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RESEARCH OF DEMANDS AND ATTITUDES OF CYCLIST IN ZRENJANIN

Keywords

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Abstract

Within this research study a survey was conducted among the residents of the city of Zrenjanin and surrounding villages, whereby significant data on cycling traffic in the observed area were collected. The obtained data refer to the basic features of bicycle users and the features of cycling journeys, but also needs, attitudes and opinion on the current conditions of the cycling infrastructure and signalization, and cycling traffic conditions in Zrenjanin. The key advantages of bicycle use were identified from the point of view of their users, the difficulties they face when cycling and the recommendations for a more massive bicycle use as a transport means in Zrenjanin.

1. INTRODUCTION

Cycling traffic in urban areas represents a significant aspect of the contemporary urban planning. An increasing number of cities around the world recognize the importance of sustainable transport and encourages cycling as an environmentally friendly and healthy mode of transport [1]. Cycling traffic has numerous advantages, including the reduction of traffic jams, air pollution and noise, as well as the improvement of population physical health. In order to improve cycling traffic, it is important to continuously enhance the infrastructure, educate the population and support policies which are in favour of cycling. The implementation of the cycling infrastructure and the promotion of the bicycle as a transport means can contribute to the creation of a more sustainable and healthier urban environment [2]. For that

reason, it is important to approach this problem from the aspect of strategic planning and create and adopt strategic documents which are used for planning cycling traffic in cities, such as Sustainable Urban Mobility Plan (SUMP) [3]. In strategic planning it is necessary to properly assess the current state of the traffic demand for cycling journeys, and to the greatest extent take into consideration the needs of the population who are the users of this mode of transport.

The results of the survey conducted among the cyclists in Zrenjanin will be shown in this paper. The surveyed respondents gave the data on the basic features of bicycle users and the features of cycling journeys, but also needs, attitudes and opinion on the current conditions of the cycling infrastructure and signalization, and cycling traffic conditions in Zrenjanin.

2. URBAN TRAFFIC IN ZRENJANIN

Zrenjanin is located in the central part of the Autonomous Province of Vojvodina and it is the economic, cultural, educational, healthcare and sports centre of Central Banat District, with around 160,000 residents of the district gravitating towards it. According to the last census from the year of 2022, there are 105,722 residents living in the wider city area, and within the very City of Zrenjanin there are 67,129 residents. There are 23 villages in the wider territory of the city of Zrenjanin [4].

There is an extensive network of roads, which connect Zrenjanin with many towns and villages in the region, and it is one of significant railway and river junctions in Vojvodina. The traffic system in Zrenjanin in the previous period has recorded a constant decline in quality, which is partly the result of long-term exploitation with minimal maintenance, wrong investment and neglect of strategic plans for traffic development. The forecast of demographic and economic development implies that by the year of 2026, the motorization level in Zrenjanin will be one car per one family, and the population mobility will be three journeys per day, out of which 30% by walking and cycling, 30% by public transport means and 40% by passenger cars [5].

2.1 Cycling traffic

In Zrenjanin and its surrounding there are around 35 kilometres of cycling paths. In the previous period 6,661 m of cycling paths have been built on exit directions towards Novi Sad, Kikinda, Ečka and Klek. The construction of cycling lanes in the streets of Nikola Pašić, Beogradska, Banatska, Dositeja Obradovića and Bulevar Oslobođenja has been planned [5].

When it comes to the existing cycling infrastructure, due to the inadequate maintenance, it is noticeable that there is a lot of damage on paths, there is a lack of bicycle parking, there is restricted access to the entrance to certain institutions and similarly. Cycling infrastructure is still observed as a side issue, and, as a result, even newly built sections are insufficiently adapted to real needs. Therefore, on certain parts of the cycling network high curbs can be noticed, illogical beginnings and ends of the paths, unsafe sections, which consequently affect the fact that cyclists do not to use the dedicated infrastructure.

The most significant international cycling routes going through Zrenjanin are the route Zrenjanin – Temisoara and the route EuroVelo 11. The construction of the cycling path from Zrenjanin to Temisoara is a part of the crossborder project “Revitalization of the navigation structure of the canal Begej”, and the deadline for the realization of the project is 4 years. The path was built alongside the embankment and it will follow the canal of the river Begej. The total length of the path is 75 km, and the construction of the rest area at every four kilometres has been planned. In Serbia, the cycling path has been built from the village of Klek to the border with Romania. It has been planned to build a permanent cycling, pedestrian and ship border crossing by the end of 2023 [6]. Lately the path has been significantly damaged since it has not been used by cyclists only but by cars, and tractors as well, although there are traffic signs that it is only designated for cyclists. EuroVelo 11 route stretches from Norway, across Europe to Greece, in the length of around 6,000 km. EuroVelo 11 route enters Serbia from Hungary, and the places it goes through are Novi Kneževac, Čoka, nearby Ada, Novi Bečej, Zrenjanin, Pančevo, Kovin. After that it stretches towards Smederevo, all the way to Vranje, where it enters Macedonia. Zrenjanin has been marked on the map Eurovelo 11 route, which is made of 17 cycling routes in Europe. For that reason, at many points in the city and the surroundings it can be noticed that there is the road signalization which directs cycling tourists to this route [7].

3. RESEARCH METHODOLOGY

The survey was conducted online via a Google form during June 2022. There were 154 responses in total. The survey consisted of 16 questions and it included the residents of Zrenjanin and the surrounding villages. The introductory questions referred to the age, gender and the place of residence. The employment status of the respondents was recorded as well as the possession of the driving license. The following group of questions referred to bicycle use in sense of frequency, purpose, average journey length and the way of movement on the roadway. The survey participants were then offered to assess the state of the current cycling paths in Zrenjanin, the connectivity of the cycling network, as well as the state of the cycling signalization. The last three questions gave the possibility to the surveyed respondents to circle three priority answers out of more offered or to write down their specific observations in relation to the advantages of bicycle use, difficulties when cycling in the city and what is the thing which would contribute to a more massive use of bicycles in Zrenjanin. The form of the questionnaire is shown in the Figure 1.

1. Age (years) • younger than 14 • between 15 and 20 • between 21 and 30	• between 31 and 40 • between 41 and 50 • between 51 and 60 • over 61 years	2. Gender • male • female
3. In which part of the city do you live? 		4. If you are from a nearby village, write the name of the village.
5. Are you employed? • Yes • No		6. Do you possess a driving license? • Yes • No
7. How often do you use a bicycle as a transport means? • Daily • A few days a week • A few days a month • I use it if I do not have any other transport means		8. At which distances do you use a bicycle as a transport means? • Between 0 and 1 km • Between 1 and 3 km • Between 3 and 5 km • Between 5 and 10 km • More than 10 km
9. What do you use the bicycle for? • Going to work / school • Doing daily activities • For recreation, sport		10. When cycling, where do you usually cycle on? • On the roadway, along the right edge of the road • On the pavement because I do not feel safe on the roadway • Only on the existing cycling paths • The combination of all aforementioned
11. How would you assess the existing cycling paths in Zrenjanin? • 1 (very bad) • 2 • 3 • 4 • 5 (great)		12. Assess the connectivity of the cycling network in Zrenjanin? • 1 (very bad) • 2 • 3 • 4 • 5 (great)
13. Assess with marks 1 to 5 how satisfied you are with the signalization (quality, information, the position of signs, how the signs were set, ...) for the cyclists in Zrenjanin? • 1 (very bad) • 2 • 3 • 4 • 5 (great)		
14. What are the advantages of bicycles as a transport means (mark three answers which are of the highest priority)? • Healthy life habit • A faster transport mode in the city • There are no parking problems • A cheap transport means • Protection of the environment • Cycling is fun • A great means for recreation • Another advantage (please, write down)		
15. Which are the biggest difficulties for cycling in the city of Zrenjanin (mark 3 answers of the highest priority)? • Disrespect by other traffic participants • Non-existence of cycling paths and cycling lanes • Parked vehicles on the existing cycling paths • Non-existence of proper cycling parking • It is stressful to cycle in the city • It is not safe to cycle in the city • Another difficulty (please, write down)		
16. What would contribute to a more massive use of bicycles in the city of Zrenjanin (mark 3 answers which are of the highest priority)? • Popularization of cycling through different manifestations and media • Construction of cycling paths • Signalization /marking of cycling paths along the right edge of the roadway • A higher security of cyclists • A higher protection against bicycle theft • Another activity (please, write down)		

Figure 1. The Form of the Survey Questionnaire

4. RESEARCH RESULTS

The age structure was divided into categories so that the first category (younger than 14) includes primary school children in Serbia, and the second group (aged between 15 and 20) includes children who attend secondary school in Serbia. Other categories were defined at every ten years. The lowest percentage of the surveyed was in the category “younger than 14” (0.6%), while the most respondents were in the age group between 41 and 50 (22.1%) and those aged between 21 and 30 (20.8%). The surveyed respondents were 43.5% male, that is, 56.5% female.

Out of 154 respondents, 90 live in the City of Zrenjanin, and most responses were from Bagljaš (22.2%) and Gradnulica (11.1%), while the fewest responses were from Putnikovo (1.1%), Mičkej (1.1%) and Šumice (1.1%). The other 64 respondents are from nearby villages, and the most responses were given in Aradac, up to 70.3% of total responses. The following are Belo Blato 9.4% and Mihajlovo 6.3%. Aradac is around 4 km away from Zrenjanin and it has a built cycling path to the city. The path has been built recently, it is well equipped, it possesses cycling paths in both directions, it is lit, protected by guardrails, alongside the path there are benches for resting. This is one of the reasons why a lot of people use bicycles for going to the city. There were 62.3% of the employed, out of the total number, that is, 37.7% of the unemployed residents. Further, 65.6% of the respondents possesses a driving license and a vehicle.

The question “How often do you use the bicycle as a transport means?” was responded by the highest number of the surveyed that it is done daily (53.9%), while 28.6% of the respondents said that they use the bicycle a few days a week. A certain percentage of the users ride their bike only when there is no alternative transport means (12.3 %), and occasionally, monthly, it is used by 5.2 % of the surveyed respondents.

When it comes to the average distance of bicycle use as a transport means, the responses can be used for determining the fact regarding the longest distance the residents are ready to use the bicycle for, as an alternative transport means in relation to the passenger car. When cycling, the most common distances are between 1 and 3km (31.2 %), then between 3 and 5 km (27.9%), which totally makes around two thirds of all the responses. The bicycle is least used for short distances (7.8 %), less than 1 km, since these journeys are commonly done on foot.

The purpose of the journey where bicycles are most commonly used is doing daily activities (59.1 %), then going to work /school (22.7 %) and recreation/sport (18.2%).

The respondents were offered the answers regarding how they use bicycles, that is, whether it is on the roadway (along the right edge of the roadway), on the pavement (since they do not feel safe on the roadway), only on the existing cycling paths or they combine previously listed during their ride. The highest number of the respondents said they are forced to combine different ways of cycling (40.9 %), but that a large number of them use only the roadway (34.4 %). A smaller number of the respondents only ride on the existing cycling paths (18.8%), while the smallest number of the respondents ride on the pavements (5.8 %), because they do not feel safe on the roadway.

The respondents had the possibility to choose one mark from 1 (very bad) to 5 (great), and in that way express their opinion on the quality of the existing cycling paths, connectivity of the cycling network, and the state of the existing cycling signalization (Figure 2). The existing cycling paths were mostly assessed as good (35.1%), but the percentage of those who assessed the cycling paths as bad is not negligible (26%). Similar results were for the assessment of the cycling network connectivity. When it comes to the quality of the cycling signalization, most participants assessed the state as good - 3 (33.1%), but 25.3% of the respondents expressed their opinion that the cycling signalization is of good quality.

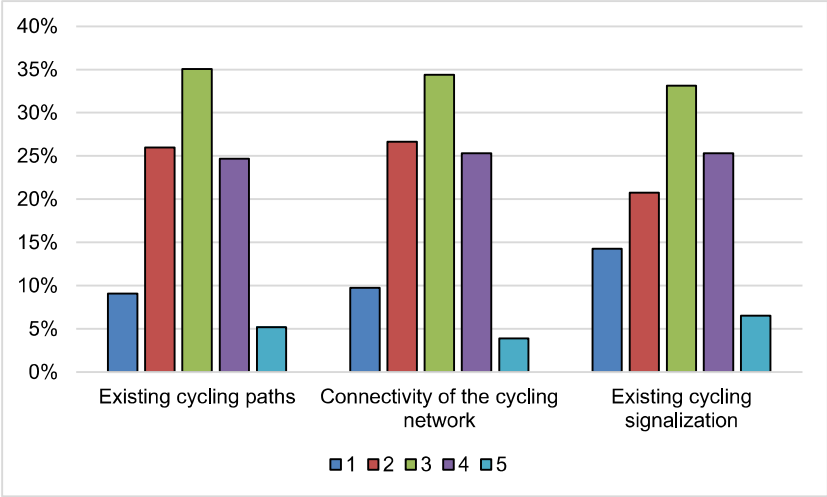


Figure 2. Assessment by the surveyed respondents

The last group of questions in the survey questionnaire meant that the respondents choose three answers out of more offered, but there was a possibility to write down an answer if they could not choose anything of the offered options. The first question referred to what the advantages of the bicycle as a transport means are (Figure 3).

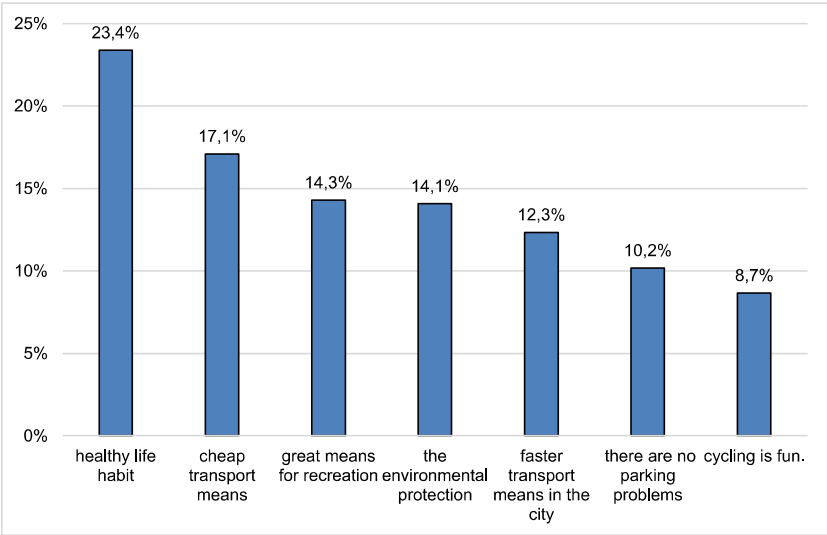


Figure 3: What are the advantages of the bicycle as a transport means?

The most frequent of all answers was that the bicycle is a healthy life habit (23.4 %), and then there are the answers that the advantage of the bicycle is that it is a cheap transport means (17.1 %), a great means for recreation (14.3 %), it is helpful in the protection of the environment (14.1 %), etc. As the most common combination of three answers there is a choice of the answer “healthy life habit“, “protection of the environment“ and “a great means for recreation“, chosen by 10.4% of the respondents.

In the following question, the respondents had to choose three most important difficulties for cycling in Zrenjanin (Figure 4). The highest percentage of the answers referred to disrespect by other traffic participants (25.3 %), and then the answers related to the problems of non-existence of cycling paths and lanes (24%), parked vehicles on cycling paths (20.7 %), non-existence of appropriate bicycle parking (18.3 %), etc. No one of the respondents has chosen the answer that it is not safe to cycle in the city. Other answers (1.1 %) implied damaged cycling paths, pedestrians on the paths and weather conditions. As the most common combination of three answers there is the choice of answers “disrespect by other traffic participants“ and “parked vehicles on the existing cycling paths“ in combination with “non-existence of cycling paths/lanes“ and “non-existence of appropriate bicycle parking“ with 17.5% of answers for each combination.

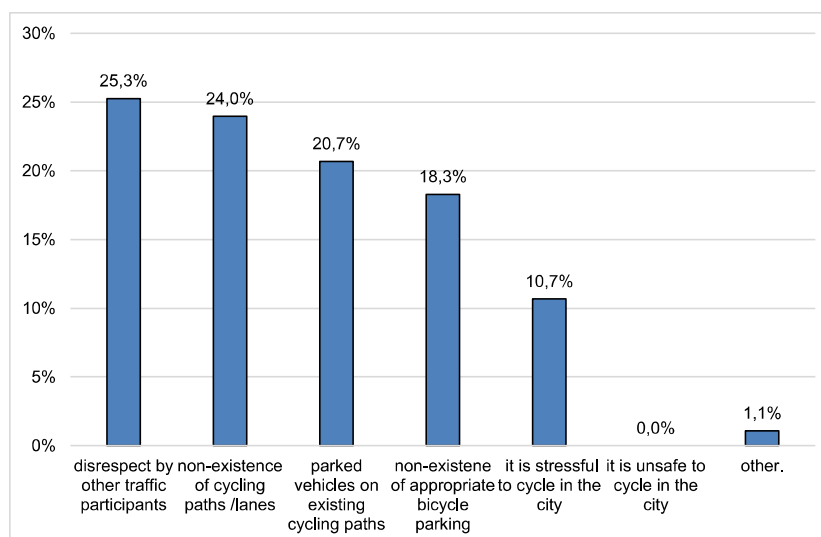


Figure 4. What are the biggest difficulties for cycling in the city of Zrenjanin?

At the end of the survey questionnaire, the respondents had to choose three answers where they were supposed to state what, in their opinion, could contribute to a more massive bicycle use in Zrenjanin (Figure 5). Most of the respondents (28.5%) think that the construction of cycling paths contributed to an increased bicycle usage, as a transport means. Greater cyclist safety (21.9 %), as well as the bicycles themselves (17.5 %) is also something what residents think could have a positive influence on a more massive bicycle use in the city. As the most common

combination of three answers, there is a choice of previously stated answers, whereby the combination was chosen by 20.1% of the respondents.

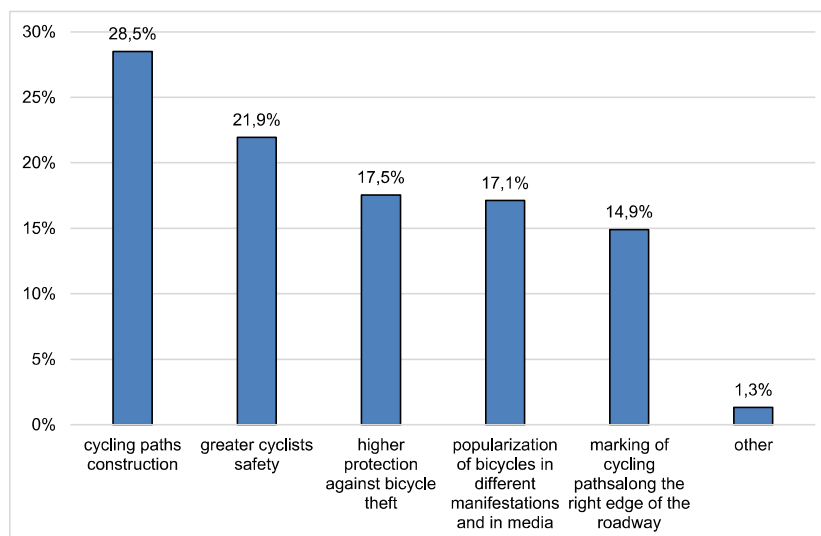


Figure 4. What would contribute to a more massive bicycle use in the city of Zrenjanin?

5. CONCLUSION

The city of Zrenjanin has expanded its cycling network in the previous years, and provided cofinancing for the purchase of bicycles to the interested residents. Additional investment into the cycling infrastructure has been planned in order to improve the existing conditions for cycling traffic. Cycling path Zrenjanin – Temisoara will affect the attractiveness of the region and it will improve tourism in this part of Banat, but it will also enable cyclists to enjoy cycling in nature. Being on the cycling route EuroVelo11 is also very important for Zrenjanin.

The survey results imply that almost one quarter of cyclists are the residents aged between 40 and 50, women cycle more than men, and around two thirds of the surveyed respondents own a driving license and a car. Since the survey included the area of the city and the surrounding villages as well, most responses were from Bagljaš, and from villages, most responses were from Aradac, which is connected with the city by this cycling path. Two thirds of the respondents are employed, and most of the respondents said that they use the bicycle daily. According to the obtained results, the most common distances covered by bicycle are between 1 and 3 km. Due to the disconnection and lack of bicycle path, the respondents most often combine the way of movement (on the roadway, paths and pavement).

The existing cycling paths, cycling network connectivity and signalization are mostly assessed by the respondents with a middle mark (good), but the number of respondents who chose a bad mark is not negligible. It means that there is dissatisfaction of bicycle users and that it is necessary to improve the conditions for cycling traffic in Zrenjanin. A bicycle is usually a healthy life habit for most respondents. The biggest difficulty for them when cycling is disrespect by other traffic participants, and they also think that a construction of new cycling paths will

contribute to an increased bicycle usage as a transport means. The City of Zrenjanin has a great potential to increase bicycle usage as one of urban transport modes, both because of the climate conditions and the terrain configuration, but for the size of the city itself.

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