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Erholung und Tourismus

Recreation and Tourism

Recreation of Urban Residents in Nearby Protected Areas in South Banat, Serbia

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Summary

The paper describes the field research in two cities in the South Banat District. The aim was to determine whether the population used protected areas on the territory of their

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cities for recreation and excursions. Appropriate criteria were used to select a total of five protected areas: three in the territory of the City of Pančevo and three in the territory of the City of Vršac (one area covers parts of the territories of both cities). Field research was conducted in 2022 in the cities of Pančevo and Vršac, covering a total of 962 respondents. The study employed a combination of direct and online surveys, with data analysed using the Statistical Package for Social Sciences (SPSS).

Key findings revealed significant socio-demographic influences on recreation patterns, with gender, age, and employment status shaping activity preferences and visit frequency. Motivational factors such as stress relief, physical activity, and nature appreciation emerged as the primary drivers of visitation. Accessibility, including transportation options, was also identified as a critical determinant of recreational engagement.

The main contribution of this work lies in providing data that can be used as an additional guideline for planners, decision makers and managers of the selected protected areas. The results of the survey can guide further activities in these areas, while the tourist organisations of the two cities can grasp the profile of potential excursionists and recreationists (age, gender, mobility, activities they engage in) and their needs, which should be the focus of future marketing campaigns, all that with the ultimate goal of enhancing the quality of life of the urban population.

Keywords: Protected areas, nature-based recreation, city dwellers, South Banat, Serbia

Zusammenfassung

Erholungsverhalten von Stadtbewohnern in nahe gelegenen Schutzgebieten im Südbanat, Serbien

Im vorliegenden Beitrag wird eine im Bereich von zwei Städten im Bezirk Südbanat, Serbien durchgeführte umfangreiche Feldforschung vorgestellt, deren Ziel es war, festzustellen, ob die Bevölkerung Schutzgebiete auf dem Gebiet ihrer Städte zur Erholung und für Ausflüge nutzt. Anhand geeigneter Kriterien wurden insgesamt fünf Schutzgebiete ausgewählt. Drei auf dem Gebiet der Stadt Pančevo und drei auf dem Gebiet der Stadt Vršac (ein Gebiet umfasst Teile des Territoriums beider Städte). Die Feldforschung wurde 2022 in den Städten Pančevo und Vršac durchgeführt und umfasste insgesamt 962 Befragte. Die Studie verwendete eine Kombination aus direkten und Online-Umfragen, wobei die Daten mit dem „Statistical Package for Social Sciences" (SPSS) analysiert wurden.

Die wichtigsten Ergebnisse zeigten signifikante soziodemographische Einflüsse auf das Erholungsverhalten, wobei Geschlecht, Alter und Beschäftigungsstatus die unterschiedlichen Aktivitätspräferenzen und die Besuchshäufigkeit prägten. Motivationsfaktoren wie Stressabbau, körperliche Aktivität und Wertschätzung der Natur erwiesen sich als die Hauptgründe für Besuche. Die Erreichbarkeit, einschließlich Transportmöglichkeiten, wurde ebenfalls als entscheidender Faktor für das Freizeitengagement identifiziert.

Der Hauptbeitrag dieser Arbeit besteht darin, dass die erzielten Ergebnisse als zusätzliche Richtlinie für Planer, Entscheidungsträger und Manager ausgewählter Schutzgebiete

verwendet werden können. Die Meinungen der befragten Personen können die Richtung der weiteren Bemühungen in diesen Gebieten bestimmen. Auch für Tourismusorganisationen der beiden Städte könnten die Ergebnisse der Untersuchung hilfreich sein. Sie können das Profil potenzieller Ausflügler und Erholungssuchender (Alter, Geschlecht, Mobilität, Aktivitäten, denen sie nachgehen) und ihre Bedürfnisse hervorheben, die im Mittelpunkt künftiger Marketingkampagnen stehen sollten – mit dem Ziel, die Lebensqualität der Stadtbevölkerung zu verbessern.

Schlagwörter: Schutzgebiete, naturnahe Erholung, Stadtbewohner, Südbanat, Serbien

1 Introduction

The fast pace of urban life, noise, air and light pollution are increasingly driving residents to spend their leisure time somewhere far from the urban tumult, enjoying different types of nature-based recreation. Outdoor recreation fosters a vital interaction between people and nature, offering a wide range of physical and mental health benefits for people. Protected areas are probably the best places for such activities. Protected natural areas, if located near larger settlements and spanning a sufficiently large area to accomodate various outdoor activities can serve as ideal places to meet the recreational demands of city dwellers.

While the current literature provides valuable insights into the role of protected areas in promoting recreation and well-being (Franceschinis et al. 2022; Jackson et al. 2021), a significant theoretical gap exists in understanding the nuanced interplay between demographic, motivational, and accessibility factors specific to urban populations in smaller cities and their engagement with nearby natural areas. Much of the existing research tends to focus on metropolitan settings (Boll et al. 2014) or high-profile national parks (Gonia and Jezierska-Thöle 2022), often overlooking how socio-cultural and economic contexts shape recreational behaviours in smaller urban regions.

Addressing this gap is critical because smaller cities, like Pančevo and Vršac in Serbia, frequently exhibit unique patterns of interaction with nearby protected areas due to differing urban pressures, infrastructure availability, and local traditions (Jojić Glavonjić 2022). Analysing these dynamics is essential for developing targeted policies that enhance the quality of life for urban residents, foster sustainable use of natural resources, and bridge the gap between urban populations and nature, ultimately contributing to broader goals of conservation and community well-being (Opačić et al. 2014; Booth et al. 2010).

The aim of the paper is to investigate how urban residents of South Banat, Serbia, utilise nearby protected natural areas for recreational purposes, with a focus on understanding their preferences, behaviours, and barriers to participation. By examining two urban centres, Pančevo and Vršac, the study seeks to identify the types of activities residents engage in, the demographic factors (age, gender, employment status) that influence their choices, and the motivational drivers such as physical activity, stress relief, or family bonding.

Additionally, the research aims to evaluate the role of accessibility, particularly transportation and infrastructure adequacy, in shaping the frequency and ease of visits to these areas. By combining field surveys with statistical analysis, the paper provides insights into the perceptions and expectations of urban populations toward protected areas. Ultimately, the goal is to offer actionable recommendations for protected area managers and local policymakers to enhance infrastructure, promotion, and accessibility, thus fostering more sustainable and inclusive use of these natural spaces for recreation and improving the quality of life for urban residents.

2 Theoretical Framework and Hypotheses

Protected natural areas play a pivotal role in fostering engagement in recreational activities by providing unique and preserved environments that encourage outdoor experiences (Buta et al. 2014). These areas are designated to conserve biodiversity, protect ecosystems, and ensure the sustainable use of natural resources, creating a conducive setting for recreational pursuits. The theoretical foundation for this relationship is grounded in environmental psychology and leisure studies, which suggest that natural environments have restorative and motivational qualities that promote physical and mental well-being (Jackson et al. 2021; Hanna et al. 2019).

Access to protected areas offers individuals opportunities to engage in activities such as hiking, birdwatching, camping, and nature photography, which not only contribute to personal health but also enhance awareness and appreciation of conservation efforts. Additionally, theories such as the biophilia hypothesis underline humans' inherent affinity for nature, which explains the increased inclination towards recreational activities in well-preserved natural settings (Grinde and Grindal Patil 2009). By integrating these areas into recreational planning, stakeholders can align conservation goals with human enjoyment, fostering a symbiotic relationship that benefits both the environment and society. Therefore, the following hypothesis has been proposed:

H1: Protected natural areas are associated with increased engagement in recreational activities.

Research on the relationship between gender and the likelihood of visiting protected natural areas has highlighted notable differences in preferences, motivations, and behaviours. Previous studies indicate that women are often more inclined toward environmentally friendly practices and demonstrate a stronger sense of responsibility toward nature, which potentially increases the likelihood of visiting protected areas for activities such as eco-tourism or education (Strapko et al. 2016). However, other studies suggest that men are more likely to engage in outdoor recreational activities that include visits to protected areas, such as hiking, camping, or adventure sports, possibly due to higher risk-taking tendencies and an affinity for physically challenging activities (Sjogren and Stjernberg 2010; Rosa et al. 2023).

Cultural and societal norms also play a role in shaping these behaviours, as women's participation in outdoor activities may be influenced by safety concerns, access to resources,

and traditional gender roles. Furthermore, age and socioeconomic factors intersect with gender, as women from higher-income brackets and urban areas are reported to have a greater propensity for visiting protected areas compared to their rural or lower-income counterparts (Godtman Kling et al. 2020).

Despite these insights, the findings across studies remain mixed, suggesting that the relationship between gender and visitation likelihood is complex and context-dependent, requiring further investigation to account for variables such as cultural context, individual motivations, and barriers to access. Based on this, the following hypothesis has been developed:

H2: Gender significantly influences the likelihood of visiting protected natural areas.

Research on the relationship between age and engagement in recreational activities in protected natural areas reveals diverse patterns influenced by demographic, social, and psychological factors. Younger individuals, particularly those in their twenties and thirties, are often more likely to participate in physically demanding recreational activities, such as hiking, climbing, or biking, due to higher levels of physical fitness, adventurousness, and time availability (Colley et al. 2022; Rosa et al. 2023). In contrast, middle-aged and older adults tend to favour less strenuous and more contemplative activities, such as birdwatching, photography, or scenic walks, reflecting their preference for relaxation, connection with nature, and reduced physical exertion (Li et al. 2024). Studies also indicate that the motivation to engage in such activities shifts from thrill-seeking to health benefits and stress relief with ageing.

However, barriers such as mobility challenges, health concerns, and the lack of transportation can significantly limit the participation of older adults in these activities (Loureiro and Veloso 2017). Understanding these age-related differences is critical for designing inclusive policies and tailored recreational offerings that enhance accessibility and enjoyment for all age groups in protected natural areas. Based on this, the following hypothesis has been proposed:

H3: Age significantly influences the likelihood of engagement in recreational activities in protected natural areas.

The research on the relationship between work status and the likelihood of visiting protected natural areas has highlighted notable trends and theoretical underpinnings. Previous studies suggest that work status, encompassing the employment type (e.g., full-time, part-time, freelance, or unemployed) and working hours, significantly influences an individual's leisure behaviour, including participation in nature-based activities (Brady et al. 2022). Employed individuals, particularly those in stable, full-time positions, are more likely to visit protected natural areas due to financial stability and access to resources that facilitate travel and recreation (White et al. 2017). Conversely, individuals with irregular work schedules or unstable employment may face time and financial constraints, limiting their ability to engage in such activities.

Moreover, research has shown that unemployed individuals often demonstrate lower visitation rates, primarily due to economic challenges, despite potentially having more free

time (Cerda et al. 2018). However, part-time workers and freelancers with flexible schedules may exhibit higher visitation rates than their full-time counterparts, as their schedules provide opportunities to engage in leisure activities during off-peak times. These findings collectively underscore the complex interplay between work status, financial capacity, time availability, and psychological factors in shaping visitation patterns to protected natural areas. Bearing in mind the importance of work status for visiting protected areas, the following hypothesis has been developed:

H4: Work status significantly influences the likelihood of visiting protected natural areas, with employed individuals being more likely to visit than those unemployed.

The relationship between transportation modes and the frequency of visits to protected natural areas has been the subject of increasing scholarly attention, reflecting the critical role of accessibility in promoting sustainable tourism. Research has shown that the availability and convenience of transportation options significantly influence visitor behaviour and the frequency of their visits to these areas. For instance, studies highlight that public transportation systems, such as buses or trains, reduce barriers to entry and encourage more frequent visits, particularly among environmentally conscious tourists (González et al. 2021). Conversely, reliance on private vehicles is associated with less frequent but longer visits, often by those with specific recreational or leisure goals (Smith 2019).

Additionally, the quality of transportation infrastructure, such as road conditions and parking facilities, has been identified as a key determinant of visitation rates (Spernbauer et al. 2022). Emerging research also suggests that the integration of sustainable transportation modes, such as cycling paths and electric shuttles, not only boosts the frequency of visits but also aligns with conservation goals by minimising ecological impact (Smith 2021). Collectively, these findings underscore the importance of aligning transportation strategies with the characteristics and needs of protected natural areas to foster enhanced visitor experiences. Based on this, the following hypothesis has been proposed:

H5: Transportation modes have a significant influence on the frequency of visits to protected natural areas.

The relationship between motivators for recreational activities and their association with the presence of protected areas has been widely explored in the literature, emphasising the role of natural attractions and ecological benefits as significant pull factors. Previous studies have demonstrated that protected areas, such as national parks and wildlife reserves, serve as essential destinations for recreation due to their biodiversity, scenic landscapes, and opportunities for outdoor activities (Weaver and Lawton 2017). Motivators such as the desire for physical activity, stress relief, nature appreciation, and family bonding are strongly linked to the unique environments provided by protected areas (Bright et al. 2024).

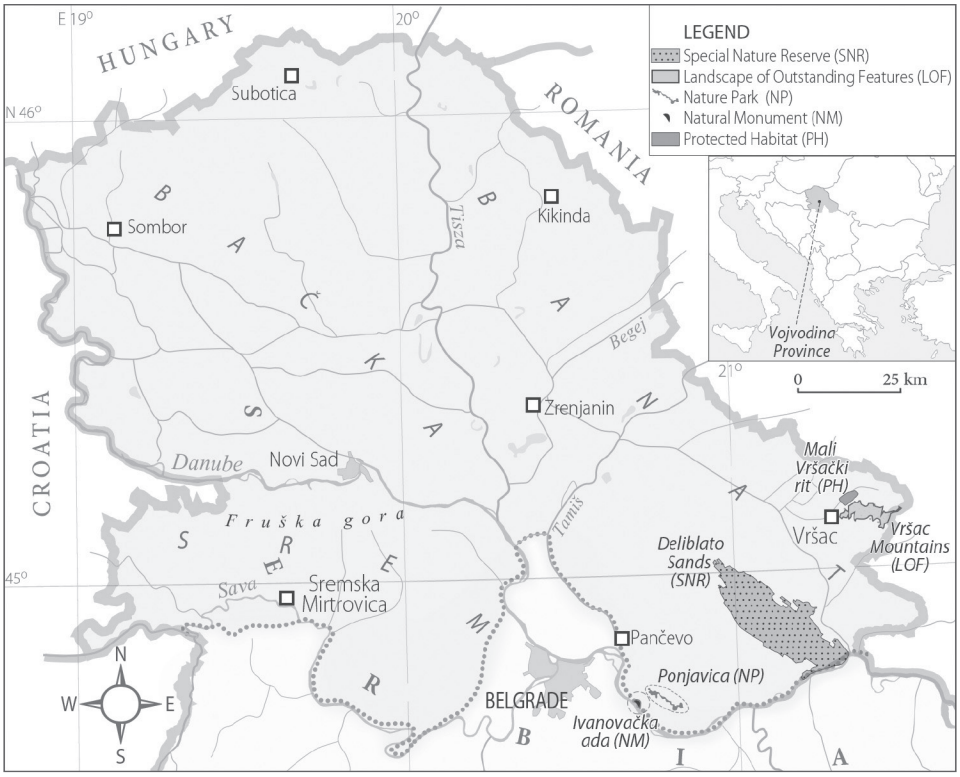
Furthermore, research indicates that the perceived quality and accessibility of these areas significantly influence visitor satisfaction and revisit intentions. Protected areas also act as catalysts for promoting pro-environmental behaviours and enhancing community

well-being, reinforcing their dual value for recreation and conservation (Franceschinis et al. 2022). However, disparities in accessibility and awareness can influence participation rates, highlighting the need for targeted management strategies to maximise their recreational benefits while ensuring sustainability. Accordingly, the following hypothesis has been developed:

H6: Motivators for recreational activities have a direct association with the presence of protected areas.

3 Research Area

The Vojvodina region is the northern part of the Republic of Serbia (Figure 1). It is administratively divided into seven districts (SORS 2022). The South Banat District is one of them and there are two settlements in it with a city status – Pančevo and Vršac. The current size of the area under protection in the Republic of Serbia is 765,442 ha, which accounts for 8.65 percent of the national territory.



Source: Own design

Figure 1: Protected areas in the South Banat District

The area under protection in Vojvodina covers a total of 15.36 percent of the region's territory. This total currently includes 143 protected areas (8.39 % of Vojvodina's territory). The rest are habitats of strictly protected and protected species – 5.4 percent of Vojvodina's territory, and the ecological corridors of the Tisza and Danube rivers, which account for 1.57 percent of Vojvodina's territory, not including protected areas (Institute for Nature Conservation of the Vojvodina Province n.d.). Some of them provide good conditions for nature-based recreation. Located near cities, these areas serve as the main tourist-emitting centres for this kind of tourist mobility and are large enough to accommodate a large number of excursionists and recreationists (Jojić Glavonjić and Denda 2023).

The City of Pančevo is the most populous settlement in the South Banat District (86,408 inhabitants, SORS 2023) and it also serves as its administrative centre. It has had the status of a city since 2007 (The Government of the Republic of Serbia 2007). Eight protected areas are under its jurisdiction (Institute for Nature Conservation of the Vojvodina Province 2020), two of which are singled out as suitable for excursions and recreation, based on their surface area and proximity to the city – *"Ponjavica Nature Park"* (hereinafter referred to as NP), and *"Ivanovačka Ada Natural Monument"* (hereinafter referred to as NM) (Figure 1).

The Ponjavica watercourse is popular with fishing enthusiasts from Pančevo and the surrounding area. This area, covering 302.96 ha and the protection zone of 678.57 ha, has been under protection since 1995. The preserved characteristics of watercourses in the plains constitute the main reason for putting this area under protection (Institute for Nature Conservation of the Vojvodina Province 2012; Official Gazette of the City of Pančevo 2014). The site is about a 25-minute drive from the centre of Pančevo via the municipal road. On its banks, there is a dedicated picnic area, equipped with outdoor furniture (Jojić Glavonjić 2022). There is also a bus that runs every hour, weekdays and weekends, from Pančevo to the town of Banatski Brestovac, which is close to the NP. The main disadvantage from the perspective of excursion tourism is the small size of the tourist area, i.e. there is no designated parking lot and visitor capacity is limited. The types of potential recreational activities are limited to fishing, picnicking, and beach sports (limited by a very small playground area). Swimming is rarely allowed, due to the poor bacteriological quality of the water. Also, the nature of the NP is not very attractive, and the presence of wild landfills in the immediate vicinity makes it even worse.

The river island Ivanovačka Ada is only 8.86 ha (6.07 ha plus a 50-meter wide protection zone) in size, about 20 km away from the centre of Pančevo. It was designated a protected area of local importance in 2009 to safeguard the remnants of former lowland forests of poplars and willows, which are also the habitats of rare and protected plant and animal species (Official Gazette of the City of Pančevo 2011). This site is very popular among fishermen, and during the summer months, it attracts numerous bathers as well. From February to June, excursionists must be particulary careful due to the nesting period of white-tailed eagles. There is no other tourist infrastructure at the campsite apart from improvised diving platforms, while electricity and water are not available. There is no parking lot, but vehicles are parked on the nearby embankment. It is well connected with Pančevo, with a city bus that runs every two hours, on weekdays and weekends, with the village of Ivanovo, 2.5 km away from the NM.

The City of Vršac has 31,946 inhabitants (SORS 2023) and has been recognised as a city since 2016 (The Government of the Republic of Serbia 2016). On the territory of the Municipality of Vršac, there are 11 protected areas (Institute for Nature Conservation of the Vojvodina Province 2020), three of which stand out – the *"Deliblato Sands Special Nature Reserve"* (hereinafter SNR), the *"Vršac Mountains Landscape of Outstanding Features"* (hereinafter LOF) and the *"Mali Vršački Rit Protected Habitat"* (hereinafter referred to as PH) (Figure 1).

The Vršac Mountains constitute a distinctly isolated and entirely independent geomorphological unit, marked by their relatively low altitude (Gudurički Vrh, 641 m). On the north and south sides, the Vršac Mountains are surrounded by hilly areas reaching up to 200 m in hight. They are located at the border of Serbia and Romania and the boundary between two geographical areas (plains and hills) (Bukurov 1950). Hypsometrically, the Vršac Mountains cannot be classified as mountains but rather as hills, because the highest peak is 641 metres high. The term 'mountains' reflects their prominence in the flat landscape. Since 2005, the site has been designated a "Landscape of Outstanding Features" (LOF), covering an area of 5,328.86 ha, to preserve the specific geological structure that bears witness to the earliest geological past, as well as autochthonous flora and fauna, which are a valuable genetic resource (Official Gazette of the Vršac Municipality 2005).

The LOF is in the immediate vicinity of the City of Vršac, which makes it easily accessible to the city's population for daily recreation. Most excursionists and recreationists opt to walk or use bicycles. Those who decide to come with their own car can use two dedicated parking lots. There is no public transport to the Vršac Mountains LOF. Introducing at least seasonal lines should be considered in order to enable elderly citizens and those who do not have their own transport to visit it. Shady forests hide landscape hiking trails, beautiful viewpoints, and well-maintained recreational facilities. The most famous symbol of the Vršac Mountains is the restored tower Vršačka Kula (15th century), whose surroundings are particularly attractive to paragliders. The LOF is suitable for hikers, runners and cyclists, and it also offers facilities for team sports at the mountain lodge (basketball) and the Red Cross resort (football and basketball). The Red Cross resort has a restaurant with a spacious terrace where excursionists can have a drink or lunch. In front of the resort, there are basketball and football courts, a children's playground, a mini zoo, and parking for visitors.

The *"Mali Vršački Rit Protected Habitat"* (PH) spans an area of 931.20 ha occcuping the entire length of the northern side of the Vršac Mountains LOF. It shows a diverse mosaic of meadows, ponds and forests. Sustainable forms of tourism and recreation are permitted but there are limits in terms of space and time (Official Gazette of the Vršac Municipality 2013). The habitat attracts nature schools, cyclists on organised ecological tours, birdwatchers, fishermen and hunters, but this area has not yet established itself as a tourist destination. It is poorly visited. According to the spatial plan for the special purpose area of the Vršac Mountains (Urban and Spatial Planning Institute of Vojvodina 2021), footpaths and bike paths should be set up and a visitor centre; outdoor classrooms and other tourist infrastructure should be constructed.

The *"Deliblato Sands Special Nature Reserve"* (SNR) was put under protection 2002 to preserve the diversity of the ecosystem, the rich and rare flora and fauna. It is also the

largest area under eolian sand in Europe. The Deliblato Sands area was first put under protection in 1912, when individual sites (five of them) were placed under protection as Natural Monuments. In 1977, the entire area was protected as a Special Reserve of Nature, and in 2002, it was renamed to "Special Nature Reserve" according to a new categorisation. It covers an area of 34,829.32 ha (The Government of the Republic of Serbia 2002). It does not belong to the administrative territory of the Municipality of Pančevo but is a decades-old picnic site and popular second homes settlement for excursionists and recreationists from this city.

At the site named Devojački Bunar, there are a bar and shops, where recreationists can get supplies and have something to drink or eat. At the Čardak School Recreation Centre, there is a hotel with a restaurant. The Čardak site has the best recreational offer with seven organised and marked trails, fields for team sports, and a large parking lot. Another noteworthy site is Zagajica Hills – by far the most attractive part of the SNR. The site is located close to the village of Šušara and is a very popular destination for hikers, paragliders and excursionists. In the Šušara village, there is also a Banat country house, interesting for excursionists for multiple reasons (local history, food, drinks and accommodation).

The residents of the City of Pančevo gravitate towards the former two sites, while the other two are more popular with the residents of the City of Vršac. Class I and II public roads traverse the nearby area, but there are no public transport lines to the popular picnic spots either from Pančevo or from Vršac.

4 Research Methods

4.1 Sample and Procedure

The research involved a combination of direct and online data collection methods, using a random sampling technique. In-person surveys were conducted in urban areas, targeting passers-by, café guests, and employees in flower shops, cafés, retail stores, and hair salons. Respondents either completed the questionnaire independently in the researcher's presence or participated in an oral survey, where the researcher read the questions aloud and recorded their answers. This direct collection method resulted in the completion of 306 questionnaires Additionally, 656 participants completed an electronic questionnaire hosted on the Google platform. The survey link was disseminated via email to sports associations, hiking clubs, and schools in Pančevo, and it was also shared on Facebook pages such as "PančevoMOJKraj", "Pančevci", and the Technical School "23rd May". In Pančevo, data was collected in December 2021 and January 2022, while in Vršac, the survey was conducted in May, June, and July 2022. The inclusion criteria required that respondents be at least 15 years old and reside in an urban area. This approach ensured a broad demographic representation, resulting in a total of 962 respondents from the cities of Pančevo and Vršac, thereby enhancing the representativeness of the sample. The sample contained 41.4 percent male and 58.6 percent female respondents. The average respondent age was 36.26 years. The majority (55.1 %) were from the category of employed (Table 1).

Socio-demographic charakteristiccs		City of Pančevo (N=715)		City of Vršac (N=247)		South Banat District (N=962)	
Gender	male	288	(40.3%)	110	(44.5%)	398	(41.4%)
	female	427	(59.7%)	137	(55.5%)	564	(58.6%)
Age	15–24	226	(31.6%)	87	(35.2%)	313	(32.5%)
	25–64	453	(63.4%)	147	(59.5%)	600	(62.4%)
	65+	36	(5.0%)	13	(5.3%)	49	(5.1%)
	mean	*36.21*		*36.40*		*36.26*	
	minimum	*15*		*15*		*15*	
	maximum	*81*		*74*		*81*	
Employment status	pupil	207	(29.0%)	71	(28.7%)	278	(28.9%)
	student	20	(2.8%)	12	(4.9%)	32	(3.3%)
	employed	400	(55.9%)	130	(52.6%)	530	(55.1%)
	unemployed	43	(6.0%)	20	(8.1%)	63	(6.5%)
	retiree	45	(6.3%)	14	(5.7%)		(6.1%)

Source: Own survey, 2022

Table 1: Socio-demographic characteristics of the respondents

4.2 Instruments

The data for this study was collected using a structured questionnaire designed to assess the recreational habits and preferences of urban residents concerning nearby protected areas. The instrument was developed based on existing literature and tailored to the specific cultural and environmental context of the South Banat District, Serbia. It comprised the following key components:

Demographic Information, such as gender, age, employment status, and residential location, was included to analyse their influence on recreational behaviors and preferences.

Recreational Behaviour: Questions on the frequency and type of recreational activities, preferred destinations in protected areas, and the means of transportation used to access these areas were used to capture patterns and determinants of visitation to protected areas.

Barriers to Recreation: Questions exploring obstacles such as time constraints, lack of transport, or inadequate facilities were used to identify factors limiting participation in nature-based recreation.

Motivational Factors: A series of questions to understand key motivators like physical activity, stress relief, family bonding, and nature appreciation helped link visitor motivations with the use of protected areas.

Awareness and Perception: Questions assessing respondents' knowledge of nearby protected areas and their opinions on current infrastructure and promotional efforts were included to explore public awareness and perception, which could guide management strategies.

The questionnaire was pre-tested with a small sample of respondents from Pančevo and Vršac (25 respondents) to ensure clarity, relevance, and cultural appropriateness. The feedback from the pre-test was used to refine the instrument, particularly as regards the phrasing of questions and response options. The questionnaire consisted of 11 multiple-choice and close-ended questions, ensuring ease of completion and standardisation of responses for statistical analysis. The survey was slightly customised for each city, reflecting the unique protected areas relevant to Pančevo and Vršac.

To ensure the reliability of the instrument, internal consistency for key constructs was assessed using Cronbach's alpha. The *'Motivations for Recreation'* section achieved a score of 0.85, while the *'Barriers to Recreation'* section scored 0.82, indicating good reliability for both constructs. These results suggest that the items within each section measure their respective constructs consistently.

4.3 Data Analysis

The collected data were analysed using the Statistical Package for the Social Sciences (SPSS), version 24, a robust tool for statistical analysis. The analysis primarily aimed to identify relationships between demographic variables (e.g., age, gender, employment status) and recreational habits in the protected areas. Key statistical tests applied included Chi-square tests to evaluate associations between categorical variables, and Cramér's V and Cohen's W to measure the strength of these associations. Where necessary, the Kruskal-Wallis test was used to assess differences between groups, particularly for hypotheses involving age-related recreational patterns.

For the sake of hypothesis testing, the study assessed six hypotheses examining the influence of factors such as gender, age, work status, transportation modes, and motivational drivers on engagement in recreational activities. Transportation and accessibility were analysed in detail, revealing demographic variations in preferences for public transport, personal vehicles, and active modes like cycling. Comparative analyses between Pančevo and Vršac were conducted, revealing city-specific differences in recreational habits, activity preferences, and transportation reliance. The comprehensive statistical approach provided nuanced insights into the interplay between demographics, motivations, and accessibility,

offering actionable recommendations for improving infrastructure, promotions, and inclusivity in protected areas.

5 Results

5.1 Demographic Influence on Recreation Patterns

The analysis of demographic variables influencing recreation patterns in protected areas revealed significant relationships across all examined factors. Gender demonstrated a noteworthy impact on recreation habits, with a Chi-square value of 30.78 and a highly significant p-value ($p < 0.001$), suggesting a strong association between gender and the likelihood of engaging in recreational activities. Similarly, age group was found to significantly influence recreation patterns, evidenced by a Chi-square value of 45.55 and a p-value ($p < 0.001$), indicating that age plays a critical role in shaping recreational preferences and habits. Employment status also emerged as a significant factor, with a Chi-square value of 53.02 and a p-value ($p < 0.001$), underscoring the relevance of occupational engagement and its interplay with leisure activities in natural settings. These results collectively highlight the complex interplay between demographic characteristics and recreation behaviours, providing valuable insights for tailoring protected area management and promotional strategies for diverse audience segments.

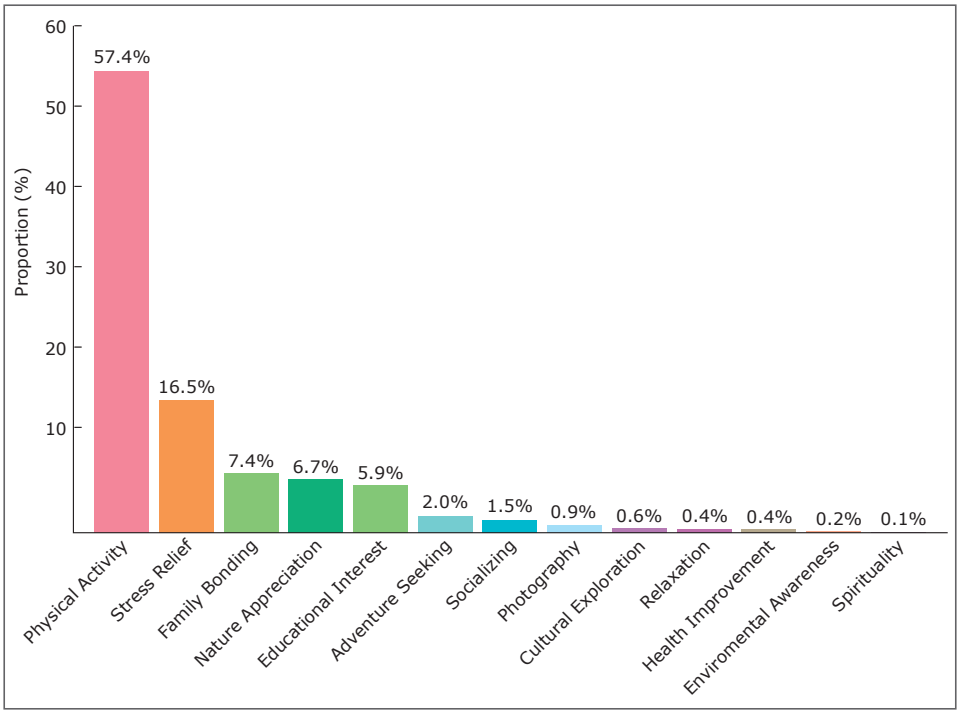
5.2 Analysis of the Motivational Factors

The analysis of motivational factors driving recreational activities in protected areas reveals several key insights into visitor behaviour and preferences (Figure 2). Physical Activity, Stress Relief, and Nature Appreciation emerged as the most influential motivators, with a large proportion of respondents identifying these as their primary reasons for engaging in outdoor recreation. This indicates a strong inclination towards health and well-being benefits associated with nature-based activities. The findings underline the role of protected areas as vital spaces for promoting physical fitness and mental relaxation, especially in urban contexts where access to nature may be limited.

Secondary motivators, such as Family Bonding and Relaxation, also played a significant role, reflecting the importance of leisure and social interaction in recreational choices. These factors suggest that many visitors see protected areas not only as spaces for personal health but also as opportunities for creating meaningful connections with family and friends. The prominence of these motivations highlights the multidimensional value of protected areas as destinations for diverse visitor needs.

On the other hand, motivators like Cultural Exploration, Environmental Awareness, and Spirituality were less frequently cited, suggesting they cater to more specific segments of the population. While these factors are less influential overall, they remain important for specific visitor groups and could be strategically targeted to enhance inclusivity and broaden the appeal of protected areas. Overall, the data highlights a complex

interplay of health, social, and personal enrichment goals driving recreation in protected areas.



Source: Authors (own survey, 2022). Own design

Figure 2: Distribution of motivational factors driving recreation

5.3 Transportation and Accessibility

The combined analysis of transportation preferences across subgroups highlights significant variations in how different demographic groups access protected areas (Table 2). Among age groups, individuals aged 15–24 predominantly relied on personal vehicles (60.1 %), followed by public transport (27.5 %), with bicycling or walking being the least preferred option (12.4 %). The reliance on public transport increases among the 25–64 age group (54.9 %), reflecting higher use of shared mobility resources in this working-age population, while the use of bicycles or walking drops to 4.2 %. For the 65+ age group, the use of public transport (46.9 %) remains substantial, though personal vehicles (42.8 %) also play a critical role, likely driven by accessibility and mobility concerns in older adults.

Gender-wise, females show a higher preference for personal vehicles (51.7 %) compared to males (40.9 %), while males are more inclined toward public transport (53.3 %) and slightly favour bicycles/walking (5.8 %) over females (8.2 %). These patterns suggest

Subgroups	Personal Vehicle (%)	Public Transport (%)	Bicycle/ Walking (%)
Age_group "15–24"	60.1	27.5	12.4
Age_group "25–64"	40.9	54.9	4.2
Age_group "65+"	42.8	46.9	10.3
Gender "Male"	40.9	53.3	5.8
Gender "Female"	51.7	40.1	8.2
Employment status "Secondary School Pupil"	61.5	25.2	13.3
Employment status "University/College Student"	59.4	37.5	3.1
Employment status "Employed"	39.9	55.8	4.3
Employment status "Unemployed"	39.7	57.1	3.2
Employment status "Retired"	47.4	42.4	10.2

Source: Authors (own survey, 2022)

Table 2: Combined transportation preferences by subgroups

that women may prioritise convenience and safety when choosing transportation, while men demonstrate a more balanced usage of transport modes.

The employment status also influences transportation choices. Employed individuals (55.8 %) and students (37.5 %) heavily rely on public transport, likely due to cost-effectiveness and routine commuting patterns. Retirees, on the other hand, show a greater reliance on personal vehicles (47.4 %), reflecting flexibility and fewer financial constraints. The unemployed or pupils exhibit mixed preferences, likely depending on access and affordability. Overall, this analysis underscores the importance of tailored transportation strategies in protected area management, addressing specific needs such as improving public transport accessibility for younger and working-age groups, enhancing safety and convenience for females, and promoting active transport options like cycling for the young.

5.4 Comparative Analysis Between Cities

The comparative analysis between Pančevo and Vršac highlights notable differences in recreational habits and preferences between the two cities. Four key aspects were examined: recreation frequency, activity types, transportation preferences, and motivational factors (Table 3). Statistical tests, including independent t-tests and Mann-Whitney U tests, were employed to determine the significance of these differences. Regarding recreation frequency, the results indicate whether residents of one city engage more often in leisure activities than those in the other. Similarly, variations in preferred activity types, such as hiking, picnicking, or fishing, were assessed to understand city-specific recreational patterns. Transportation preferences were analysed to uncover disparities in reliance on

personal vehicles, public transport, or active modes like cycling and walking. Motivational factors, such as stress relief, family bonding, or physical activity, were also compared to identify what drives residents from each city to visit protected areas.

The findings provide valuable insights for targeted planning and policy-making. For instance, if residents of Pančevo participate less frequently in recreation, tailored outreach or infrastructure improvements could encourage greater engagement. City-specific differences in activity preferences and transportation modes offer guidance for developing facilities, such as bike paths or enhanced public transport options, to meet the needs of each population. Furthermore, understanding motivational drivers enables more effective promotion of protected areas, emphasising benefits like stress relief for residents of Vršac or physical activity for residents of Pančevo. These insights are crucial for optimising resource allocation and improving accessibility and satisfaction in protected areas for both cities.

Variable	Test Used	Statistic	p-value
Recreation	Independent t-test	+2.815477915	0.005094053
Activity type	Independent t-test	-2.953326297	0.003275861
Transport	Independent t-test	-1.454724703	0.146400048
Motivators	Independent t-test	-0.729783558	0.465829398

Source: Authors (own survey, 2022)

Table 3: Differences in recreational habits and preferences between Pančevo and Vršac

The detailed comparison between Pančevo and Vršac reveals nuanced differences in recreational habits and preferences across four key dimensions. Regarding recreation frequency, both cities exhibit similar patterns, with a majority of residents engaging in recreation, though specific frequencies may vary slightly, reflecting differences in lifestyle and accessibility. In terms of activity types, residents of Pančevo show a stronger preference for physically engaging activities like hiking and picnicking, while Vršac residents are slightly more inclined to relaxation-oriented or niche activities such as birdwatching or fishing. These variations underscore the differing cultural and recreational tendencies of the two cities.

Transportation preferences also differ markedly between the cities. Pančevo residents rely more on personal vehicles (over 52 % of trips), reflecting possibly better access to vehicles or less reliance on public transport. In contrast, residents of Vršac exhibit a stronger preference for public transportation (nearly 53 % of trips), indicating a greater reliance on shared mobility options. Active modes like bicycling and walking are less prevalent overall but slightly higher in Pančevo, likely due to differences in infrastructure or proximity to recreational sites.

Regarding motivational factors, the two cities share similar primary drivers, such as physical activity and stress relief. However, residents of Vršac are more likely to be motivated by educational or cultural interests, while residents of Pančevo place a greater

emphasis on relaxation and family bonding. These differences reflect the diverse ways in which residents of each city engage with protected areas, as well as their distinct recreational goals.

5.5 Hypothesis Testing

The hypothesis testing results provide valuable insights into the factors influencing engagement in recreational activities in protected natural areas. For H1, the Chi-square test reveales a significant association between the city (proximity to protected areas) and recreation ($\chi2 = 9.82$, $p = 0.007$), suggesting that residents of different cities engage in recreational activities differently, likely due to varying accessibility or preferences. For H2, the Chi-square test demonstrates a highly significant relationship between gender and recreation ($\chi2 = 30.78$, $p < 0.001$), suggesting that gender plays a critical role in shaping recreational habits, thereby supporting this hypothesis.

The H3 hypothesis, tested using the Kruskal-Wallis test, shows a significant effect of age group on recreation ($\chi2 = 40.35$, $p < 0.001$), highlighting that recreational activities vary significantly across age groups. Younger individuals may prefer more physically demanding activities, while older adults are more likely to opt for less strenuous activities. For H4, the Chi-square test reveals a strong relationship between work status and recreation ($\chi2 = 53.02$, $p < 0.001$), indicating that employment status significantly impacts the likelihood of engaging in recreational activities, probably due to differences in time availability and financial capacity.

Transportation modes also reveal a highly significant association with recreation for H5 ($\chi2 = 107.68$, $p < 0.001$), underscoring the importance of accessibility in facilitating visits to protected areas. This highlights the need for improved transportation options to support recreational access. Lastly, the test for H6 confirms a significant relationship between motivators and recreation ($\chi2 = 133.46$, $p < 0.001$), demonstrating that drivers such as physical activity, stress relief, and nature appreciation strongly influence engagement in protected areas. All of the proposed hypotheses were accepted (Table 4).

Hypothesis	Test	Chi-square	p-value	Statistic	Decision
H1	Chi-square	9.82	0.007		Accepted
H2	Chi-square	30.78	0.001		Accepted
H3	Kruskal-Wallis		0.001	40.35	Accepted
H4	Chi-square	53.02	0.001		Accepted
H5	Chi-square	107.68	0.001		Accepted
H6	Chi-square	133.46	0.001		Accepted

Source: Authors (own survey, 2022). Own calculation

Table 4: Hypothesis testing

6 Discussion

The results of our study align with several findings from similar research, while also highlighting notable regional distinctions. Consistent with studies such as Franceschinis et al. (2021) and Opačić et al. (2014), our research reveals gender-based recreational preferences, with women favouring light activities like walking and picnicking, and men engaging more in physically demanding pursuits such as fishing and hunting. It also showed that male respondents go for recreation to the surrounding protected nature more often (69.8 %) compared to female respondents (55.7 %). Similarly, age emerged as a significant factor in both our study and others, such as Booth et al. (2010) and Schirpke et al. (2018), with older adults preferring less strenuous activities and younger participants showing a preference for team sports and cycling.

It was observed that young people were not very interested in nature and excursions. Middle-aged participants expressed a willingness to engage but cited a lack of leisure time, while elderly individuals displayed a keen interest but were often limited by health concerns, physical condition, and the lack of companionship. The share of those who visited protected areas was the highest in the oldest demographic group (69.4 %). They were closely followed by the middle-aged group (67.7 %), while the youngest group of the respondents demonstrated the lowest engagement (48.6 %). This trend aligns with findings from numerous similar studies. For instance, Opačić et al. (2014), point out in their study on the "Medvednica Nature Park" that there is a positive correlation between age and the frequency of visits to this protected area for recreational purposes, with older generations leading the way. An American study (Falgoust 2017) shows that younger generations are less inclined to visiting protected areas for recreation than older generations, primarily due to a lack of leisure time.

Key motivators, including stress relief and physical activity, also echoed findings from Jackson et al. (2021), underscoring the universal value of nature for mental and physical well-being. However, our study found older adults visiting protected areas more frequently than younger participants, as opposed to Booth et al. (2010) where younger individuals showed higher visitation rates. Additionally, while the availability of public transport was not deemed essential in this study, its potential to enhance access was acknowledged, as opposed to the findings of González et al. (2021), which emphasises its critical role in increasing visitation rates.

Lastly, significant awareness gaps regarding protected areas were observed in this research, unlike regions studied by Boll et al. (2014), where awareness was bolstered by targeted campaigns. In addition to the need for further improvements to the roads leading to the Vršac Mountains LOF and the desirability of introducing direct seasonal public transport lines, representatives from the Tourist Organisation of Vršac especially emphasised the need for better promotion of attractive natural sites in the city's surroundings. In their opinion, the lack of awareness among citizens regarding the importance of nature is a major problem. The poll confirmed their opinion. Almost 40 percent of the citizens of the South Banat District (39.9 % of the inhabitants of Pančevo and 38.1 % of the inhabitants of Vršac) were unaware of the existence of protected areas in the vicinity of their cities. These comparisons suggest that while our findings align

with broader trends in recreational preferences and motivations, regional factors such as cultural norms, infrastructure, and awareness levels distinctly shape the behaviour of local residents.

Through the analysis of the collected responses the following is also noted: The most popular excursion sites among the urban population of the South Banat District were the "Deliblato Sands SNR" and the "Vršac Mountains LOF". In particular, citizens of Pančevo are more inclined to visit the SNR (58.6 % visited SNR several times; 7.6 % never visited it), while citizens of Vršac are more drawn to the LOF (39.3 % visited LOF several times, while only 0.8 % never visited it). They usually visited those areas on their own (alone, with friends or family), rather than through organised groups (e.g., hiking societies, sports clubs, school, etc.). While respondents typically accessed the protected areas in their vicinity by car, motorcycle or bicycle, nearly half of them indicated that the existence of direct seasonal transport lines to these places would be beneficial to them (Jojić Glavonjić 2022; Jojić Glavonjić and Doljak 2023).

7 Conclusions

Based on the results of the survey conducted on the territory of the cities of Pančevo and Vršac, along with on-site observations and informal conversations with the local population, it can be concluded that the urban population of the South Banat District who participated in this research frequently visits nearby protected areas in significant numbers. Their favorite activities during these outings are walking, picnicking and jogging. Among the five protected areas included in this research, the "Deliblato Sands Special Nature Reserve" (SNR) and the "Vršac Mountains Landscape of Outstanding Features" (LOF) stand out as the most favoured and frequently visited destinations.

City dwellers from Pančevo and Vršac mainly rely on their own transportation to access these areas, although many respondents suggest that introducing direct city or suburban transport lines, at least during peak seasons, would be beneficial. This would be particularly advantageous for the very young and the oldest, i.e., those who either do not own a vehicle or no longer drive. Improved accessibility through public transportation might encourage more frequent visits, especially among the youth, who currently visit these areas less frequently Apart from age, gender also proved to be a variable that makes a difference. The men living in urban areas in South Banat tend to visit protected natural resources in their vicinity and engage in physically demanding activities (extreme sports, biking, hunting) more often than women.

The findings of this study have several practical implications for enhancing the recreational use and management of protected areas. Firstly, targeted infrastructure improvements, such as the introduction of seasonal public transport lines and better-maintained road networks, could significantly enhance accessibility, particularly for non-drivers, youth, and older adults. Secondly, recognising the diverse preferences across age and gender groups, protected area managers can develop tailored recreational offerings –

such as light walking trails for older adults, adventure sports for younger demographics, and family-oriented spaces for middle-aged groups. Awareness campaigns leveraging digital platforms and community events can address the significant gaps in knowledge about the existence of these areas, encouraging greater visitation and fostering environmental stewardship.

Additionally, integrating educational programmes and promoting the health benefits of nature-based recreation can resonate with urban residents seeking stress relief and physical activity, positioning these areas as wellness destinations. Finally, collaboration between local governments, transportation agencies, and conservation organisations can ensure the alignment of infrastructure development, promotional activities, and conservation goals, fostering a sustainable balance between increased visitation and the preservation of natural resources. These strategies, informed by research, can help maximise the ecological, social, and economic value of protected areas for the local community.

Like any research endeavor, this study has some limitations that should be acknowledged. One notable limitation is the overrepresentation of women in the sample, particularly in the City of Pančevo. Additionally, representation across different age categories is unequal. The majority of respondents are from the age group of 25 to 64, and the least from the category over 65. As regards the work status, the majority of the respondents belong to the categories of employed and students, while the other three categories are significantly underrepresented. Another potential limitation is that two cities from Banat were studied, instead of choosing one from Banat and the other from another area in Vojvodina, central Serbia, the neighbouring countries, Europe, or the world. Nevertheless, this study is only the beginning of more extensive research, at the end of which, hopefully, this type of comparison will be possible (at least for protected areas on the territory of Serbia).

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