTILLI, R. (2009). Community-based tourism: A success. *ICRT Occasional paper*, 11, 1, 1-37.

HART, T., ZANDBERGEN, P. (2014). Kernel density estimation and hotspot mapping. *Policing: An International Journal of Police Strategies & Management*, 37, 2, 305–323.

HERMAN, G.V., ILIEȘ, D.C., GACEU O. et al. (2019). Some Considerations Concerning the Quality of Groundwater in the Natura 2000 Lunca Barcăului (Barcăului Meadow) Site, Romania. *Environmental Engineering and Management Journal*, 18(9), in published.

HERMAN, G.V., WENDT, A.J., DUMBRAVĂ, R. et al. (2019). The role and importance of promotion centers in creating the image of tourist destination: Romania. *Geographia Polonica*, 92 (4), in published.

HOANG, H., TRUONG, Q., NGUYEN, A. et al. (2018). Multicriteria Evaluation of Tourism Potential in the Central Highlands of Vietnam: Combining Geographic Information System (GIS), Analytic Hierarchy Process (AHP) and Principal Component Analysis (PCA). *Sustainability*, 10, 9, 3097.

ILIEȘ A., WENDT A.J., ILIEȘ D.C. et al. (2016). The patrimony of wooden churches, built between 1531 and 2015, in the Land of Maramureș, Romania, *Journal of Maps*, 12, 597-602.

ILIEȘ, D.C. BAIAS, Ș. BUHAȘ, R. et al. (2017). Environmental education in protected areas. Case study from Bihor County, Romania. *GeoJournal of Tourism and Geosites*, 19 (1), 126-132.

ILIEȘ, D.C., ONEȚ, A. HERMAN, G.V. et al. (2019). Exploring the Indoor Environment of Heritage Buildings and its Role in the Conservation of Valuable Objects. *Environmental Engineering and Management Journal*, 18(9), in published.

JOHNSON, P.A. (2010). Realizing rural community-based tourism development: Prospects for social economy enterprises. *Journal of Rural and Community Development*, 5(1), 150-162.

JOHNSTON, K., VER HOEF, J. M., KRIVORUCHKO, K. et al. (2001). Creating a surface with geostatistical techniques; using analytical tools when generating surfaces. *Using ArcGIS Geostatistical Analysis*, 131-219.

LECHNER, F.J. (2009). *Globalization: The making of world society*. John Wiley & Sons.

LEE, S.-H., CHOI, J.-Y., YOO, S.-H. et al. (2013). Evaluating spatial centrality for integrated tourism management in rural areas using GIS and network analysis. *Tourism Management*, 34, 14–24.

LEE, T.H. (2013). Influence analysis of community resident support for sustainable tourism development. *Tourism management*, 34, 37-46.

LI, J., HEAP, A.D. (2014). Spatial interpolation methods applied in the environmental sciences: A review. *Environmental Modelling & Software*, 53, 173–189.

LIU, A. (2006). Tourism in rural areas: Kedah, Malaysia. *Tourism management*, 27, 5, 878-889.

MATLOVIČOVÁ K., MOCÁK, P. (2014a). Intraurbánna kriminalita a jej prevencia v konceptuálnom rámci CPTED (príklad mesta Prešov). *Geografický časopis / Geographical Journal.* Vol. 66, No. 3, 2014, pp.: 199-223

MATLOVIČOVÁ K., KORMANÍKOVÁ J. (2014b). City Brand-Image Associations Detection. Case Study of Prague. SGEM International Multidisciplinary Scientific Conferences on Social Sciences and Arts, *SGEM 2014*, Psychology & Psychiatry, Sociology & Healthcare, Education, Conference Proceedings, Volume II., Sociology and Healthcare, Albena, Bulgaria, ISBN 978-619-7105-23-0, ISSN 2367-5659, pp. 139-146

MATLOVIČOVÁ, K., HUSÁROVÁ, M. (2017). Heritage marketing a možnosti jeho využitia pri rozvoji turistickej destinácie. Prípadová štúdia hradu Čičva. *Folia Geographica,*59(1), 5-35.

MATLOVIČOVÁ K., KOLESÁROVÁ J., MATLOVIČ R. (2016a). Vybrané teoretické aspekty destinačného marketingu založeného na participácii marginalizovaných komunít. In: Hotelnictví, turizmus a vzdělávání: sborník recenzovaných příspěvků z 8. ročníku mezinárodní vědecké konference, Praha: Vysoká škola hotelová, pp. 128-143

MATLOVIČOVÁ K., MOCÁK P., KOLESÁROVÁ J. (2016b). Environment of estates and crime prevention through urban environment formation and modification. *Geographica Pannonica*, Volume 20, Issue 3, pp. 168-180

MATLOVICOVA, K., TIRPAKOVA, E.; MOCAK, P. 2019. City brand image: semiotic perspective a case study of Prague. *Folia Geographica*, Vol.: 61 (1), pp. 120-142

MGONJA, J.T., SIRIMA, A., BACKMAN, K.F. et al. (2015). Cultural community-based tourism in Tanzania: Lessons learned and way forward. *Development Southern Africa*, 32, 3, 377-391.

MOODY, R., VAN AST, J.A. (2012). Implementation of GIS-based applications in water governance. *Water resources management*, 26, 2, 517-529.

O'CONNOR, M., ZABIK, M., CADY, C. et al. (2010). Multi-element analysis and geochemical spatial trends of groundwater in rural northern New York. *Water*, 2, 2, 217-238.

OLIVER, M.A., WEBSTER, R. (1990). Kriging: a method of interpolation for geographical information systems. *International Journal of Geographical Information System*, 4, 3, 313-332.

ROMOCEA, T., ONEȚ, A., SABĂU, N.C. et al. (2018). Change of the groundwater quality from industrial area oradea, romania, using geographic information systems (GIS). *Environmental Engineering & Management*, 17, 2189-2199.

TRUKHACHEV, A. (2015). Methodology for Evaluating the Rural Tourism Potentials: A Tool to Ensure Sustainable Development of Rural Settlements. *Sustainability*, 7(3), 3052–3070.

WENDT, A.J., BUHAȘ, R., HERMAN G.V. (2019). Experience of the Baile-Felix Tourist System (Romania) For the Protection and Promotion of the Grey Seal as a Brend on the Hel Peninsular (Poland). *Baltic Region/Baltijskij Region*, 11(1), 109-116.

XIAO, Y., GU, X., YIN, S. et al. (2016). Geostatistical interpolation model selection based on ArcGIS and spatio-temporal variability analysis of groundwater level in piedmont plains, northwest China. *SpringerPlus*, 5, 1.

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CULTURAL DIPLOMACY OF SELECTED COUNTRIES IN A COMPARATIVE PERSPECTIVE

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Abstract
The objective of the present paper is to analyse and compare activities and actors of cultural diplomacy of Slovakia, Austria, China and the US. Since cultural diplomacy is a rather complex phenomenon, we predominantly focus on the targets and activities conducted by official cultural institutes. Besides, we look at the countries´ participation in international organisations pursuing common cultural policy. The research is supported by both domestic and foreign scientific sources and official websites of ministries, cultural institutes, statistical offices and similar. The outcome of the research are recommendations for improvement of cultural diplomacy practices of the selected countries. We conclude that the numbers of official entities responsible for cultural diplomacies of respective countries differ considerably. However, their agendas are similar.

Key words
Cultural diplomacy, cultural institutes, comparison, Austria, Slovakia, USA, China

INTRODUCTION

Throughout the centuries, the basic concept of diplomacy has evolved into various subfields, depending on the articulated objectives. Both in theory and praxis we distinguish economic diplomacy, sport diplomacy, public diplomacy, environmental diplomacy and other specific kinds. One of the dimensions of diplomacy is cultural diplomacy. According to Pajtinka (2015b), cultural diplomacy, political diplomacy, economic diplomacy and military diplomacy are the basic components of the overall concept. Furthermore, the individual dimensions frequently overlap.

In this paper we firstly focus on the notion of cultural diplomacy, its definitions and relation to other dimensions of diplomacy and related phenomena. Next, we describe activities, aims and main actors of cultural diplomacy of selected European as well as non-European states, namely Slovakia, Austria, China and the US. The selection of the countries was made upon the authors´ research interest. There are likely to be differences mainly between cultural diplomacy of China in relation to the other countries, because of distinct political regime. Besides, two

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of the states belong to countries with a relatively small population and area; two other states are among the most populated and the largest countries in the world. Hence, we can suppose, there may be considerable differences for example with regards to the number of cultural institutes.

Scientific literature provides numerous contributions on the topic of cultural diplomacy, studying the concept from diverse points of view. The element of comparison is present for example in the work of Udovič and Podgornik (2016), who analyse cultural diplomacy in Slavic member states of the European Union. Pajtinka (2015a) has contributed to the debate on institutional and organizational models of cultural diplomacy of Austria, Slovakia, Germany and France.

It is fairly difficult to define the concept of cultural diplomacy, as it is in constant development. Cultural diplomacy is frequently considered to be a part of public diplomacy (Rusiňák et al. 2012), which may be due to their orientation on the broad public (Mattoš, 2013). In both cases (as well as when applying the instruments of so-called *soft power*), a state communicates externally (Pánek Jurková, 2018). Apart from public diplomacy and soft power, cultural diplomacy may demonstrate similar characteristics as nation branding. The difference is that nation branding utilizes marketing methods, whilst cultural diplomacy focuses on cultural products (Pánek Jurková, 2018). However, both nation branding and public diplomacy have a common goal and that is place promotion (Matlovicova, Husarova 2017; Matlovicova, Tiraákova, Mocak 2019). As Kim (2017) points out, there is no single definition of cultural diplomacy; the meaning varies based on the context. For the purpose of our research, the definition of the Institute for Cultural Diplomacy (ICD) seems to be appropriate. The ICD defines cultural diplomacy "as a course of actions, which are based on and utilize the exchange of ideas, values, traditions and other aspects of culture or identity, whether to strengthen relationships, enhance socio-cultural cooperation, promote national interests and beyond (Pachura 2018); Cultural diplomacy can be practiced by either the public sector, private sector or civil society." According to the definition, cultural diplomacy may be targeted at diverse objectives and conducted by public entities or individuals. A comprehensive grasp of the concept of cultural diplomacy requires a deeper understanding of its various aspects (Matlovic, Matlovicova 2012, 34). Kurucz (2007) in this respect claims that cultural diplomacy is engaged in an international exchange of information, ideas and cultural values, with fine arts, science, sport and education playing the most significant role.

In order to achieve its objectives, cultural diplomacy applies culture and arts as its means of communication. Besides, the activities are often accommodated to specific needs of a location (Pánek Jurková, 2018). As already emphasised, there is a variety of actors of cultural diplomacy, but activities of cultural diplomacy are most often conducted by diplomatic missions or cultural institutes, whereby cultural institutes may have either diplomatic or non-diplomatic status (Pajtinka,

2015a). Nevertheless, any individual presenting their culture to representatives of another national culture can be considered an indirect actor of cultural diplomacy, even without being aware of doing so (Čiefová, 2018). In any case, in the promotion of national culture, through the disproportionately massive development of tourism, it is necessary to set up a "cautionary platform" that sets certain limits. These should prevent disturbance or undesirable social changes, modification or even the decline of traditional cultures (Matlovicova, Kolesarova, Matlovic 2016.).

OBJECTIVES, DATA AND METHODS

The main objective of the research is to comparatively analyse activities and institutional structure of cultural diplomacy of four states, namely the Republic of Austria, the Slovak Republic, the United States of America, and the People´s Republic of China. When doing so, we refer to domestic as well as foreign scientific literature sources, and to official websites of ministries, cultural bodies, and statistical offices of the countries in question. The methods used within the paper include qualitative research methods, such as (comparative) analysis, synthesis, description, and discourse analysis. When comparing the numbers of cultural institutes in the respective countries, we calculate them as numbers of cultural institutes per 1 million inhabitants, to make the comparison feasible (as seen by Udovič and Podgornik, 2016). The description of cultural diplomacy of individual states is followed by a comparative analysis resulting in articulation of the countries´ strengths and weaknesses regarding their cultural diplomacy. The research results are suggestions for improvements and optimisation of cultural diplomacy of the analysed countries.

CULTURAL DIPLOMACY OF AUSTRIA

Austria is well-known for its cultural products all around the globe. Classical music and composers, literature, and architecture are just few elements of Austrian culture attracting people from other countries. An inherent part of Austrian culture is the language.

Cultural diplomacy of Austria is thoroughly discussed by Mattoš (2013), who points out the phenomenon of Austrian neutrality as a significant element of its foreign policy, as well as enormous potential of Austria´s cultural diplomacy with regards to its rich historical experience. Maurer´s research (2016) revealed that Austrian diplomacy as such had been rather adapting to European and global tendencies, instead of actively pursuing change. She also points out the issue of budget cuts in relation to diplomatic activities.

Austrian institutional system of cultural diplomacy is rather developed. The country´s cultural policy is in responsibility of the Federal Ministry for Europe, Integration and Foreign Affairs (*Bundesministerium für Europa, Integration und Äußeres*

- *BMEIA*). Currently, there are 30 Austrian Cultural Fora in 28 countries, that focus on specific needs of a location. From the geographical point of view, most of Austrian Cultural Fora are located in Europe (Belgrade, Berlin, Bern, Bratislava, Brussels, Bucharest, Budapest, Istanbul, Kiev, Ljubljana, London, Madrid, Milan, Moscow, Paris, Prague, Rome, Sarajevo, Warsaw, Zagreb); five in Asia (New Delhi, Peking, Teheran, Tel Aviv, Tokyo); four in Central and Northern America (Mexico, New York, Ottawa and Washington); and one on African continent (Cairo). According to the available data, the Fora cover approximately 6,000 cultural and scientific projects every year. The objective is to build and sustain "*cultural bridges in the world*" (BMEIA, 2019d).

Apart from Austrian Cultural Fora, a network of Austria Libraries has been established. The Austria Libraries are aimed at providing information about Austrian culture and science, and thus both by means of books lending, and event organising. At the moment, there are 65 libraries in 28 countries, which operate in collaboration with institutions (mainly universities or libraries) in host countries. Both sides of the partnership have several responsibilities. The host countries provide necessary infrastructure and human resources; Austria, in concrete BMEIA, oversees providing books, budget for books purchases, and similar tasks. The libraries locations are usually those with no Austrian representation (BMEIA, 2019b). In some cases, there are more libraries in a country. For instance, there are three Austria Libraries in Bulgaria, four in Croatia (including Zagreb), six in Poland (including Warsaw), and even eight in the Czech Republic (but none in Prague). As for the countries studied within this paper, there are currently two Austria Libraries in Slovakia, namely in Bratislava and Košice; however, there is no such establishment in China and the US. All Austria Libraries have been set up either in Central and Eastern Europe, the Caucasus area or the Balkans. The overall list of the countries with Austria Libraries is as follows: Albany, Armenian, Azerbaijan, Belorussia, Bosnian and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Israel, Italy, Kazakhstan, Kirgizstan, Kosovo, Latvia, Lithuania, North Macedonia, Poland, Republic of Moldova, Rumania, Russian Federation, Serbia, Slovenia, Slovakia, Turkey, Ukraine (Österreich-Bibliotheken, 2019).

Next, an important actor of Austrian cultural diplomacy is the network of Austria Institutes (*Österreich Institut GmbH*), engaged in providing German language courses abroad. All of them are located in Europe, specifically in the following cities: Belgrade, Bratislava, Brno, Budapest, Krakow, Moscow, Rome, Sarajevo, Warsaw and Wroclaw. The company is almost exclusively financed from its own financial means. Moreover, seven Austrian schools in non-German speaking countries have been established so far. The Austrian schools are, in contrast to Austria Institutes, located not only in European countries (two in Hungary, Czech Republic, Albany, Turkey), but also in Central America (in Mexico and Guatemala). Of course, Austrian language lectors can be found in countries all around the globe. Besides, study mobilities are nowadays a trend (BMEIA, 2019c). We believe, Austria may indirectly profit also from

activities of Germany, Goethe Institute and similar German entities, that support and ensure spread of German language knowledge in the world, although there are some differences between Austrian and German language variety.

In the sphere of cultural diplomacy, Austria cooperates with the members of several international organizations, such as Platform Culture Central Europe, which connects six countries - Austria, Czech Republic, Hungary Poland, Slovakia, and Slovenia. Platform Culture Central Europe contemporarily focuses its activities mainly on non-EU countries (MZVaEZ SR, 2019). Important is also Austria´s membership in the European Union, Council of Europe, UNESCO and EUNIC (European Union National Institutes for Culture) (BMEIA, 2019a).

CULTURAL DIPLOMACY OF SLOVAKIA

Slovakia, compared to China, the US and Austria, is the smallest country in terms of its size as well as population. However, Slovakia is culturally recognized thanks to traditional dance (folklore), clothing (folk costume), folk music and important athletes, thanks to which Slovakia is a well-known country all over the world. (also in Ilies, Wendt, Ilies, et al. 2016). Many Slovak and foreign authors have discussed the topic of Slovak cultural diplomacy in their publications. Erik Pajtinka accentuates that Slovakia cannot be compared with the US in the field of cultural diplomacy, because the US is a superpower. But he also adds that not only the amount of money spent affects the power of cultural diplomacy, but also the attitude of the state to the importance of cultural diplomacy (Pajtinka, 2015a).

Slovak cultural diplomacy is influenced by two ministries: the Ministry of Foreign and European Affairs of the Slovak Republic and the Ministry of Culture of the Slovak Republic. The institutional basis of the Ministry of Foreign and European Affairs of the Slovak Republic (MFaEA SR) consists of the Slovak Institutes (SI) which are responsible for the presentation and dissemination of Slovak culture abroad. Their network has been systematically built since 1993. Each Slovak Institute is currently established by the MFaEA SR. Activities in the field of cultural diplomacy fall under the Ministry of Foreign Affairs of the Slovak Republic. In accordance with the legislation of the Slovak Republic, the institutes are budget units of the Ministry of Foreign Affairs of the Slovak Republic, while the costs of individual institutions differ according to local conditions (MZVaEZ SR, 2011).

The first institute was established in 1994 in Vienna, followed by Warsaw in 1995, Prague in 1996, Berlin in 1997, Moscow in 1998, Rome in 2000. The last Slovak institute established by the MFaEA in 2001 was the Slovak Institute in Paris. In the present, eight Slovak institutes operate (MZVaEZ SR, 2019c). As we can see, seven institutes are in Europe and only one is in Russia. None is in America, Asia or Africa.

SIs operate abroad with the Embassy of the Slovak Republic and are an effective instrument of Slovak foreign policy. In addition to dominant cultural activities,

they also mediate information, documentation and promotion activities, thanks to which they help to create favourable conditions not only for mutual political contacts, but also for cooperation in other areas (see also Ilies, Hurley, Ilies, et al. 2017). The role of SI abroad is not only to introduce Slovakia and Slovak culture, but also to disseminate objective information and knowledge about Slovakia and, in the interest of the Slovak economic policy, to inform about business, investment and tourism opportunities. Their activities ensure and realize the presentation of Slovak art and the cultural dimension of diplomacy in practice. Slovak institutes present the best and most up-to-date of Slovak culture to a foreign audience - genre-diverse events such as exhibitions, concerts, discussions, films, presentations of new books and more (MZVaEZ SR, 2019c). SI's general mission is to develop and support Slovak culture and language abroad and to improve international contacts. It is important to note that in countries where Slovakia does not have a cultural representation in the form of the Slovak Institute, the Embassy of the Slovak Republic takes on this role (Pajtinka, 2015a).

Slovakia also uses various ways and means to spread its culture abroad, such as Pro Libris and Portal of culture Slovakiana. Pro Libris is a joint program of the Ministry of Culture of the Slovak Republic, Slovnaft and the Central European Foundation and it supports the publications of young Slovak artists and their translation. The aim of the program was to support the development of Slovak literature and increase the availability of translations of contemporary European works (Slovnaft, 2013). Slovakiana is a portal and is a part of the European cultural portals network headed by the cultural portal Europeana. The main aim is to digitize Slovak cultural heritage available for the professional and non-professional public (Slovakiana, 2018).

Slovakia, same as Austria, cooperates within multilateral cultural groupings (V4, EUNIC - European Union National Institutes for Culture, ASEF - Asia-Europe, PCCE - Platform Culture Central Europe, Eastern Partnership Platform etc.) (MZVaEZ SR, 2019b). Participation in the UNESCO's World Heritage List is also an important aspect of Slovak cultural diplomacy. The UNESCO list contains 21 various cultural monuments and natural rarities of Slovakia, which include caves, castles, hills, but also the historical centre of the towns of Banska Stiavnica and Bardejov (UNESCO, 2019b).

CULTURAL DIPLOMACY OF THE USA

American cultural diplomacy, and the whole culture in general, is based more on the prevailing private sector support and limited government coordination. The importance of the private sector in US cultural diplomacy is seen particularly in strong position of Hollywood movie industry as a giant in the world, also in the commercial industry, and of course in creative industry. US cultural diplomacy can be also characterized by volatility in terms of intensity of interest and activities, as

well as a short-term horizon of cultural diplomacy that adapts to the current US foreign policy objectives. Also due to these aspects, cultural diplomacy of the US is widespread as a topic debated by many authors.

In the international relations, the United States of America is classified as a large state, which is characterized by a more active foreign policy than in the medium-sized and small states (Druláková, 2008). Druláková advises the economic development of the United States among the factors that make the US more active in cultural diplomacy. Another factor according to Druláková is the geographical location that is associated with the availability of natural resources. The intensity of the active approach of foreign policy is also influenced by national identity and values, which put the nation at the forefront. In the United States, patriotism, belief in hard work and success also contribute to an active approach to foreign policy (Druláková, 2008).

Nakamura and Weed argue that in US cultural diplomacy, the emphasis is on educating the foreign public and providing information about the United States. They also argue that US public diplomacy is characterized by an effort to eliminate negative and stereotyped impressions about American citizens, their attitudes and beliefs, by considering the interests of the foreign public (Nakamura and Weed, 2009).

To the actors of US cultural diplomacy belong individual public diplomacy offices whose roles are divided according to the specific areas of interest. Among the actors of US public diplomacy, we consider the authorities such as Bureau of Educational and Cultural Affairs (ECA) and Bureau of International and Information Programs (IIP). Bureau of Educational and Cultural Affairs (ECA) aims to increase mutual understanding between the US and foreign citizens through educational academic, sports, professional and cultural exchanges in order to develop peaceful relations (ECA, 2019). Bureau of International and Information Programs (IIP) provides information about US foreign policy and about related US foreign policy topics through videos, printed publications, and audio books that reach up to a billion people a year (USACOPD, 2018). IIP supports both physical and virtual places, which can be defined as actors of public diplomacy abroad. The IIP comprises a total of 547 American spaces, including American Centers and American corners around the world. The IIP also manages the content of embassies, and consulates (USACOPD, 2018).

Other actors are NGOs, independent media, think-tanks, American Spaces (American Centers, American Corners) and, last but not least, embassies. American spaces, as places to learn about US culture and the values of American society, use tools such as teaching English, organizing in-house meetings with experts and speakers, or organizing exhibitions.

As a part of cultural diplomacy of the US, different forms of American spaces exist. The best known are the American Centers, which serve as cultural institutes,

have a library and are focused on providing books, films and organizing lectures and other events. Total amount of the American Center is 105 worldwide (USACOPD, 2018). Although the American Centers operate essentially independently, they are headed by an US diplomat who also holds the role of cultural attaché (U.S DEPARTMENT OF STATE, 2019). This gives the embassy an overview of what is happening at the American Center. The American Centers may possibly cooperate with the US Embassy. For example, American Centers will provide their land for events dedicated to the public organized by the US embassy. American Centers aimed at the general public, should not be in the vicinity of the US embassy or consulate. The American Centers' activities include providing information, organizing lectures, exhibitions, or organizing other events in collaboration with local experts or think-tanks and other non-profit organizations (Fialho, 2013).

The American Corners tend to focus on youth who should be given access to literature and internet databases. Access to quality and prestigious publications is one of the main aims of American corners. The American corners are mostly placed in colleges, grammar schools and libraries outside the capital of the recipient country. In order to establish the American Corner, the Department of Public Diplomacy or Cultural Affairs of the Embassy must agree with an institution that would be willing to implement the American Corner on its soil. Total amount of American Corners is 442 worldwide (USACOPD, 2018). The very first physical space, which served for mutual interaction and learning about different cultures and their values was established in 1927 in Argentina (Fialho, 2013). Today, American spaces are located in 169 countries and their total number is over 500 (USACOPD, 2018). Whether the American Corner or rather the American Center is based, it depends not only on the goals and strategy of US public diplomacy in a particular country, but also on the strength of the US Embassy in the country and the importance of the US in bilateral relations. In countries where the US is an important trading partner, there are often American Centers, along with American Corners also outside of the capital (Fialho, 2013).

Another of the main instruments of the US cultural diplomacy is the offer of educational or professional stays in the USA for various periods of time. Stays are aimed at learning about American lifestyle, culture and daily life, creating an environment of mutual understanding. The result of this effort is to draw on long-term relationships, cooperation and understanding differences (Nakamura a Weed, 2009). Teaching the language by US experts and its accessibility to the foreign public is for many countries an important tool of public diplomacy. However, this instrument is not of high importance in US public diplomacy. In comparison with other countries, whose tool is also mother tongue teaching in the host countries, the US is lagging behind (ECAEP, 2019). While the availability of English language teaching by US experts is increasing, demand for it is higher.

CULTURAL DIPLOMACY OF CHINA

It is obvious that China as the world´s most populated country, one of the largest countries by area, and one of the strongest economies needs to strategically present itself to the outside world. As Slobodníková (2014) points out, the country´s economic success can be ascribed to its labour and language, what she calls "geocultural factors."

Chinese cultural diplomacy (as well as public diplomacy and soft power) has been receiving extensive coverage in scientific literature. Some works focus on the aspect of space, i.e. the target country (e.g. Hartig, 2012, discussing the case of Confucius Institutes in Australia); other works attempt to synthesise the issue of cultural diplomacy (or soft power) and economic or political aspects such as the Silk Road (e.g. Winter, 2016; Ondriaš, 2018), and international insertion of China (Becard and Filho, 2019); some works focus on public diplomacy, while at the same time taking into consideration cultural aspects (Meričková, 2013). We can say that research on Chinese cultural diplomacy is no new phenomenon, as some works are already several decades old (e.g. Ratliff, 1969, oriented on China´s cultural diplomacy in Latin America). In our Central European area, a relevant monography was published by Klimeš et al. (2018), representing a detailed contribution on Chinese cultural diplomacy with regards to different regions in the world.

Contemporary foreign policy of China is influenced by the principles of Confucianism, with multilateral diplomacy being one if its pillars (Cibuľa, 2018). The research of Ondriaš (2018) shows that China´s soft power and hard economic power are closely linked. The author concludes, improvement of China´s image could be beneficial in the CEE region for economic purposes, as there may be cultural barriers in doing business due to not being familiarised with the cultural aspects of the country. Because of the aforementioned linkage between soft power and hard economic power, we can suppose, there is also a connection between cultural diplomacy and hard economic power, as the terms soft power and cultural diplomacy are sometimes considered synonymous.

Cultural diplomacy in China is coordinated and implemented by several actors, namely the Ministry of Culture, the Ministry of Education, and the Communist Party (Lihua et al, 2015). The official entity presenting Chinese language, culture and values abroad is Confucius Institute. Hartig (2012) looks at Confucius Institute as a kind of engagement of strategic stakeholders. He argues "this collaborative tool of cultural diplomacy depends heavily on the commitment of its local stakeholders." Su-Yan Pan (2013) understands Confucius Institute as a sort of cultural diplomacy sponsored by the state and piloted by universities. Starr (2009) concludes that the reason behind establishing such an entity lies in Chinese national pride, meaning the people "want to see China´s contribution to world culture better recognised."

Confucius Institute is a non-profit public organization affiliated with China´s Ministry of Education (Dig Mandarin, 2019). The Institute´s objective is not only reinforcement of Chinese language and culture education all around the world; it also serves as a platform for cultural exchanges and an advocate of cooperation and friendship between China and other countries. Next to the Institute branches, Confucius Classrooms exist. Both the Institute offices and Classrooms tend to adapt to the needs of a respective location. As it is stated on the Institute´s website, Spanish, British, German, and French successful experience served as a model for these activities (HANBAN, 2014a). The tasks of Confucius Institute can be summarized as follows: offer programmes for Chinese teaching; offer training programmes for Chinese teachers; organize tests and qualifications; inform about Chinese culture, economy, and education; develop study programmes about China (HANBAN, 2014b).

Concrete numbers of the Institute´s locations are following: 126 in Asia, 59 in Africa, 150 in America, 184 in Europe, and 20 in Oceania. Thus, there are 539 Confucius Institutes worldwide. With regards to the states analysed within the present paper, there are both Confucius Institutes and Classrooms in all of them. In the US itself, there are over 100 Confucius Institute branches and Classrooms (HANBAN, 2014a). The work of the Institute is, however, often criticised (also in the US), as discussed by Becard and Filho (2019) in detail. Usually, a library has been set up next to the Institute, like for example in Bratislava (Konfuciov inštitút, 2019). Regarding the number of the Confucius Institute branches a short remark is to be made. The expansion of the Institute is rather rapid, as also our studies have proved. It is probable the numbers stated here will not be valid for a very long time, let us therefore consider them approximate. In accordance with the Constitution and By-Laws of the Confucius Institutes, "Any corporate entity outside of China capable of facilitating language instruction, conducting educational and cultural exchange activities, and meeting the requirements for application as stated in this Constitution and By-Laws may apply to the Confucius Institute Headquarters for the permission to establish a Confucius Institute" (HANBAN, 2014c). It is therefore likely there will soon by new Institute branches, as Chinese language knowledge is becoming a highly valuable asset.

Although not as spread as Confucius Institute, but also relevant for our research is China Cultural Center. The Center´s functions and objectives are organizing various cultural events, such as performances, festivals and exhibitions; teaching and training (Chinese language, culture, but also sports); and providing information about China. The events are meant to strengthen bilateral relationships of the countries (CCC, 2015). The Center is to be found worldwide, however the most of them are located in Asia and Europe. So far, 34 branches have been established by the Chinese government, which are as follows: Belarus (Minsk), Belgium (Brussels), Bulgaria (Sofia), Denmark (Copenhagen), Germany (Berlin), Greece (Athens), France

(Paris), the Netherlands (the Hague), Malta, Russia (Moscow), Spain (Madrid), Sweden (Stockholm); Cambodia (Phnom Penh), Israel (Tel Aviv), Japan (Tokyo), Laos (Vientiane), Mongolia (Ulan Bator), Myanmar (Yangon), Nepal, Pakistan (Islamabad), Singapore, South Korea (Seoul), Sri Lanka, Thailand (Bangkok), Vietnam (Hanoi); Benin (Cotonou City), Egypt (Cairo), Mauritius, Nigeria, Tanzania; Australia (Sydney), Fiji, New Zealand (Wellington); Mexico (CCC, 2018).

China is a member (or an observer) of many international organizations, but these are mostly of economic nature, hence it is difficult to assess China´s multilateral cultural policy. We conclude, China´s cultural diplomacy is only sporadically conducted within international platforms.

According to Meričková (2013), we can expect an increasing tendency in cooperation of European countries and the United States in the sphere of public diplomacy (we believe this can apply to cultural diplomacy as well). The reason is that China is intensively working on its soft power, thus gaining influence, so the countries may try to balance it.

RESULTS AND DISCUSSION

Our analysis pointed out several similarities and discrepancies among cultural diplomacy of the countries included into the comparison. Regarding the actors of cultural diplomacy, it is to note that we focused solely on the most significant actors of, as their number is not exhaustive.

First of all, there are significant differences in terms of numbers of official cultural institutes, and, probably also in terms of their influence and power. Due to the fact that two out of four countries compared within this paper are small countries, both in terms of their population and area, and the other two states belong to the largest and most populated states in the world, we operate not only with actual numbers of their establishments responsible for cultural diplomacy. Moreover, we calculate these number per 1 million inhabitants to make the data comparable. It needs to be emphasised again that only official cultural institutes are considered when calculating, not other actors (see line *Official name of cultural institute* in the Table 1 below). Based on our calculations we can conclude that absolute numbers of official cultural institutes and subsequent calculations differ in the ranking. In absolute numbers, China has the highest number of cultural institutes, followed by the US, Austrian, and eventually Slovakia. However, calculations per 1 million inhabitants alter the ranking, resulting in Austria being on the 1st place, followed by Slovakia, China and the US. Besides official cultural institutes or centres, there are usually other similar entities in most of the analysed countries.

In all four countries, cultural diplomacy is at least partially regulated by particular ministries or other entities. Certain differences can be observed in the sphere or multilateral cultural policy. In case of Slovakia and Austria, cultural diplomacy

is partially conducted within international organisations, such as the European Union, or the Platform Culture Central Europe. We suppose, this fact may be conditioned by their smaller size, as well as by historical connections. China is a member of the UNESCO; the US usually carries out cultural diplomacy without involvement in international bodies.

Table 1 Cultural diplomacy of the selected states

Country	Austria	Slovakia	USA	China
Official name of the cultural institute	Austrian Cultural Forum	Slovak institute	American Center	Confucius Institute
Number of cultural institutes	30	8	105	539
Number of countries with a cultural institute	28	8	Unspecified	109
Status of the cultural institute	Diplomatic	Diplomatic	Diplomatic	(Semi-) Diplomatic
Name of the actor No. 2	Austria Institute	Not applicable	American Corner	Confucius Classroom
Number of the actors No. 2	10	Not applicable	422	More than 1,000
Number of countries with the actor No. 2	9	Not applicable	More than 169	Unspecified
Name of the actor No. 3	Austria Libraries	Not applicable	Not applicable	China Cultural Center
Number of the actors No. 3	65	Not applicable	Not applicable	34
Number of countries with the actor No. 3	28	Not applicable	Not applicable	34
Department / entity responsible for cultural diplomacy	Federal Ministry for Europe, Integration and Foreign Affairs	Ministry of foreign affairs and European affairs; Ministry of Culture	Bureau of Educational and Cultural Affairs (ECA); Bureau of International and Information Programs (IIP)	Ministry of Education; Ministry of Culture; Communist Party
Number of inhabitants in millions (rounded)	8.81	5.44	329.66	1,433.67
Number of cultural institutes per 1 million inhabitants (rounded)	3.41	1.47	0.32	0,38
Multilateral cultural policy	Yes	Yes	Not applicable	Partially
Multilateral cultural policy institutions	Platform Culture Central Europe, European Union, Council of Europe, EUNIC, UNESCO	Platform Culture Central Europe, European Union, Council of Europe, EUNIC, UNESCO	Not applicable	UNESCO

Source: *Authors´ own elaboration based on a variety of sources*

CONCLUSIONS

The main objective of this contribution was to analyse cultural diplomacy of selected countries, namely Austria, Slovakia, the US and China. The performed comparative analysis enabled articulation of strengths and weaknesses of the countries´ cultural diplomacy.

Austria is well-known for its cultural heritage all around the world. Despite its being a rather small country, various activities of cultural presentation are carried out by Austrian Cultural Fora and Austria Institutes. Apart from that, a network of libraries is a valuable asset. A strength is also the geographical dispersion of these establishments, except for the libraries. In our opinion, Austria can indirectly benefit also from language courses provided by German Goethe Institute, although Austrian and German cultures are not the same.

A sort of weakness of Slovak cultural diplomacy is the low number of cultural institutes (8) and their concentration in Europe and Russia. A certain diversification in terms of geographical locations could be beneficial. On the other hand, our calculations demonstrated a relatively positive results in relation to China and the US in terms of number of cultural institutes per 1 million inhabitants. However, we believe cultural institutes are not the sole factor of cultural representation. For instance, Slovakia could benefit from international exchanges of students and academics, mainly with the direction to the country. Another solution could be an increased involvement in international projects, for instance those research-related.

Cultural diplomacy of the US is influenced by the private sector that is an important factor concerning also the US soft power, and thus despite the existence of official cultural institutes, like the American Centers and American Corners. Companies and internationally established brands such as Coca Cola or McDonald´s, or Hollywood movies significantly portray and spread American culture abroad. This can be considered an advantage in contrast to countries which lack such widespread establishments. The US tends to rely on its own cultural organisations when promoting its culture abroad, which can be caused by its being a so called "melting pot."

China´s cultural diplomacy can be characterised by its rapid expansion. The country has managed to create an impressively broad network of cultural institutes and classrooms in more than 100 countries all around the globe. On the other hand, cultural diplomacy of China needs to face criticism every now and then, presumably due to the engagement of the Communist Party.

As far as concrete activities of institutes responsible for performance of cultural diplomacy in the analysed countries are concerned, these are similar, and include language courses, lectures, exhibitions, and so forth.

To conclude, diplomacy and its dimensions are influenced by dynamics of the global geo-political developments. Therefore, debate of these phenomena is

justified, and constant involvement of both academics and policy-makers recommended.

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REFERENCES

BECARD, D. S. R., FILHO, P. M. (2019). Chinese Cultural Diplomacy: instruments in China´s strategy for international insertion in the 21st Century. *Revista Brasileira de Política Internacional*, 62, 1, -20.

BUREAU OF EDUCATIONAL AND CULTURAL AFFAIRS (ECA) (2019). History and Mission of ECA. Retrieved from: https://eca.state.gov/about-bureau/history-and-mission-eca/. Accessed on 25 August 2019.

BUREAU OF EDUCATIONAL AND CULTURAL AFFAIRS - EXCHANGE PROGRAMS (ECAEP). (2019) Retrieved from: https://exchanges.state.gov/non-us/exchange-experience/. Accessed on 15 September 2019.

CIBUĽA, A. (2018). Nová čínska zahraničná politika v ére Si Ťin-pchinga. In *Conference proceedings 19th International Scientific Conference International Relations 2018: Current issues of world economy and politics*. Bratislava: Ekonóm, pp. 105-109.

CHINA CULTURAL CENTER (CCC) (2018). Worldwide. Retrieved from: http://en.cccweb.org/worldwide.html. Accessed on 3 July 2019.

CHINA CULTURAL CENTER (CCC) (2015): About China Cultural Center. Retrieved from: http://en.cccweb.org/2015-02/02/content_597924.htm. Accessed on 3 July 2019.

CONFUCIUS INSTITUTE HEADQUARTERS (HANBAN) (2014a). About Confucius Institute/Classroom. Retrieved from: http://english.hanban.org/node_10971.htm. Accessed on 23 June 2019.

CONFUCIUS INSTITUTE HEADQUARTERS (HANBAN) (2014b). FAQ. Retrieved from: http://english.hanban.org/node_7577.htm. Accessed on 24 June 2019.

CONFUCIUS INSTITUTE HEADQUARTERS (HANBAN) (2014c). Constitution and By-Laws of the Confucius Institutes. Retrieved from: http://english.hanban.org/node_7880.htm. Accessed on 28 June 2019.

ČIEFOVÁ, M. (2018). Selected issues of cultural diplomacy. *Almanach*, 13, 2, 4-13.

DIG MANDARIN (2019). Confucius Institutes Around the World – 2019. Retrieved from: https://www.digmandarin.com/confucius-institutes-around-the-world.html. Accessed on 28 June 2019.

DRULÁKOVÁ, R. (2008). Mezinárodní vztahy I: úvod do studia. Vyd. 1. Praha: Oeconomica, ISBN 978-80-2451-449-9.

FEDERAL MINISTRY FOR EUROPE, INTEGRATION AND FOREIGN AFFAIRS (BMEIA) (2019a). Multilaterale Auslandskulturpolitik. Retrieved from: https://www.bmeia.gv.at/europa-aussenpolitik/auslandskultur/multilaterale-auslandskulturpolitik/. Accessed on 21 June 2019.

FEDERAL MINISTRY FOR EUROPE, INTEGRATION AND FOREIGN AFFAIRS (BMEIA) (2019b). Österreich-Bibliotheken. Retrieved from: https://www.bmeia.gv.at/europa-aussenpolitik/auslandskultur/oesterreich-bibliotheken/. Accessed on 21 June 2019.

FEDERAL MINISTRY FOR EUROPE, INTEGRATION AND FOREIGN AFFAIRS (BMEIA) (2019c). Bildung und Sprache. Retrieved from: https://www.bmeia.gv.at/europa-aussenpolitik/auslandskultur/bildung-und-sprache/#c679963. Accessed on 21 June 2019.

FEDERAL MINISTRY FOR EUROPE, INTEGRATION AND FOREIGN AFFAIRS (BMEIA) (2019d): Kulturforen. Retrieved from: https://www.bmeia.gv.at/europa-aussenpolitik/auslandskultur/kulturforen/. Accessed on 21 June 2019.

HARTIG, F. (2012). Cultural diplomacy with Chinese characteristics: The case of Confucius Institute in Australia. *Communication, Politics & Culture*, 45, 2, 256-276.

ILIES, A., HURLEY, P.D, ILIES, D. C et al. (2017). Tourist Animation - a Chance for Adding Value to Traditional Heritage: Case Studies in the Land of Maramures (Romania). Revista de etnografie si folclor-journal of ethnography and folklore, Issue: 1-2, pp. 131-151

ILIES, A., WENDT, J., ILIES, D. C., et al. (2016). The patrimony of wooden churches, built between 1531 and 2015, in the Land of Maramures, Romania Journal of Maps, Vol. 12, Suppl.: 1, pp. 597-602

INSTITUTE FOR CULTURAL DIPLOMACY (2019). What is Cultural Diplomacy? Retrieved from: http://www.culturaldiplomacy.org/index.php?en_culturaldiplomacy. Accessed on 19 June 2019.

KIM, H. (2017). Bridging the Theoretical Gap between Public Diplomacy and Cultural Diplomacy. *The Korean Journal of International Studies*, 15, 2, 293-326.

KLIMEŠ O. et al. (2018). *Kulturní diplomacie Číny a její regionální variace*. Prague: Academia.

KONFUCIOV INŠTITÚT (2019). Knižnica. Retrieved from: https://konfuciovinstitut.sk/o-nas/kniznica/. Accessed on 24 June 2019.

KURUCZ, M. (2007): Kultúrna dimenzia diplomacie. In *Conference Proceedings Zahraničná politika a diplomacia Slovenskej republiky v kontexte európskej integrácie*. pp. 62-71.

LIHUA, Z. et al. (2015). China´s Cultural Diplomacy: Strategy, Policy, and Implementation. Retrieved from: https://carnegietsinghua.org/2015/04/17/china-s-cul-

tural-diplomacy-strategy-policy-and-implementation-event-4807. Accessed on 28 June 2019.

MATLOVIC, R.; MATLOVICOVA, K. (2012). The Social Relevance and Branding of Geography. Geografie. Vol. 117, Issue 1, pp. 33-51

MATLOVICOVA, K., KOLESAROVA, J., MATLOVIC, R. (2016). Selected Theoretical Aspects of the Destination Marketing Based on Participation of Marginalized Communities. *Conference: 8th International Annual Scientific Conference on Hotel Services, Tourism and Education Location*: Prague, pp.: 128-143

MATLOVICOVA, K., HUSAROVA, M. (2017). Potential of the Heritage Marketing in Tourist. Destinations Development. Cicva castle ruins case study. *Folia Geographica*, Vol. 59, Issue 1, pp. 5-35

MATLOVICOVA, K, TIRPAKOVA, E.; MOCAK, P. 2019. City Brand Image: Semiotic Perspective a Case Study of Prague. Folia Geographica, Vol. 61, Issue 1, pp. 120-142

MATTOŠ, B. (2013). Kultúrna dimenzia diplomacie ako nástroj zahraničnej politiky štátu na príklade Rakúskej republiky. In *Conference Proceedings 12th International Scientific Conference of Doctoral Students and Young Scholars Economic, Political and Legal Issues of International Relations 2013*. Bratislava: Ekonóm, pp. 377-383.

MAURER, H. (2016). Austrian diplomacy in a changing global and European context: Between innovation, adaptation and resilience. *OZP – Austrian Journal of Political Science*, 45, 2, 35-47.

MERIČKOVÁ, L. (2013). Teória verejnej diplomacie. In *Conference Proceedings 12th International Scientific Conference of Doctoral Students and Young Scholars Economic, Political and Legal Issues of International Relations 2013*. Bratislava: Ekonóm, pp. 384-390.

MINISTRY OF FOREIGN AND EUROPEAN AFFAIRS OF THE SLOVAK REPUBLIC (MZVaEZ SR) (2019a). Platform Culture Central Europe. Retrieved from: https://www.mzv.sk/ministerstvo/kulturna_diplomacia-stredoeuropska_kulturna_platforma. Accessed on 21 June 2019.

MINISTRY OF FOREIGN AND EUROPEAN AFFAIRS OF THE SLOVAK REPUBLIC (MZVaEZ SR) (2019b). Cultural diplomacy. Retrieved from: https://www.mzv.sk/ministerstvo/kulturna_diplomacia-kulturna_prezentacia Accessed on 10 September 2019.

MINISTRY OF FOREIGN AND EUROPEAN AFFAIRS OF THE SLOVAK REPUBLIC (MZVaEZ SR) (2019c). Slovak Institutes. Retrieved from: https://www.mzv.sk/ministerstvo/slovenske_zastupitelstva-slovenske_instituty. Accessed on 10 September 2019.

MINISTRY OF FOREIGN AND EUROPEAN AFFAIRS OF THE SLOVAK REPUBLIC (MZVaEZ SR) (2011). Návrh záverečného účtu kapitoly 210 – Ministerstvo zahraničných vecí Slovenskej republiky za rok 2011 Retrieved from: https://www.

mzv.sk/documents/10182/2639021/zaverecny_ucet.pdf. Accessed on 17. September 2019.

NAKAMURA, K.H. and WEED, M.C. (2009) U.S. Public Diplomacy: Background and Current Issues. Federation of American Scientist. Retrieved from: http://www.fas.org/sgp/crs/ row/R40989.pdf/. Accessed on 15 September 2019.

ONDRIAŠ, J. (2018). Issues facing China´s soft power in the 16+1 Platform. *Economic Annals*, 172, 7-8, 22-27.

ÖSTERREICH-BIBLIOTHEKEN (2019). Bibliotheks-Verzeichnis. Retrieved from: https://www.oesterreich-bibliotheken.at/oesterreich-bibliotheken/die-bibliotheken/bibliotheks-verzeichnis/. Accessed on 21 June 2019.

PAJTINKA, E. (2015a). Cultural diplomacy and its organizational and institutional models in selected states. *Journal of International Relations*, 13, 2, 111-122.

PAJTINKA, E. (2015b). *Základy teórie a praxe diplomacie*. Bratislava: Pamiko.

PACHURA, P. (2018). Kantian and Post-Kantian Thought as an Illustration of an Ideational Foundations of European Integration, Folia Geographica, 60/2, pp. 5–14

PÁNEK JURKOVÁ, J. (2018). Teoretický úvod do kulturní diplomacie. In Klimeš et al., *Kulturní diplomacie Číny a její regionální variace*. Prague: Academia, pp. 26-54.

PONTES FIALHO, L. (2013) The U.S. State Department's American Spaces Programs. American Security Project. Retrieved from: http://americansecurityproject.org/ASP%20Reports/Ref%200117%20-%20The%20US%20State%20Department's%20American%20Spaces%20Programs.pdf/. Accessed on 15 September 2019.

RATLIFF, W. E. (1969). Chinese Communist Cultural Diplomacy toward Latin America, 1949-1960. *The Hispanic American Historical Review*. 49, 1, 53-79.

RUSIŇÁK, P. et al. (2012). Diplomacia – úvod do štúdia. Bratislava: Ekonóm.

SLOBODNÍKOVÁ, O. (2014). Growing Economic Activity of China. *Folia geographica*, 56, 1, 113-129.

SLOVAKIANA. (2018) Slovakiana Cultural Heritage of Slovakia. Retrieved from: <https://www.slovakiana.sk/>. Accessed on 10 September 2019.

SLOVNAFT. (2013). New Grant Program of Supporting Literature Pro Libris. Retrieved from: https://slovnaft.sk/sk/o-nas/pre-media/370-aktuality/1694-novgrantov-program-podpory-literatury-pro-libris/. Accessed on 10 September 2019.

STARR, D. (2009). Chinese Language Education in Europe: the Confucius Institutes. *European Journal of Education*, 44, 1, 65-82.

STATISTICS AUSTRIA (2019). Total population. Retrieved from: https://www.statistik.at/web_en/statistics/PeopleSociety/population/population_censuses_register_based_census_register_based_labour_market_statistics/totaL_population/index.html. Accessed on 23 June 2019.

SU-YAN PAN (2013). Confucius Institute Project: China´s cultural diplomacy and soft power projection. *Asian Education and Development Studies*, 2, 1, 22-33.

UDOVIČ, B., PODGORNIK, A. (2016). Cultural Diplomacy of Slavic European Union Member States: A Cross-country Analysis. *Baltic Journal of European Studies*, 6, 2, 117-136.

UNESCO. (2019a). China. Retrieved from: https://whc.unesco.org/en/statesparties/cn/. Accessed on 28 June 2019.

UNESCO. (2019b). Pamiatky UNESCO na Slovensku Retrieved from: http://www.unesco-slovakia.sk/sk/menu/pamiatky-unesco-na-slovensku Accessed on 10 September 2019.

UNITED STATES ADVISORY COMMISSION ON PUBLIC DIPLOMACY (USACOPD) (2018). 2018 Comprehensive Annual Report on Public Diplomacy and International Broadcasting - United States Department of State. Retrieved from: https:// www.state.gov/wp-content/uploads/2019/05/2018-ACPD.pdf/. Accessed on 15 August 2019.

U.S DEPARTMENT OF STATE (2019) Key Topics – U.S. Advisory Commission on Public Diplomacy. Retrieved from: https://www.state.gov/key-topics-u-s-advisory-commission-on-public-diplomacy/. Accessed on 15 September 2019.

WINTER, T. (2016). One Belt, One Road, One Heritage: Cultural Diplomacy and the Silk Road. *The Diplomat*.

WORLD POPULATION REVIEW. (2019). China Population 2019. Retrieved from: http://worldpopulationreview.com/countries/china-population/. Accessed on 23 June 2019.

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INVESTIGATIONS ON AIR QUALITY IN A SCHOOL

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Abstract
The high rate of children becoming ill during school periods as opposed to during school holidays has forced authorities associated with the educational system and labour medicine to carry out regular checks in schools and to assign hygienization tasks. Air quality reports, otherwise completely absent from schools, have been requested. Students have reportedly been confronted with headaches and drowsiness, particularly during the second half of their school day. This paper aims to determine the effects of the most important indoor microclimate indicators - namely classroom air temperature, relative humidity, and CO_2 content - on the students' productivity and their health. The study regarding microclimate monitoring in the Iosif Vulcan National College of Oradea,

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Romania, was carried out in the interval of March 2018-March 2019. The Trotek BZ 30 thermohygrometer was used to obtain measurements in classrooms, and the data on temperature, relative humidity, and CO_2 was then centralized and processed. Results show that the microclimate in various classrooms in the Iosif Vulcan National College of Oradea differs according to room type (computer science laboratory, library, classroom), time of day (during classes or after hours), and number of students.

Key words
Air Temperature, CO_2, Indoor Microclimate, Relative Air Humidity

AIMS AND BACKGROUND

The occasionally insufficient size of classrooms, relative to the number of their enrolled students, the various stored materials (such as the books in the library), the lack of adequate ventilation and air conditioning systems, and the computers used in the respective laboratory all play an important part in the indoor microclimate analysis. We have also taken into account the information yielded by other studies in the field, such as the one by Sonne (2006) that aimed to inform on the influence of indoor climate in United States schools and which states that "over half of the respondents (50.5%) indicated 'many' 'chronic' problems." A number of 22.5% of the study's subjects have responded that temperature is by far the most important factor influencing chronic health issues, followed by indoor air quality, humidity, and smell.

According to the studies carried out by Kenley and Seppänen (2006) the productivity of desk work without any physical effort is maximized at a temperature of 22°C. The productivity of desk activities tends to rise until a temperature of 21-22°C is reached, and to fall once the temperature is over 23-24°C. The results of the experiments conducted by Wyon and Wargockiin (2006) elementary schools in Denmark have shown that, by reducing temperature by 1°C from values of 24-25°C, there is an increase in the logics - and basic math - related productivity of students by approximately 2-4% when concentration and logical reasoning are then required. All of these have laid the foundations for the regarding of indoor air quality as a highly necessary contribution to indoor air quality control standards and for the taking of measures to maintain clean air and prevent its deterioration (Soto et al., 2009).

EXPERIMENTAL

The Iosif Vulcan National College is situated in the center of the city of Oradea, in a location consisting of two buildings: a main one for high-school students, and a secondary one for middle-school students (Figure 1). It accommodates a total of approximately 1,000 students on middle-school and high-school levels across 47 classrooms and laboratories. For the purposes of the current analysis, we

have selected two classrooms, one for high-schoolers and the other one for middle-schoolers, such that they would be differently placed within the school, on different floors and with different exposure to sunlight. In the selected classrooms we used the Trotek BZ30 to measure ambient temperature, relative air humidity, and CO_2 values. The device was placed in the middle of the classrooms so as it would record its data most accurately and without influence from external weather factors.

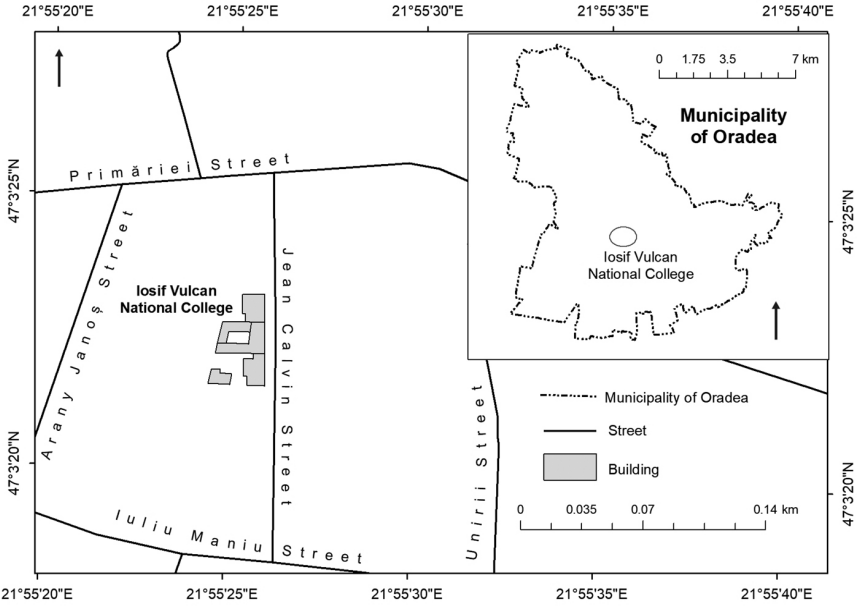

Figure 1
The locations of Iosif Vulcan National College of Oradea, Romania

Classroom 109 is on the first floor of the main building, its windows facing north, and has a surface of 55 m^2 and 26 students. Classroom 301 is on the third floor of the secondary building, its windows facing south, and has a surface of 55 m^2 and 30 students. Room 107 (the computer science lab) is on the first floor of the main building, its windows facing north, and has a surface of 55 m^2 and 33 computers. Room 5 (the school library) is on the ground floor of the main building, its windows facing north, and has a surface of 45 m^2 and 21,684 books.

Among studies on closed spaces, such as offices, hospitals, churches, and museums, school spaces hold a prominent position as students spend a large number of hours in their classrooms, of 5-6 hours a day. Assessment of the air quality inside the considered location was undertaken by checking whether airborne compound concentrations were within the limits established by regulations in force (Alves et al., 2013; Ilieş et al., 2018a). Compliance with health and

comfort directives is analysed in accordance with such standards as ISO 16814: 2008, SR EN ISO 7730: 2006, ASHRAE 55: 2004, etc. The volume of air breathed out by humans contains 4.4% CO_2. As carbon dioxide cannot be filtered or absorbed inside the rooms, the measuring of CO_2 concentration allows for the characterization of the condition of the indoor air. According to standards ASHRAE 62.1-2013 of the USA and EN-15251: 2012, EN-15241: 2011, EN-15242: 2009, and EN-13779: 2008 of Europe, the admitted indoor CO_2 concentration is 0.5%, although even with slighter concentrations there are cases of headaches and discomfort. Debits of fresh air per capita corresponding to an admitted indoor CO_2 concentration of 0.5% are used if the outdoor concentration is 0.04% for various metabolism values. Hence the necessity of indoor air quality control for closed spaces (De Gennaro et al., 2014; Ilieș et al., 2018b; Lee and Chang, 2000; Yang et al., 2015; Mainka et al., 2015). Just as in the case of outdoor air, it is necessary to adhere to standard norms for indoor microclimate and to certain values for temperature, humidity, CO_2, etc.

Studies on the effects of these parameters on human health are relatively few (Altintaş and Findik, 2016; Andrei and Băldean, 2018; Comșa, 2017; Demirel et al., 2014; Griffiths and Eftekhari, 2008). For thermal comfort inside a building it is recommended that temperatures should fall inside the interval of 19-22°C. From the hygiene norms proposed by Law 263 of July 19 2007, article 23, on the approval of hygiene norms for the protection, education, and instruction of children and youth, it is known that for adequate didactic activity in classrooms during the cold season, when heat sources are in use, temperatures must be of 18-20°C, with relative humidity of 20%-60%, and air speeds of 0.2-0.3 m/s. Temperature oscillations must not exceed 2°C during classes, while between hallways and classrooms the temperature differences must not exceed 3°C. Air temperature represents the most important climate factor with pathogenic effects as its value and variability determine physiological reactions that stimulate or, on the contrary, inhibit the human organism's capacity for effort and may furthermore be conducive to the development of pathogens9. If the temperature drops, the organism responds by both peripheral vasoconstriction with reduction of heat loss and by intensified thermogenesis, wherein the metabolism is increased to several times its normal value, and muscle tone is heightened – which is experienced as cold shivers. If temperatures reach 24-25°C, the organism will suffer when you go out in the cold. Similarly, when temperatures drop to 18-19°C there is the same risk of catching a cold. Humidity is the amount of water vapor in the air and it varies according to classroom temperature relative to the temperature outside. Classroom air humidity is particularly high during winter, when indoor temperature is high and outdoor temperature is low. Schools often have difficulties keeping relative indoor humidity within the optimal interval (30%-50%) to reduce allergies and irritations (ISO 7730: 2005). Legislation in force on hygiene norms for children (MO 1955/1995) prescribes that classrooms should keep humidity levels between 30% and 60% to negate the risk of mold

developing. And yet the potential relationship between classroom humidity and student health has not been explored, but the harmful effects of the lack of school ventilation are known. If there is insufficient air exchange, there are health threats to children sitting down in such spaces (decreased attention focus, worsened health, and aggravated allergic manifestations) (Almeida et al., 2011; Buonanno et al., 2012; Kalwasinska et al., 2012; Sofuoglu et al., 2011; Zwoździak et al., 2013). Also, humid classroom air increases the risk of mold developing (Indrie et al., 2019). Mold ruins the walls and gives an unpleasant smell to the entire room but is extremely dangerous for health as well (Comșa, 2015).

The processing and analysis of the data are based on the school measurements carried out within the rooms proposed for research during the monitored period. This data has granted the possibility of analyzing indoor microclimate conditions in classrooms in various areas of the school, depending on the chosen period, on the extent of sunlight exposure of the room, on the number of students and the surface of the classroom, and on the establishment of internal rules (airing classrooms during recess, acquiring flowers to oxygenate the classroom, emptying the trash cans and the desks at the end of school days, etc.) that would lead to keeping an optimal classroom climate. In those classrooms where mere airing could not ensure those conditions, air conditioning devices were installed, but issues regarding the timely changing of their filters have been reported (Grsic et al., 2014; Viegi et al., 2004).

On the same note, the microclimate in the companies, with shool workshops, producing knitwear, apparel and footwear is strongly vitiated by pollutants, toxic gases etc. In the production of knitwear and clothing there are flakes and excess CO_2, and in the production of footwear there are vapors of toluene and benzene, which endangers the health of the employees and practitioners, being required efficient ventilation installations and protective filters.

RESULTS AND DISCUSSION

For the interval of March 8-March 12, 2018, the analysis of CO_2 values (Figure 2) in classroom 109 shows that the higher values are reached during classes. On March 8 the following values were recorded: 2,929 ppm at 11:59 am; 2,914 ppm at 12:01 pm; and 3,137 ppm at 12:33 pm. On March 12, at 8:52 am the value was of 2,462 ppm. All values were thus over the maximum limit of 1,000 ppm, considered not to be dangerous to the health of children (Bornehag et al., 2001). The registered values go from the minimum value of 414 ppm on March 12 at 6:40 am, before the start of classes, to the maximum value of 3,137 ppm on March 8 at 12:33 pm, during classes. Based on the Figure 2 chart, it is evident that 80% of the values are less than or equal to 789 ppm, which is an optimal value only due to the long periods monitored after classes, when the students are not influenced.

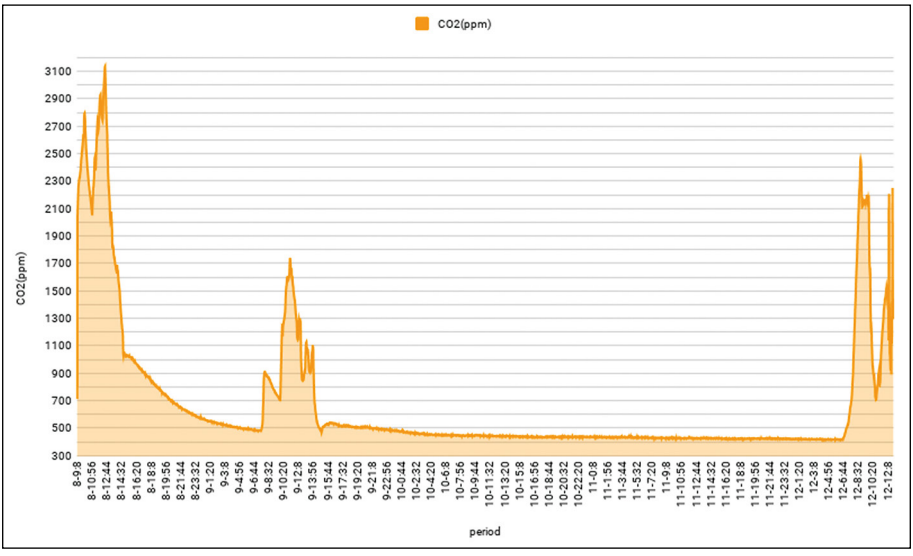

Figure 2
Chart of CO_2 values recorded in the interval March 8-March 12, 2018 in classroom 109

The recorded values for temperature vary from the minimum of 19.7°C obtained on the night of March 10, 2018 between 4:22 am and 4:31 am, to the maximum of 24.5°C obtained during daytime on March 12, 2018 at 12:25 pm. Based on the yielded data and the Figure 3 chart, it can be seen that 80% of values are less than or equal to 20.6°C, a value recommended by international standards for classrooms (ISO 7730, Law 263 of July 19, 2007). The recorded values for relative humidity vary from the minimum of 37.3% on March 10, 2018 in the interval of 10:44 am and 10:50 am, which is too low for an optimal climate, to the maximum of 59.9% on March 12 at 12:21 pm, which is in the optimal interval. Based on the recordings and the Fig. 3 chart it can be seen that 80% of values are less than or equal to 42.2%, which shows that the air is too dry and there is not enough airing done in the classroom.

During the interval of January 17-January 25, 2019 I took measurements in classroom 301, located in the secondary building (where middle-schoolers are housed), on the third floor and with 30 students.

Values recorded for CO_2 vary from the minimum of 342 ppm on January 18 at 3:26 pm to the maximum of 5,536 ppm on January 22 at 10:56 am. Based on the Figure 4 chart, it can be seen that 80% of values are less than or equal to 867 ppm. These values reveal that, during classes, CO_2 concentration is above the limits admitted as normal for indoor spaces (Bornehag et al., 2001). Average values inside the optimal interval, in accordance to SR EN ISO 7730:2006, are due to the fact that after classes the concentration of CO_2 drops greatly and remains low until students return to school.

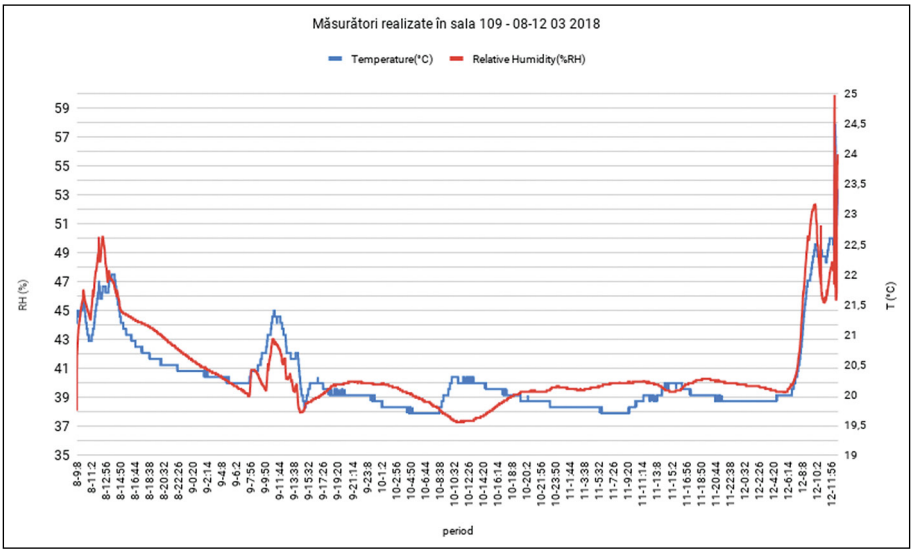

Figure 3
Values for temperature and relative humidity recorded in the interval March 8-March 12, 2018 in classroom 109

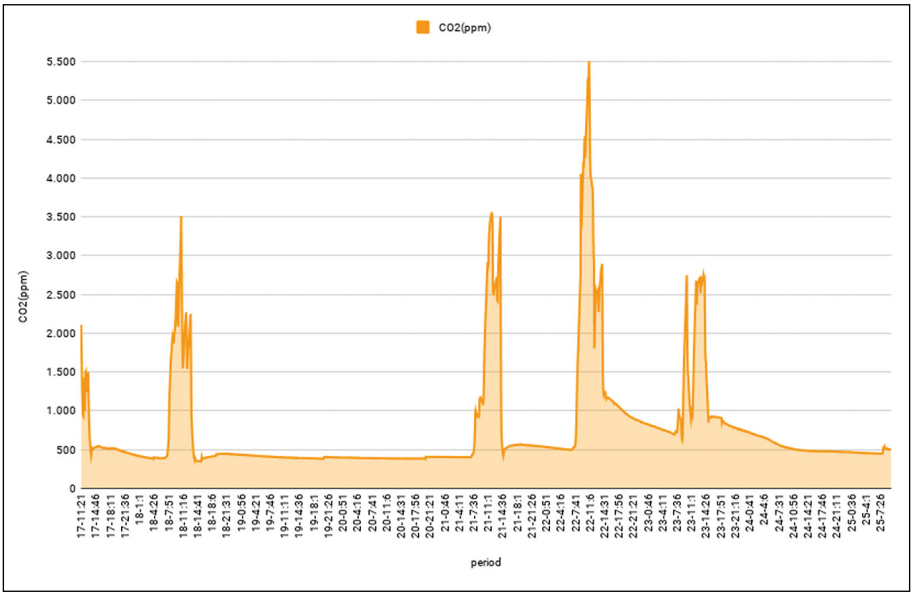

Figure 4
Chart of CO_2 values recorded in the interval January 17-January 25, 2019 in classroom 301

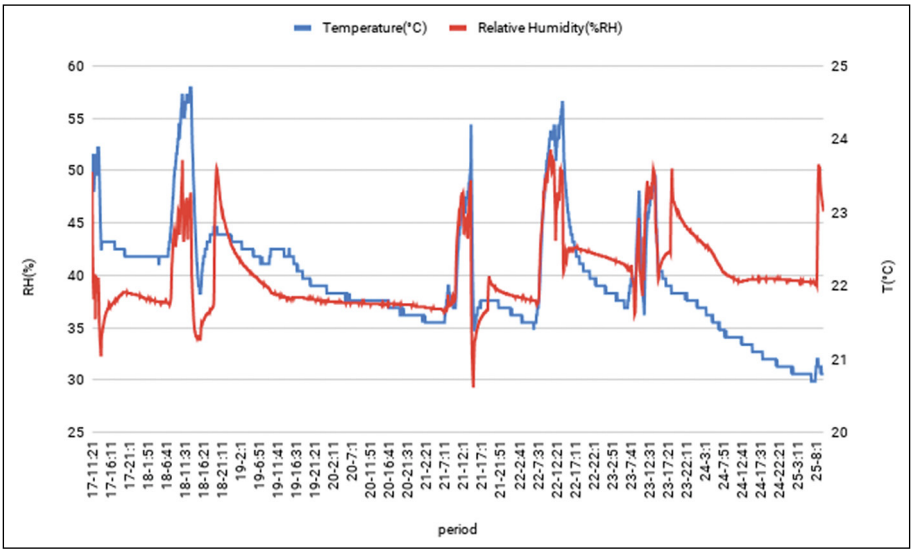

Figure 5
Values for temperature and relative humidity in the interval January 17-January 25, 2019 in classroom 301

Temperature varies between the minimum of 20.7°C on the morning of January 25, between 646 am and 6:56 am, and the maximum of 24.7°C on January 18, between 12:51 pm and 1:06 pm (Figure 5). The average value is of 21.9°C, which is within the interval recommended for classrooms by the temperature and humidity standard ASHRAE 55: 2004, while the maximum points are slightly above the admitted limits, but only briefly, which does not greatly influence the productivity of students. Temperature reaches maximum points at the end of the school day, when values were of 24.7°C on January 18, between 12:51 pm and 1:06 pm, and 24.5°C on January 22, between 1:56 pm and 2:01 pm. Relative humidity values vary between the minimum of 29.3%, recorded on January 21 at 2:46 pm, and the maximum of 52% on January 22 at 10:56 am. The average recorded value was of 39.3%. This is a very low value for an environment where children spend 6 h a day, according to Law 319/2006 on air quality for the protection of human health, which leads to the development of allergies and to the more sensitive children becoming ill. Relative humidity reached values above 51% on the morning of January 18 at 10:51 am, and 50% at 7:46 pm. On January 25 at 8:41 am it reached the value of 50% and the minimum value of 29% on January 21 at 2:46 pm (Figure 5).

We took measurements in room 107 (the computer science laboratory), fitted with 33 computers, during the interval of January 28-January 31, 2019.

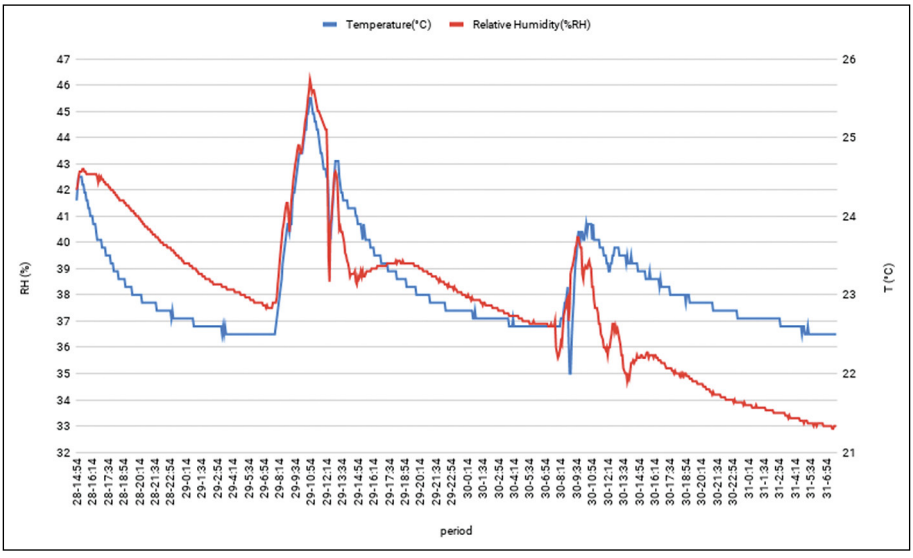

Figure 6
Values for temperature and relative humidity in the interval January 28-January 31, 2019 in the computer lab, room no. 107

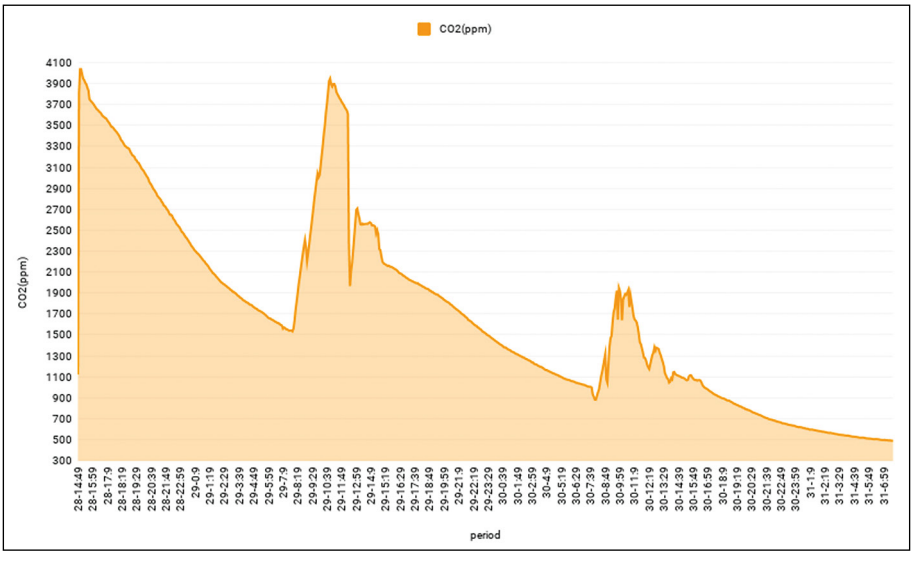

Figure 7
Chart of CO_2 values recorded in the interval January 28-January 31, 2019 in the computer lab, room no. 107

Values for temperature vary between the minimum of 22°C on January 30 between 8:59 am and 9:04 am and the maximum of 25.5°C on January 29 between 10:49 am and 10:54 am, the latter being a value over the limit admitted as optimal in a classroom. The average value is of 22.9°C, an optimal value, according to ASHRAE 55: 2004 and ASHRAE 62.1-2013, considering that heat is also emanated from the computers.

The values recorded for relative humidity vary between the minimum of 32% recorded on January 31 between 7:24 am and 7:29 am and the maximum of 46% on January 29 at 10:49 am. The average obtained value was 38%, which is too low for an optimal climate as recommended by ISO 7730: 2006 and has negative consequences on the students' general health.

CO_2 values vary between the minimum of 490 ppm, on January 31 at 7:39 am, and the maximum of 4,037 ppm, on January 28 between 2:59 pm and 3:04 pm. The average value was of 1,600 ppm, which is much over the limit of 1,000 ppm considered the maximum admitted limit, in accordance with ISO 7730: 2006. The highest values for CO_2 were 3,947 ppm on January 29 at 10:54 am; 3,896 ppm at 11:09 am; and 3,896 ppm at 11:14 am, all during classes. The lower values were 1,122 ppm on January 28 at 2:49 pm and 1,451 ppm on January 29 at 11:59 pm, both after classes. Based on the recordings and the chart in Figure 7, it is noticeable that 80% of values are less than or equal to 2,470 ppm.

On January 30 in room no. 107 the values during class intervals were very high, of 1,923 ppm at 9:44 am; of 1,950 ppm at 9:54 am; of 1,891 ppm at 10:24 am; and of 1,928 ppm at 10:39 am.

On January 31 in room 107 the CO_2 values varied between 490 ppm at 7:39 am and 625 ppm at 0:04 am. That day was a Saturday, and students were not in school, therefore they had no influence on CO_2 values.

Measurements were also taken between February 12-March 12, 2019, in room no. 5 (the school's library).

From the gathered data, according to Table 1, and based on the chart in Figure 8, it is clear that relative humidity values vary between the minimum of 22%, recorded on February 25, 2019 between 3:18 pm and 3:23 pm, and the maximum of 33.6%, recorded on February 22 at 1:38 pm. The average value is of 29%. These values are all below the minimum limit admitted as optimal for indoor climate qualitatively conducive to the librarian's work activity, as well as to the study activity of students frequenting the library, according to ASHRAE 62.1-2013. The recorded values for temperature vary between the minimum of 21.1°C on February 22, 2019, at 1:33 pm, and 25.1°C on February 10, 2019, between 10:43 am and 10:58 am. Most values are clustered around 23.8°C, hence they are values close to the upper optimal limit as suggested by Law 263 of July 19, 2007 (relative humidity 55%-65% and 10-24°C). The values obtained for CO_2 (Table 1) vary between the minimum of 385 ppm on March 11, at 10:28 am and 11:58 am, and the maximum

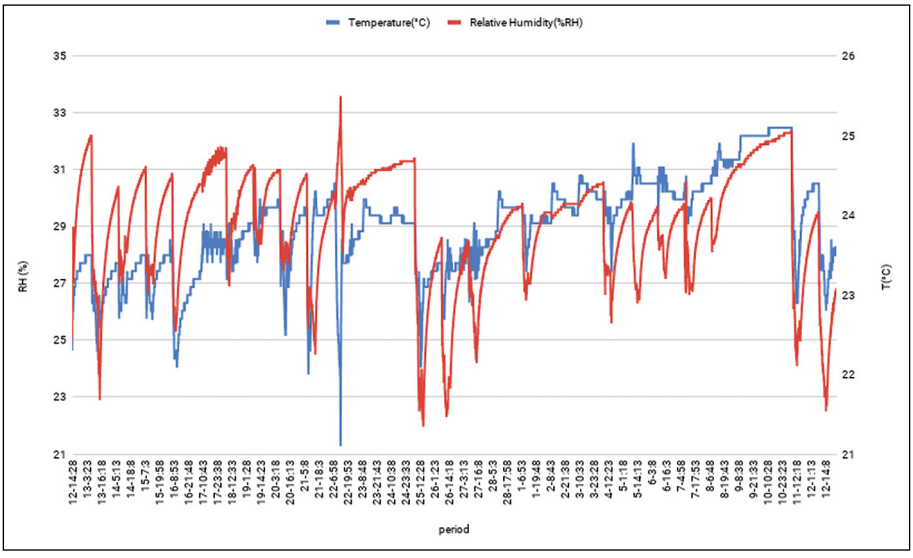

Figure 8
Values for temperature and relative humidity in the interval February 12 - March 12, 2019 in the school library (room no. 5)

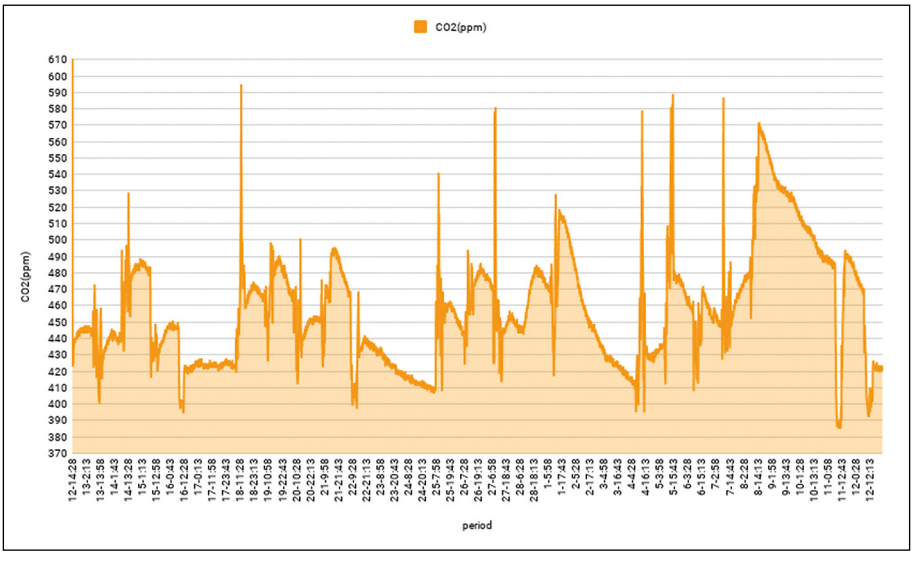

Figure 9
Chart of CO_2 values recorded in the interval February 12 - March 12, 2019 in the school library (room no. 5)

of 631 ppm on February 12 at 2:28 pm. The average value is of 452 ppm, which is a great value as per ISO 7730: 2006, and considering there is only one permanent human presence here, thus with little influence on CO_2 levels.

Table 1 Interpretation of the data in a comparative summary of the rooms

Room	Interval	Air temperature (°C)			Relative humidity (%)			CO_2 (ppm)	
		Min	Avg	max	min	avg	max	min	max
109	Mar. 8-12, 2018	19.7	20.3	24.5	37	40	59	414	678
301	Jan. 17-25, 2019	20.7	22	24.7	29	40	52	342	773
5	Feb.12-Mar.12, 2019	21.1	23.8	25.1	22	29	33	385	457
107	Jan. 28-31, 2019	22	23.1	25.5	30	37	46	490	1,711
Max. values	Mar. 2018-Mar. 2019	22	23.8	25.5	37	40	59	490	1,711
Min. values	Mar. 2018-Mar. 2019	19.7	20.3	24.5	22	29	33	342	678

Table 1 shows that the highest air temperature value, of 25.5°C, was recorded in the computer lab, whereas the lowest value, of 19.7°C, in room no. 109. The minimum value fits into the optimal interval as recommended by Law 263 of July 19, 2007, which is between 17°C and 24°C, but the maximum value exceeds that interval, as do the other recorded maxima.

Also from Table 1 it becomes clear that the maximum value for relative humidity, 59%, fits the interval recommended by Law 263 of July 19, 2007 (relative humidity of 55%-65% and 10-24°C) but the minimum value, 22%, is below the inferior limit, therefore it does not provide optimal conditions for school usage.

Concerning the values of CO_2 as presented in Table 1, we may conclude that the minimum, recorded in the library, of 342 ppm, fits the interval prescribed by the in-force norms (EN-15251: 2012, ISO 16814: 2008, ISO 7730: 2006, ASHRAE 62.1-2013) but the maximum, of 5,536 ppm, greatly exceeds the superior limit admitted as optimal.

CONCLUSIONS

The data obtained via measurements carried out on school grounds reveal that the classrooms do not exhibit optimal conditions, as not all monitored parameters take values within those recommended in the literature (SR EN ISO 7730: 2006, ASHRAE 55: 2004).

Taking into account that the productivity of the associated activities has the tendency to rise up to temperatures of 21-22°C and to drop as temperatures go over 23-24°C, the yielded data (featuring average temperatures of 23.8°C in the

library, 22.9°C in the computer lab, 21.9°C in classroom 301, and 20.6°C in classroom no. 109) leads us to conclude that temperature-wise conditions are at their upper limit, and thus not a significant hindrance to normal didactic activity; however, a 1°C reduction in temperature, particularly in the computer room, would prove beneficial for the development of the students' logical thinking.

There are state-sanctioned sanitation norms and standards for the organization and maintenance of general-purpose educational facilities, as well as for the execution of educational processes (GSanPin 5.5.2.008-01) according to student age, facility purpose, and climate zone. The normative intervals of such standards prescribe temperatures of 17-20°C for classrooms in schools and colleges, and of 16-18°C for libraries, while similarly prescribing 40%-60% as an interval for humidity. As such, conditions in the monitored rooms do not fit these limits (Ilieș et al., 2018c; Onet et al., 2019).

In what concerns relative air humidity, the average obtained values of 29.5% in the library, of 38% in the computer lab, of 39% in room 301, and of 42% in room no. 109 range within the normal limits, with only the library conditions falling slightly below the limit.

With the exception of the computer lab, where average values for CO_2 are over the limit, these values fall within normal limits (453 ppm in the library, 789 ppm in room 109, 867 ppm in room 301, and 1,600 ppm in the computer lab). However, they do not reflect optimal conditions being provided during classes (Griffiths and Eftekhari, 2008). During the time of day when students are normally in their classrooms, we recorded CO_2 values over the 1,000 ppm limit considered the maximum for admitted concentration in rooms – at a time when didactic activities are intensified and air flow lacking (EN-15251: 2012, ISO 16814: 2008, ISO 7730: 2006, ASHRAE 62.1-2013). Recorded maxima were of 3,137 ppm in room 109; 4,037 ppm in the computer lab; and 5,536 ppm in room no. 301. They prove that air quality is not conducive to educational activities, except for the library, where the maximum was of only 685 ppm.

To keep optimal ambient temperatures of 21-22°C and normal relative humidity of 30%-60% in classrooms, the following measures must be taken: air the classrooms for 10 min. after each class, which should also ensure the lowering of CO_2 levels; fit the rooms with various plants able to absorb the excess humidity, such as ivy, ferns, peace lilies (*Spathiphyllumspp.*), dwarf palms or pink quills (*Tillandsiaspp.*); reduce noise/dynamic pollution; uncover the windows, so as the natural light would enter the room; install air conditioning and use it in moderation, to reduce energy consumption; install a thermohygrometer; keep the rooms clean and selectively dispose of waste; use wall paints and solutions against dampness and moisture; buy a dehumidifier to provide high absorption of the ambient air moisture and to efficiently neutralize unpleasant odours in the classroom; open classroom doors to allow for air circulation.

REFERENCES

ALMEIDA S.M., CANHA N., SILVA A. et al. (2011). Children exposure to atmospheric particles in indoor of Lisbon primary schools. *Atmospheric Environment*, 45(40), 7594-7599.

ALTINTAŞ N., FINDIK O. (2016). Temperature, Humidity and CO_2 Information Estimation of Indoor Sports Hall Environment by Using Artificial Neural Nets. *International Journal of Sport Culture and Science*, 4(Special Issue 2), 547-556.

ALVES C.A., CALVO A.I., CASTRO A. et al. (2013). Indoor air quality in two university sports facilities. *Aerosol and air quality Research*, 13(6), 1723-1730 (2013).

ANDREI L., BĂLDEAN D.L. (2018). The contribution to the research of CO_2 emission in environmental and pollution management and life, 18th International – multidisciplinary conference *"Profesor Dorin Pavel – founder of Romanian hydropower Cluj Napoca"* (In Romanian).

BORNEHAG C.G., BLOMQUIST G., GYNTELBERG F. et al. (2001). Dampness in Buildings and Health. *Indoor Air,* 11 (2), 72-86.

BUONANNO G., FUOCO F., MARINI S. et al. (2012). Particle resuspension in school gyms during physical activities. *Aerosol and Air Quality Research*, 12(5), 803-813.

COMŞA. E. (2017). The study of indoor air, PhD thesis (In Romanian).

DE GENNARO G., DAMBRUOSO P.R., LOIOTILE A. D. et al. (2014). Indoor air quality in schools. *Environmental chemistry letters*, 12(4), 467-482.

DEMIREL G., ÖZDEN Ö., DÖĞEROĞLU T. et al. (2014). Personal exposure of primary school children to BTEX, NO_2 and ozone in Eskişehir, Turkey: Relationship with indoor/outdoor concentrations and risk assessment. *Science of the total environment*, 473, 537-548.

GRIFFITHS M., EFTEKHARI M. (2008). Control of CO_2 in a naturally ventilated classroom. *Energy and Buildings*, 40(4), 556-560.

GRSIC Z., DRAMLIĆ D.M., MILUTINOVIC P. et al. (2014). Representativity of Air Quality Control in Limited Number of Grid Points. *Journal of Environmental Protection and Ecology*, 15 (1), 1-6.

ILIEŞ D.C., BUHAŞ R., ILIEŞ A. et al. (2018a). Indoor Air Quality Issues. Case Study: The Multipurpose Sports Hall of the University of Oradea. *Environmental Engineering & Management Journal (EEMJ)*, 17(12), 2999-3005.

ILIEŞ D.C., ONEŢ A., MARCU F. et al. (2018b). Investigations on Air Quality in the Historic Wooden Church in Oradea City, Romania. *Environmental Engineering & Management Journal (EEMJ)*, 17(11), 2731-2739 (2018).

ILIEŞ D.C., ONET A., WENDT J.A. et al. (2018c). Study on microbial and fungal contamination of air and wooden surfaces inside of a historical Church from Romania. *Journal of Environmental Biology*, 39(6), 980-984.

INDRIE L., OANA D., ILIEŞ M. et al. (2019). Indoor air quality of museums and conservation of textiles art works. Case study: Salacea Museum House, Romania. *Industria Textila*, 70(1), 88-93.

KALWASINSKA A., BURKOWSKA A., Wilk I. (2012). Microbial air contamination in indoor environment of a university library. *Annals of Agricultural and Environmental Medicine*, 19(1), 25-29.

KENLEY R., SEPPÄNEN O. (2006). Location-based management for construction: Planning, scheduling and control. *Routledge*.

LEE S.C., CHANG M. (2000). Indoor and outdoor air quality investigation at schools in Hong Kong. *Chemosphere,* 41(1-2), 109-113.

MAINKA A., BRĄGOSZEWSKA E., KOZIELSKA B. et al. (2015). Indoor air quality in urban nursery schools in Gliwice, Poland: Analysis of the case study. *Atmospheric Pollution Research*, 6(6), 1098-1104.

ONET A., ILIES D.C., BUHAS S. et al. (2018). Microbial Air Contamination in Indoor Environment of University Sports Hall. *Journal of Environmental Protection and Ecology,* 19(2), 694-703.

SOFUOGLU S.C., ASLAN G., INAL F. et al. (2011). An assessment of indoor air concentrations and health risks of volatile organic compounds in three primary schools. *International Journal of Hygiene and Environmental Health*, 214(1), 36-46.

SONNE W. (2006). Criminal Investigation for the Professional Investigator*, CRC Press*.

SOTO T., GARCÍA MURCIA M.R., FRANCO A. et al. (2009). Indoor Airborne Microbial Load in a Spanish University (University of Murcia, Spain). *Annales de Biología*, 31, 109.

VIEGI G., SIMONI M., SCOGNAMIGLIO A. et al. (2004). Indoor Air Pollution and Air Way Disease. *International Journal of Tuberculosis and Lung Disease*, 8 (12), 1401-1415.

WYON. D.P., WARGOCKI P. (2006). Indoor air quality effects on office work. *Creating the productive workplace*, 193-205.

YANG J., NAM I., YUN H. (2015). Characteristics of indoor air quality at urban elementary schools in Seoul, Korea: *Assessment of effect of surrounding environments. Atmospheric Pollution Research*, 6(6), 1113-1122.

ZWOŹDZIAK A., SÓWKA I., KRUPIŃSKA B. et al. (2013). Infiltration or indoor sources as determinants of the elemental composition of particulate matter inside a school in Wrocław, Poland?. *Building and Environment*, 66, 173-180.

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Kashiwaya Kenji: GEOMORPHOLOGY OF LAKE-CATCHMENT SYSTEM. A NEW PERSPECTIVE FROM LIMNOGEOMORPHOLOGY. *Singapore, Springer Nature, 2017, 139 pp. ISBN 978-981-10-5109-8.*

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REVIEW REPORT

In the year before last a remarkable book publication, dealing with lake-catchment systems as a tool to evaluate earth-surface changes, appeared. It will undoubtedly attract the attention of specialist in both dynamic and historical geomorphology as it is trying to contribute to uncovering the "missing link" between these disciplines. Its author is a distinguished, internationally well known geomorphologist of the Institute of Nature and Environmental Technology, Kanazawa University, Japan.

According to the author, geomorphology of lake-catchment systems (or limnogeomorphology) aims to contribute to both postdiction and prediction of landform changes. Understanding of recent processes and available quantitative data have to be extended to historical and geological timescales. On the other side, the same information is required also for estimation of future landform evolution. The lake-catchment systems are convenient for observing earth-surface changes both instrumentally and historically-geologically. If appropriate relationships between instrumental and lacustrine (proxy) data are established for the present observation interval, proxy data for the past may be available as quasi-instrumental ones. In the case of logical connection of both groups of data, it would be possible to obtain long continuous dataset for the past climate-environmental changes. Thus, the lake-catchment systems may be considered as proxy observatories.

The book consists of nine mutually complementing chapters. The introductory one refers to the fact that though studies on earth-surface processes (process/dynamic geomorphology) and on landform development (historical geomorphology) are inseparably connected in the field of geomorphology, they are often studied independently. According to the author, limnogeomorphology offers one of possibilities to combine smoothly both mentioned geomorphological branches.

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In the 2nd chapter, considering the temporal and spatial development of drainage systems and continuous records of various climatic regimes at various scales, the following questions are discussed: (1) the fractal structure of the drainage system in a catchment, and (2) the compatibility of drainage systems in various zones. Drainage system as a dominant structure of catchments is related to erosion and sedimentation. The author refers to prevailing fractal structure (self-similarity) of drainage systems. Additionally, a model of temporal development of drainage systems is introduced, that was verified for two areas by ergodic reasoning.

The 3rd chapter is dedicated to an assessment of the influence of external (climato-geomorphic) forces on lake-catchment systems. Consequences of long-term external forces are discussed on examples of Lake Biwa (Japan) and Lake Baikal (Russia) systems. Historical short-term external forces are examined using Lake Yogo (Japan) and Lake Biwa systems, and instrumental observations of short-term external forces are checked on the example of the pond Kawauso-ike (Kobe, Japan). Abrupt, the most drastic changes, are discussed on the example of the Darkhad lake-catchment system in Mongolia.

The 4th chapter evaluates the influence of internal (tectono-geomorphic) forces. Historical and long-term tectono (seismo)-geomorphic forces are discussed on examples of Lake Biwa and Lake Baikal systems. Modern activities of these forces are checked for three lake-catchment systems in Yunnan (China) and Kawauso-ike. Both historical and modern tectono (volcano)-geomorphic activities are studied using Lake Onuma system in Hokkaido and Lake Taisho-ike system (central Japan).

The effect of anthropogenic forces on lake-catchment systems is discussed in the 5th chapter, namely in the form of silting of both historical and modern reservoirs. As examples the author uses historical reservoirs Pyeokgolje and Euirimji in Korea and modern reservoir of Riyuetan Power Plant station in Taiwan. He also analyses anthropogenic influences on sedimentation in some above mentioned Japan lakes (Yogo, Kawauso-ike, Onuma).

Two experimental models are introduced in the 6th chapter. The first, erosion-sedimentation one, is based on field observations in Kawauso-ike system. This model assumes that the sedimentation in ponds is mainly related to three factors: the catchment conditions under which the sediment material is produced, the erosional conditions and the internal pond conditions. The second, process-oriented model, is based on some elementary processes in three lake-catchment systems in Japan and Korea showing similar climatic conditions. The idea that the seasonal sedimentation rate is a power function of seasonal rainfall intensity in the system is basically approved.

The 7th chapter refers to the necessity of quantitative expression of temporal changes in physical phenomena to understand lake-catchment processes. The

author introduces a mathematical model of temporal changes in the Kawauso-ike system observed in the course of 10 years after the 1995 Kobe earthquake. Three stages are assumed for establishing the model: (1) rapid increase and gradual decrease in the sedimentation rate, (2) stationary stage, and (3) new weathering-limited stage, similar to that before the earthquake.

The 8th chapter is dealing with the possibility to use mathematical models for proper understanding of causal relations in lake-catchment systems based on lake sediment information. Models established emerge from simplified imaginary ideas and they are phenomenological ones in the outlined form. Two cases (small/no or large glacier effect) of such models are formulated, considering data given by Lake Baikal and Lake Biwa with small/no effect and Lake Khuvsgul (Mongolia) with large effect. The research showed that sediment discharge may be significantly influenced by glaciers.

In the last chapter the author discusses in general the position of solar activity in terms of external forcing and, especially, looks for (and finds) the relationship between the Milankovič forcing, long-term climatic changes and related landform changes. A comparison of responses to long-term external forcing (Milankovič cycles), recorded in lacustrine sediments of Lake Baikal and Lake Biwa, has shown divergences influenced by different environmental conditions.

The reviewed book represents a significant contribution in the field of limnogeomorphology. The author evaluates the influence of external, internal and anthropogenic forces on lake-catchment systems. A common denominator of his investigation of numerous lakes in the eastern Asia is the use of lacustrine sediments in the assessment of their catchment evolution. The author discusses actual knowledge in study of lake-catchment systems, brings new results and outlines future trajectories of limnogeomorphological investigation. I should like to congratulate prof. Kenji Kashiwaya, the sincere friend of Slovakia, for publishing such valuable scientific work.

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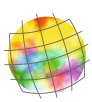

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