

## Protected areas as recreational zones for nearby cities – the case study of the city of Vršac

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### Abstract

The fast-paced life has led many people to practise more frequent and shorter trips to nature. City dwellers are particularly inclined to this. Protected areas (PAs), especially those in the vicinity of cities, provide a good opportunity for one-day excursions and nature-based recreation. The paper presents the results of research aimed at determining how many city dwellers in Serbia use the surrounding PAs for this kind of activities. On a random sample of 247 residents of the City of Vršac above the age of 15, the survey method, with the help of the Statistical Package for the Social Sciences (descriptive statistics, Chi-Square Test and Kruskal-Wallis Test), confirmed the research hypothesis that the utilization of these areas for recreation purposes was insufficient. Based on this and four additional hypotheses that were tested, conclusions are drawn that will serve to define guidelines for the development of excursion tourism in the studied areas and enrich the scarce local scholarly literature on the utilization of PAs for recreation by the urban population.

**Keywords:** *protected areas, one-day excursions, nature-based recreation, city of Vršac*

### Introduction

All types of activities in free time that develop creative potential, health, life optimism, satisfaction and improve the quality of life in people who practise them are considered to be recreation. Accordingly, an area with a more pronounced presence of recreational activities is considered to be a recreation area (Zmijanović, 2016).

Protected areas are increasingly attractive as recreation areas. Recreation, as an important function of these areas, has had a long tradition in Europe. People practise various forms of sports events there, either in an organized (sport events) or in an unorganized (family fun) form, which requires a certain degree of organization and equipment (Eagles, & McCool, 2002). In recent years, the world has seen an increase in the demand for nature-based tourism, and the WTO assumes that this growth trend will only continue in the future (Zmijanović, 2016). A similar situation has been observed in Serbia, especially since the Covid-19 pandemic was declared (Štetić, Trišić, & Gvozden, 2021).

In the territory of the Republic of Serbia, protected areas cover 7.81% of the total territory (<https://www.zzps.rs/wp/centralni-registar/>). In the territory of the Autonomous Province of Vojvodina, they account for 6.91% (<https://pzzp.rs/zastita-prirode/zastita-prirode/registar-zasticenih-podrucja.html>). This research focuses on PAs in the territory of the City of Vršac and the tendency of its inhabitants to use them for excursions and recreation. Some international authors dealt with this topic, using the example of other cities and other

protected areas (Boll, Von Haaren, & Von Ruschkowski, 2014; Opačić et al., 2014). In the local scholarly literature, the topic has been studied on the example of the town of Pančevo (Jojić Glavonjić, 2022), while technical and scholarly studies on the opportunities for developing excursion and recreational tourism as forms of sustainable tourism in protected areas around the City of Vršac are more numerous (Brankov, 2010 ; Vujko, 2011; Stojanović, et al., 2011; Bjeljac, & Romelić, 2015; Trišić, 2020; Štetić et al., 2021; Trišić, 2022).

Based on the experience of the mentioned studies, and primarily on the basis of the conclusions derived from direct, formal and informal conversations with the residents of the City of Vršac, the null hypothesis (H<sub>0</sub>) was formulated and an alternative hypothesis (H<sub>A</sub>) was derived from it:

H<sub>0</sub>: The residents of the City of Vršac do not use PAs in their surroundings frequently.

H<sub>A</sub>: The residents of the City of Vršac use PAs in their surroundings frequently.

In order to verify the main research hypothesis (The residents of the City of Vršac do not use PAs in their surroundings frequently) based on informal conversations with residents of the City of Vršac and visits to three PAs, the frequency of visits to each of the three existing PAs individually was first analyzed. That is why three subhypotheses were formulated: H<sub>a</sub>: Residents of the City of Vršac do not visit frequently the REC Vršac Mountains; H<sub>b</sub>: Residents of the City of Vršac do not visit frequently the PH Mali Vršački rit; and H<sub>c</sub>: Residents of the City of Vršac do not visit frequently the SNR Deliblato Sands.

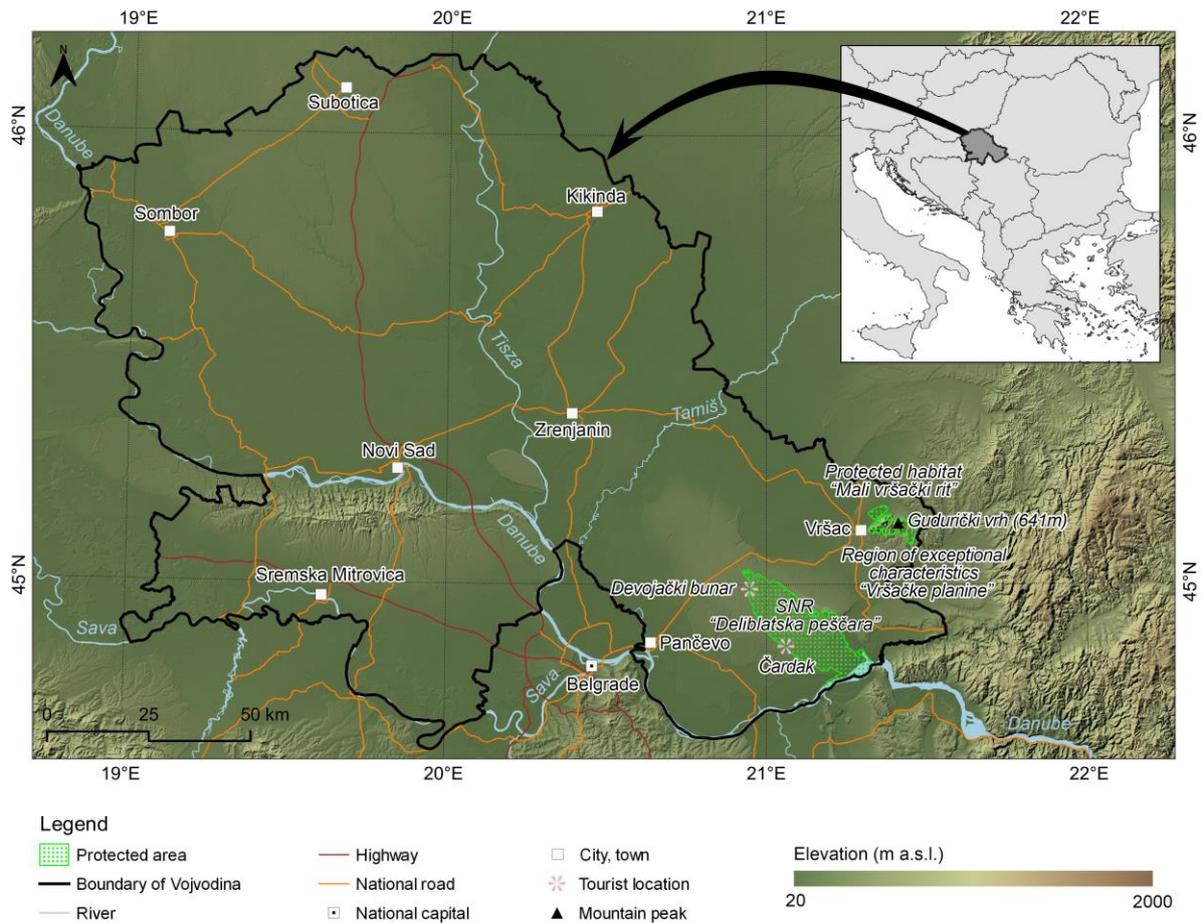
The research hypothesis and subhypotheses were verified by conducting a survey among the residents of Vršac, and the obtained results were analyzed with the help of the Statistical Package for the Social Sciences (SPSS), version 20. In order to reach the statistical conclusion of this research, descriptive statistics and relevant statistical tests were used.

**Study area**

Eight settlements in the Autonomous Province of Vojvodina (AP Vojvodina) have the status of city, the City of Vršac being one of them (Statistical Office of the Republic of Serbia [SORS], n.d.). It is located in the

northeast of Serbia, near the border with Romania, and is the only city in Vojvodina located on the boundary between the lowland and mountain regions (Ćurčić, 2004). According to the 2011 Census, the urban settlement of Vršac had a total of 36,040 inhabitants (SORS, 2012).

There are a total of 11 protected areas in the territory of the City of Vršac (<https://pzzp.rs>). Most of them are natural monuments, and only three meet the conditions for recreation in terms of surface and structure. These are: the Vršac Mountains (Vršačke planine) Region of Exceptional Characteristics (REC), the Protected Habitat Mali Vršački rit (PH) and the Special Nature Reserve of Deliblato Sands (Deliblatska peščara)(SNR).



**Figure 1. Protected areas in the vicinity of the City of Vršac**

Source: Author's research

**Vršac Mountains Region of Exceptional Characteristics**

The Vršac Mountains are a range of mountains located mostly in Serbia (122km<sup>2</sup>), with a smaller part in Romania (50 km<sup>2</sup>) (Davidović, Miljković, & Ristanović, 2003). Like an island, the mountains rise above the lowland relief of Vojvodina and are well forested. The plural in the name

(mountains, not a mountain) reflects their structure: they are composed of four mountain blocks, which are clearly separated by three deep intermountain passes (Zeremski, 1985).

In 2005, the Vršac Mountains site was designated a Region of Exceptional Characteristics and declared a Protected Area of the First Category (international/national importance). In order to preserve its shape, geological structure and its specific wildlife,

three protection regimes have been established (Odluka o zaštiti predela izuzetnih odlika „Vršačke planine”, Decision on the protection of the landscape of exceptional features "Vršačke planine", 2005). In September 2006, the category of this protected area was changed to the third category (local importance), and in 2019 to the second category (provincial/regional importance), due to which decision-making power was transferred to the level of the Autonomous Province. The REC covers an area of 5328.86 ha and is entirely in the territory of the City of Vršac (<https://evrsac.rs/podignut-stepen-zastite-pio-vrsacke-planine-video/>). The Vršac Public Utility Company Drugi Oktobar has been in charge of its management (Odluka o izmenama Odluke o zaštiti predela izuzetnih odlika „Vršačke planine” Decision on amendments to the Decision on the protection of the landscape of exceptional features "Vršačke planine", 2017).

If we exclude the Protection zone I, where only research is allowed, hikers and recreationists can find excellent conditions for satisfying their recreational and health needs and for high-quality leisure activities in the remaining parts of the REC area. In the Protection regime II, along with the controlled movement of visitors, it is allowed to mark trails and arrange sites for tourist purposes. In the Protection regime III, hunting, sports and recreational activities in some areas and facilities are allowed (Odluka o zaštiti predela izuzetnih odlika „Vršačke planine”, 2005). A great effort by the management has been made to improve the conditions for the stay of excursionists and recreationists. The Vršac Mountains or, as the residents of the surrounding villages call them, Vršački breg (Vršac Hill), is now a very clean place supplied with various amenities that welcomes nature lovers both from the surrounding area and from afar. Benches for rest, information boards are abundant, and the walking paths are arranged and maintained in an orderly manner. The offer is completed by four peaks, accessible via organized paths with appropriate signposts - the highest peak in Vojvodina, Gudurički vrh (641m), Mala Čoka (602m), Srednji vrh (570m), Lisičija glava (590m), Vršački vrh (514m), Đakov vrh (449m), Turska glava (402m) and Kula (399m) (<https://psdkulavrsac.com/vrsackeplanine.html>).

Throughout history, the Vršac Mountains was as a place of refuge, to become an attractive place for farming, primarily for viticulture and cattle breeding. Before World War II, it was popular as a health tourism destination. They were the origin of health tourism. Various healthcare associations and sanatoriums were established there. The period after World War II was marked by the development of excursion (weekend) and sports and recreational tourism. Nowadays, the Vršac Mountains are one of the "leading centres of excursion-weekend tourism in Serbia" (Bjeljac & Romelić, 2015, p. 92), keeping in mind the contractile zone of about three million inhabitants from the surrounding, mostly lowland area. On weekends, they gravitate towards the picnic areas of the mountains for a half- or full-day stay. In line with to the natural features of

the Vršac Mountains, Bjeljac & Romelić (2015) emphasize mountaineering and hiking, and Vujko (2011) also mentions cycling as the most suitable forms of recreation. Thanks to its relief and favourable air currents, Vršačka kula attracts paragliders (Bjeljac, & Romelić, 2015). In the territory of REC and PH, hunting tourism is practised. The most numerous representatives of hunting fauna are: wild boar, roe deer, rabbit, pheasant, field partridge, fox, jackal and wolf (JP Zavod za urbanizam Vojvodine, 2021).

The Vršac Mountains are protected in international frameworks as well, as the Important Plant Area in Central and Eastern Europe (IPA) and the Important Bird Area in Europe (IBA) (<https://pzzp.rs/zastita-prirode/podrucja-od-medunarodnog-znacaja/podrucja-sa-medunarodnom-zastitom.html>).

### Protected habitat Mali vršački rit

Mali rit (also the Vršac Depression or Vršac Trench, according to Zeremski, 1967; 1972; 1985) is an integral part of the northern foothills of the Vršac Mountains. It is a mosaic of wet and dry meadows, ponds and forests and extends along the entire length of the Vršac Mountains. It would be one whole, if it were not for the road that connects Vršac with Veliko Središte (Odluka o proglašenju zaštićenog područja "Zaštićeno stanište Mali Vršački rit", 2013).

On the initiative of the GEA Nature Society from Vršac, the Institute of Nature Conservation of the Vojvodina Province proposed in 2008 that the area of Mali Vršački rit be placed under protection (<https://staniste.org.rs/mali-vrsacki-rit-revizija-zastite-is-in-progress/?msckid=76b294e4ba4b11ec87571d2931982699>). A protection regime was established in 2013, when this area was declared a protected area of the third category, for the sake of preserving unique ecological, structural and functional entities and connecting it with the neighbouring protected area of the REC Vršac Mountains. The area of the protected habitat is 931.20 ha, and the protection regimes II and III have been established, which means that tourism is restricted in terms of spatio-temporal and capacity constraints. In an area under the third-degree protection regime, recreation is allowed in the designated places, along with sustainable forms of tourism (Odluka o proglašenju zaštićenog područja "Zaštićeno stanište Mali Vršački rit", 2013).

Although protected by the law, due to the lack of financial support, the protected area is still facing numerous challenges, such as: fires, plowing, unplanned construction, logging, uncontrolled hunting. Conservationists see the way out in merging it with the REC into one second-category protected area. In that case, the area would come under the jurisdiction of the AP Vojvodina and thus receive greater attention. In 2017, the Institute of Nature Conservation of the Vojvodina Province initiated the revision procedure regarding the REC and the PH, in order to unify them (<https://staniste.org.rs/mali->

vrsacki-rit-revizija-zastite-je-u-toku/?msclkid=76b294e4ba4b11ec87571d2931982699).

With the exception of some specialized recreationists – hunters, fishermen and birdwatchers (Brankov, 2010, Bjeljac, & Romelić, 2015), this site is not attractive as a place for excursions and leisure activities. The reason probably lies in the fact that it is unknown to many and is not sufficiently promoted. Perhaps that will change in the coming period, since in 2021 the Spatial Plan for the Vršac Mountains Special Purpose Area was adopted (JP Zavod za urbanizam Vojvodine, 2021), which aims at the improvement of the offer of this site – the construction of prefabricated wooden greenhouses up to 50 m<sup>2</sup> in size, which would serve as a visitor centre and open-air classrooms, the routing of pedestrian and bicycle paths, the installation of canopies and viewpoints.

Together with the REC, the PH is on the IPA list (<https://pzzp.rs/zastita-prirode/podrucja-od-medunarodnog-znacaja/podrucja-sa-medunarodnom-zastitom.html>).

### Special Nature Reserve Deliblato Sands

Deliblato Sands is a relatively late aeolian formation, created mostly by the Košava wind that caused sand deposit (from the banks of the Danube, in the NW direction) (Menković, 2013). It is one of the most important European biodiversity centres (Amidžić, Krasulja, & Belij, 2007). So far, about 900 species of higher plants have been recorded, many of which have been protected as relic and endemic species. The animal world is also rich in species, especially the ornithofauna, where about 170 species of nesting birds have been recorded so far (Pokrajinski sekretarijat za arhitekturu, urbanizam i graditeljstvo, 2006).

Excursion movements towards the Deliblato Sands and within it are the most intensive on weekends and holidays, mainly in spring and autumn (Kovačev, Romelić, Pivac, & Lukić, 2014). Vršac, as the closest urban settlement, is certainly the strongest emitting centre, while Kovačev et al. (2014) also mention Belgrade, Pančevo, Kovin, Bela Crkva, and villages around the SNR. The primary tourism sites in the SNR are located in the territory of the Pančevo and Alibunar municipalities. These are Čardak and Devojački Bunar, where tourist and information centres should also be established (Pokrajinski sekretarijat za arhitekturu, urbanizam i graditeljstvo, 2006). However, probably the most attractive area within the SNR that is also the closest to the City of Vršac is the Zagajička brda site. It is part of the Dumača loess plateau and, with the highest elevation of 251 m (Lukić, et al. 2013), it rises in the middle of the Deliblato Sands, being higher by 10 to 50 m than the surrounding terrain (Menković, 2013). Tourists visit Zagajička brda mainly from the direction of Šušara, a small isolated village 28 km from the City of Vršac and the most peripheral settlement that gravitates to it (Ćurčić, 2004).

In the SNR, sports-recreational and excursion tourism are already highly developed (Stojanović, et al., 2011). Hiking, photo safaris, collecting medicinal plants, and hunting tourism are also present. Along with the Vršac Mountains, Deliblato Sands is one of the most important hunting areas in South Banat. In the territory of the Vršac Municipality there are several hunting areas, both lowland and hill-mountain types (Kovačević, 2019).

The SNR Deliblato Sands is included in the Inventory of Geomorphological Heritage of Serbia, as an example of relict aeolian relief in Europe (<https://www.zzps.rs/wp/geomorfologija/>). It is internationally protected as an IPA, IBA and PBA (Prime Butterfly Area), as well as a significant transboundary area, and it has been proposed for the World Network of Biosphere Reserves (MAB) (<https://pzzp.rs/zastita-prirode/podrucja-od-medunarodnog-nacaja/podrucja-sa-medunarodnom-zastitom.html>).

### Materials and methods

Between May and July 2022, a survey was conducted in the territory of the City of Vršac, using the random sample method. Vršac's citizens over the age of 15 were interviewed in the streets, at the market, in restaurants, and at their workplaces. In this way, 111 respondents were surveyed. The answers of the other 136 respondents were collected with the help of an electronic Google questionnaire which was promoted on the websites and Facebook pages of Vršac sports and mountaineering clubs, high schools and cultural institutions.

The questionnaire contained a total of 14 questions. Three questions were related to personal data of respondents (gender, age and work status), nine of them were closed-ended with fixed responses and two were multiple-choice questions. The introductory questions were intended to gain insight into the respondents' habit of going on one-day trips to nature and the type of activities they engage in. Then followed the questions about three specific sites in the vicinity of the City of Vršac. Randomly selected respondents provided information about the frequency and mode of visits them, whether they were in favour of introducing direct public transport lines to these places and what could be done to encourage them to visit these sites more frequently in their free time. The intention was also to check the awareness of the citizens of Vršac about the existence of protected areas in their immediate environment; accordingly, one question was dedicated to that as well. The last three questions related to the respondent's gender, age and work status. Out of 259 responses in total, 247 were accepted as valid.

The representativeness of the sample was verified by ensuring that all respondents were from Vršac, that all age groups and both sexes were represented, and that their shares in the study reflected their shares in the total population. The average age of the inhabitants of the City of Vršac is 41.9 (SORS, 2012). The average age of the

respondents is approximately 36.4. The research involved three age categories – young (15-24 years of age), middle-aged (25-64 years of age) and elderly (over 65 years of age). Among the population of the City of Vršac over 15 years of age, the share of the young is 13.0%, the share of the middle-aged is 68.3% and the share of the old is 18.7% (calculated on the basis of the SORS data, 2012). The largest percentage of respondents belongs to the category of the middle-aged. The share of the young is 35.2%, the share of the middle-aged is 59.5% and the share of the elderly is 5.3%. The gender structure of the citizens of the City of Vršac is also similar to the gender structure of the respondents. The share of men over 15 years of age in the total population of the City of Vršac is 47.0%, and the share of women is 52.9% (SORS, 2012). Among the respondents, their share is 44.5% of men, and 55.5% for women.

The Statistical Package for the Social Sciences (SPSS), version 20, was used to summarize the collected data, describe their main characteristics and test for significant differences between variables.

## Results

### Descriptive statistics

In the sample of 247 citizens of the City of Vršac the youngest respondent was 15 years old, and the oldest was 74. The respondents' average age was 36.4. The majority of respondents belonged to the category of employees (52.6%), while the fewest were in the category of students (4.9%) and pensioners (5.7%) (Table 1).

**Table 1. Sociodemographic characteristics of the respondents**

Age	Mean	36.4	
	Std. deviation	16.773	
Minimum	15		
	74		
		Frequency	Valid percent
Gender	Male	110	44.5
	Female	137	55.5
	Total	247	100.0
		Frequency	Valid percent
Employment Status	Pupil	71	28.7
	Student	12	4.9
	Employed	130	52.6
	Unemployed	20	8.1
	Retiree	14	5.7
	Total	247	100.0

Source: Author's research

Contrary to expectations, based on conversations with local residents and representatives of the tourist organization of the City of Vršac, the vast majority of respondents (80.2%) gave an affirmative answer to the introductory question – whether they practised nature-based recreation in their leisure time. A small percentage never went to nature in their free time (7.3%), while a

certain percentage (12.6%) wanted to go, but circumstances did not allow for it. Their favorite outdoor activities were walking, hiking, and picnic with friends (64.8%). To a lesser extent, combinations of the following activities were also represented – cycling, fishing, team sports and extreme sports.

Out of the total number of respondents, 39.3% visited this area several times, and the frequency of visits was particularly high: 27.5% of the respondents go there "at least once a week", and 23.9% visit it "at least once a month". However, an example of another PA, also very close to the city, refutes the conclusion of the Spanish study. Namely, the lowest frequency of visits out of the three PAs in the area of the City of Vršac has been recorded in the PH Mali Vršački rit, which is also a protected area that has never been visited by the largest percentage of Vršac residents (59.1%). A large number of people from Vršac have visited the SNR Deliblato Sands (several times – 44.9%), but the frequency of visits is not even close to that of the REC (Table 2).

**Table 2. Attendance of PAs in the vicinity of the City of Vršac**

Have you ever been to these PAs?	REC "Vršačke planine"		PH "Mali vršački rit"		SNR "Deliblatska peščara"	
	Frequency	Valid Percent	Frequency	Valid Percent	Frequency	Valid Percent
Once	6	2.4	39	15.8	67	27.1
Several times so far	97	39.3	59	23.9	111	45.0
At least once a week	68	27.5	1	.4	2	.8
At least once a month	59	23.9	1	.4	0	0.0
At least once a year	15	6.1	1	.4	10	4.0
Never	2	.8	146	59.1	57	23.1
Total	247	100.0	247	100.0	247	100.0

Source: Author's research

The dominance of private transport in visiting PAs (Sanchez Martin, Rengifo Gallego, & Martin Delgado, 2018) was confirmed by this research. This is especially evident in the case of trips to the PH (83.2%) (Table 3).

The introduction of direct seasonal bus lines to PAs in the surrounding area would encourage a significant number of the residents of the City of Vršac (40.5%) to visit them more often. Being used to their own transport, 50.6% of them answered that it would not encourage them to go to nature more often, while the rest (8.9%) claimed that this would not have an impact, because they were not interested in nature.

When asked "how many PAs there are in the area of the City of Vršac", 35.6% of respondents answered "I don't know", 19.4% "There is one" and 2.4% "There are none" (Table 4).

**Table 3. The most common way of visiting PAs in the vicinity of the City of Vršac**

If you have visited these PAs, how did you go?	REC "Vršačke planine"		PH "Mali vršački rit"		SNR "Deliblatska peščara"	
	Frequency	Valid Percent	Frequency	Valid Percent	Frequency	Valid Percent
On my own	147	60	84	83.2	104	54.5
Organized	5	2	6	5.9	46	24.1
Both ways	93	38	11	10.9	41	21.5
Total	245	100.0	101	100.0	191	100.0

Source: Author's research

**Table 4. Additional drivers for visiting PAs in the surroundings**

What would influence your decision to visit these areas more often?	Frequency	Valid Percent
Better state of development	82	33.2
Better promotion	30	12.1
Better state of development and promotion	25	10.1
Better availability for cyclists	9	3.6
Better state of development and availability for cyclists	7	2.8
Better state of development, promotion and availability for cyclists	8	3.2
More leisure time	58	23.5
Better financial situation	4	1.6
More leisure time and better financial situation	7	2.8
Company	5	2.0
Better health and condition	3	1.2
Nothing, because I am not interested	9	3.6
Total	247	100.0

Source: Author's research

**Testing for significant differences in the variances of sub-groups**

After descriptive statistics had been done, the obtained data were compared in relation to gender and age. Variable "excursions to nature in leisure time" and variable "preferred activities" were tested and four subhypotheses were formulated – H1: Residents of the City of Vršac of different genders do not differ significantly in terms of practicing outdoor recreation; H2: Residents of the City of Vršac of different genders do not differ significantly in terms of the types of outdoor activities they practice in their free time; H3: Residents of the City of Vršac of different ages do not differ significantly in terms of practicing outdoor recreation; and H4: Residents of the City of Vršac of different ages do not differ significantly in

terms of the types of outdoor activities they practice in their free time.

To test the significant differences between groups in gender, the Chi-Square Test was used.

First of all, it was checked whether there was a difference between the citizens of Vršac of different gender regarding excursions to nature. The statistical conclusion of the test is that the differences in the resulting frequencies are the result of chance (Sig. =0.078) (Table 5).

**Table 5. Gender and excursions to nature in the leisure time**

Gender	Excursions to nature in the leisure time			Total
	Yes	Wished I could	No	
Male	94 85.5%	8 7.3%	8 7.3%	110 100.0%
Female	104 75.9%	23 16.8%	10 7.3%	137 100.0%
Total	198 80.2%	31 12.6%	18 7.3%	247 100.0%
	Value	df	Asymp. Sig.	
Chi-Square	5.095 <sup>a</sup>	2	0.078	

a. 0 cells (.0%) have expected count less than 5. Source: Author's research

The differences in the way of spending time in nature between men and women, residents of the City of Vršac, were also analyzed. The test showed a significance of less than 0.05 (.000), indicating that there was a significant difference between male and female respondents in terms of the type of recreation they preferred (Table 6). For the purposes of statistical analysis, the activities were classified into five groups. Table 6 clearly shows which activities were preferred by the residents of Vršac, in relation to gender.

**Table 6. Gender and favorite ways to spend leisure time in nature**

Gender	Top 5 Favourite types of activities					
	Walking, hiking, picnic	Team sports	Cycling, motorcycling	Extreme sports	Fishing, hunting	No interest in nature
Male	67 60.9%	4 3.6%	8 7.3%	12 10.9%	17 15.5%	2 1.8%
Female	93 67.9%	10 7.3%	21 15.3%	1 0.7%	6 4.4%	6 4.4%
Total	160 64.8%	14 5.7%	29 11.7%	13 5.3%	23 9.3%	8 3.2%
	Value		df		Asymp. Sig.	
Chi-Square	26.559 <sup>a</sup>		5		0.000	

a. 2 cells (16.7%) have expected count less than 5. Source: Author's research

Testing for significant differences in terms of the age of the citizens of Vršac and the practice of trips to nature, i.e.

the type of preferred outdoor activities, due to one numerical variable (age) and one categorical variable with at least three categories (3 and 6), required the use of the ANOVA statistical test. First, the Kolmogorov-Smirnov test of normality was performed, where the deviation of normal data distribution was observed (Statistics .164; df 247; Sig. .000). This was also confirmed by the coefficient of variation (CV 46.1%). Therefore, a non-parametric alternative was used – the Kruskal-Wallis Test.

**Table 7. Age groups and excursions to nature in the leisure time**

Age groups	Excursions to nature			Total
	Yes	Wished could	No	
Young	65 74.7%	15 17.2%	7 8.0%	87 100.0%
Middle aged	122 83.0%	16 10.9%	9 6.1%	147 100.0%
Old	11 84.6%	0 0.0%	2 15.4%	13 100.0%
Total	198 80.2%	31 12.6%	18 7.3%	247 100.0%
	Chi-Square	df	Asymp. Sig.	
Kruskal-Wallis	1.691	2	0.429	

Source: Author's research

In the category of young population (87 or 35.2% out of total), 74.7% declared that they visited protected areas in the vicinity of the City of Vršac. The share of middle-aged respondents who had the habit of recreating in the nearby protected areas was 83.0%, while the category of the elderly led with 84.6%. Nevertheless, all these figures were approximately the same values. The Kruskal-Wallis Test also showed that residents of the City of Vršac of different ages did not differ significantly in terms of practising outdoor recreation, since Sig. >0.05 (.429). The statistical conclusion is that the median values of the subsamples do not differ significantly (Table 7).

**Table 8. Age groups and favorite ways to spend free time in nature**

Age groups	Top 5 Favourite types of activities					
	Walk- ing, hik- ing, picnic	Team sports	Cy- cling, moto- cy- cling	Ex- treme sports	Fish- ing, hunt- ing	No in- ter- est in na- ture
Young	54 62.1%	9 10.3%	12 13.8%	0 0.0%	11 12.6%	1 1.1%
Middle aged	109 74.1%	2 1.4%	17 11.6%	2 8.8%	10 6.8%	7 4.8%
Old	11 84.6%	0 0.0%	0 0.0%	0 0.0%	2 15.4%	0 0.0%
Total	174 70.4%	11 4.5%	29 11.7%	2 0.8%	23 9.3%	8 3.2%
	Chi-Square	df	Asymp. Sig.			
Kruskal- Wallis	22.752	5	0.000			

Source: Author's research

The highest percentage of the respondents of all three age categories prefer walking, hiking and hanging out with friends (62.1%-74.1%-70.4%). The Kruskal-Wallis Test showed Sig. >0.05 (.000), so the statistical conclusion is that the median values of the subsamples differ significantly, i.e. the respondents of different ages differ in terms of the type of outdoor activities they practice (Table 8).

## Discussion and conclusions

A survey among residents of the City of Vršac over the age of 15 showed that, as expected, the most visited PA was the REC Vršac Mountains because of its proximity to the city. However, a significant number of residents of the City of Vršac rarely visited this site (47.8%). The other two sites were visited frequently (once a week or once a month) by only 0.8% of the respondents, while the least visited PA in the area of the City of Vršac was the PH Mali Vršački rit, which had never been visited by 59.1% of the respondents. The percentage of the residents of the City of Vršac who had never been in the SNR was also relatively high (23.1%). After processing the survey results, the null hypothesis (H0) was accepted.

The well-known tourist sites of Vršačka kula and the Red Cross resort are about 8 km away from the city center by an asphalt road. PH "Mali vršački rit" is about 6 km from the center, but its landscapes are far less attractive. As far as SNR "Deliblatska Peščara" is concerned, the tourist site of Zagajička Brda is the closest to the City of Vršac, but still quite far away - 28 km. There is an extensive Spanish study on PAs (Sanchez Martin et al., 2018) which shows that visits decline with the distance. This was confirmed on the example of the REC. However, the example of PH Mali Vršački rit showed that distance is not crucial for visitors when planning a visit to a PA, which is in line with the results of two recent similar studies – Ali and Irfan (2021) and Jojić Glavonjić (2022).

The REC leaves to the visitors to organize their own transportation, which negatively affects the volume of tourist visits (Vujko, 2011). As of today (summer 2022), nothing has changed in this regard. From the City of Vršac, there are no direct bus lines, not even seasonal, to Čardak, Devojački bunar and Šušara (localities in the SRP). The citizens of Vršac can visit them only by private car or with organized excursions (mountaineering clubs, school excursions). The same is with the REC and the PH, but they are still much closer, so it is possible to go there on foot or by bike.

The state of development, infrastructure and services of the most visited PA (REC) are excellent, and every year more and more is invested in order to attract as many visitors as possible. The same is true for many sites in the SRP, while the PH is still a new, rather unknown site that is yet to be supplied with amenities for visitors. Common to all those sites is the need for better promotion.

As for additional drivers for visiting these protected areas, the citizens of Vršac first cited a better state of development (tourism infrastructure and recreational facilities) and better promotion, but also more leisure time.

Additional hypotheses were formulated in order to compare difference between data samples for men and women, as well as for respondents of different ages. They were verified by statistical tests (Chi-Square Test and Kruskal-Wallis Test), which showed the following. Hypothesis H1: Residents of the City of Vršac of different genders do not differ significantly regarding the practice of outdoor recreation, was accepted. A high percentage of the respondents of both genders like to visit nature. Hypothesis H2: Residents of the City of Vršac of different genders do not differ significantly regarding the types of outdoor activities they practise in their free time, was rejected, and the alternative hypothesis was accepted (H2A: Residents of the city of Vršac of different genders differ significantly regarding the types of outdoor activities they practise in their free time). There is a difference between male and female residents regarding their favorite type of recreation. Except for the most represented ones – walking and picnic with friends, respondents also mentioned: team sports, cycling, fishing, running, and extreme sports all in different combinations, since it was allowed to choose several activities. The only group of activities that both sexes equally practiced is walking, picnic with friends, and hiking. Hypothesis H3: Residents of the City of Vršac of different ages do not differ significantly in terms of practising outdoor recreation, was accepted. There are no significant differences among Vršac residents of various generations in the practice of trips to the surrounding PAs. The hypothesis H4: Residents of the City of Vršac of different ages do not differ significantly in terms of the types of outdoor activities they practise in their leisure time, was refuted and the alternative was accepted (H4A: Residents of the City of Vršac of different ages differ significantly in terms of the types of outdoor activities they practise in their free time). There is a difference in practicing team sports (the young lead the way with 10.3%), while extreme sports among respondents are as well as extreme sports (practised exclusively by the middle-aged). It is noticeable that the elderly are not inclined to team sports, motorcycling and cycling, and extreme sports, but they are the only group from which not a single respondent answered that they did not like to spend their free time in nature.

The obtained results can be used to propose recommendations on what to do in order to encourage the residents of the City of Vršac to visit the surrounding PAs more often. An improved level of development and availability of infrastructure is the first thing that the respondents emphasized (33.2%). Many of them also mentioned the need for better promotion (12.1%) as well as the inseparable combination of those two (10.1%). However, each of the three PAs is a story in itself. In the

case of the REC, for example, the management takes the job of landscaping very responsibly. The paths are developed and regularly maintained, well-marked, picnic areas are equipped with amenities. From the conversation with the managers of the Tourist Centre, it has been learnt that it would be necessary to fix the road leading to the Vršačka kula peak, which is now very steep and narrow. It is used by paragliders, and the track should be arranged according to standards as well. There is also a lack of parking space for buses at the foot of Vršačka kula, near the Red Cross resort. Many respondents, especially the older ones, emphasized the need to pave the road to the Široko bilo mountain lodge. The PH is the worst in this regard, but it has only recently been declared a PA, and as such is still undeveloped and unknown to the wider population (except for fishermen and hunters). The citizens of Vršac do not visit it because most of the respondents, apart from fishermen and hunters, have neither heard of it, nor do they know where it is. Although both mentioned PAs are, so to speak, within the city itself, they are insufficiently promoted, especially among young generations. Schools usually take them on field trips to these sites, but as they grow up, they rarely go there on their own. According to the respondents in this survey, the main reason for this is the lack of free time. Unfortunately, there is no way to change this. What can be changed is the introduction of organized transportation to these three sites, at least in the main seasons – spring and summer. It would certainly affect the scale of visits for the better. This is the opinion of 40.5% of the respondents. The REC is visited because of its proximity (7.4 km, 13 min), so one can go there on foot or by bike. However, due to the significant percentage of elderly citizens who like to visit the Vršac Mountains, it would be useful to organize seasonal bus lines to the Široko bilo mountain lodge or at least to the Red Cross resort. Direct bus lines to sites within the SRP would be particularly useful (the nearest site is Šušara, with the attractive site Zagajička brda – 28.9 km, about 30 minutes).

The topic of using PAs in the vicinity of Serbian cities for excursions and recreation is very poorly studied in the local scholarly literature. Therefore, it is one of the contributions of this paper, while its practical contribution is that it could serve as a guide for the PA managers in their further management and planning of the excursion and recreational tourism development. Already at the beginning of the research, the Sector for Maintenance of Public Areas and Environmental Protection of the PUC Second October (Manager of the REC Vršac Mountains) expressed interest in the results of the survey.

The lack of research is reflected in the fact that a small number of questionnaires were filled out in a face-to-face interview, and many respondents confuse the concept of visiting and recreating in a protected area and the concept of living in it or near it and visiting relatives and friends who live there. This is particularly reflected in the specific case of the REC Vršac Mountains, since a significant

number of citizens of the City of Vršac live right on their slopes. Some respondents answered that they went to the REC every day, but in fact, through the conversation, it turned out that they lived there and had not visited the forest, paths or viewpoints within the REC for years. This kind of understanding occurred in the questionnaires filled out by the respondents independently. In the questionnaires accompanied with an interview, questions of this type were additionally clarified. Also, one of the limitations of this research is the unequal representation of all categories when it comes to work status. The highest percentage of respondents comes from the category of employees, while the lowest number are among students and pensioners.

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## Author contribution

Tamara Jojić Glavonjić defined the research structure. She designed a survey and visited Vršac on three occasions to survey residents. She processed the collected data with the help of SPSS. Dejan Doljak was in charge of the online survey, the creation of the map and the technical arrangement of the work.

## Conflicts of interest

The authors declare no conflict of interest.

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