

# CYCLING IN THE CITY: NOVI SAD ON ITS WAY TO BECOME MORE BIKE-FRIENDLY CITY THROUGH THE SOCIAL ACTIVISM

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**ABSTRACT:** *Novi Sad is a city with great potential for becoming a major cycling city. However, there have been certain obstacles standing in the way. Via survey, people who cycle expressed their satisfaction with the number of parking spots, storage space at home, safety in traffic, quality of cycling paths, and density of cycling paths. On the other hand, a group that does not cycle was asked for reasons behind it as well as for their opinion on how to involve more cyclists. Furthermore, we tried to illustrate the importance of social activism in promoting cycling as well as its role in implementing new social policies. This paper offers an insight into the origins of the present issues while presenting potential solutions based on already implemented methods from other major cycling capitals. Overall we propose novel approaches to tackling this issue with the hope of using this research for making the future policy more coherently and continuously. Only with a multidisciplinary and integrative approach from different parts of the community, Novi Sad can fulfill its potential to become a safe and efficient area for cyclists.*

**Keywords:** *Novi Sad, bicycle, cycling, NGO, social activism*

## INTRODUCTION

Sustainability, especially in urban areas, is of crucial significance these days. One of the best sustainable modes of urban transport is cycling (Koch et al., 2017). The bike-friendly cities are cities that make everything that people need reachable in short-distance trips which are usually made by bicycle (Zayed, 2016). Another measure cities make for accessibility is building or repairing cyclist paths. Another key thing to bear in mind for making the city bike-friendly is safety and comfort. Furthermore, support and needed services have to be provided to keep them. Finally, with continuing the promotion and education, the number of people who choose bicycles as their transportation will increase (Civitas, 2010). It is possible to determine the level of bicycle-friendliness. Every two years a company called Copenhagenize Design will make a list of 20 most bike-friendly cities in the world based on different parameters. This ranking system is called Copenhagenize Index (Zayed, 2016). Cycling in a city has two main purposes: utility and leisure. A more representative one, in this case, is utility; assur-

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ing prompt arrival at destinations of interest - most commonly workplace, school or shopping areas. In contrast, the second purpose is more focused on enjoying the journey (Ryan et al., 2004). Unfortunately, it often remains unacknowledged how many benefits cycling has on a city and its population. For a better understanding, divide those advantages into four categories: urban, economic, ecological and social (Koch et al., 2017). Beginning with the urban category, acknowledged the following: cyclists are more likely to use public transport therefore, public transport would be financially more stable; using a bicycle as a transport saves a lot of time and lastly cycling requires less road infrastructure and less parking space. This is tightly correlated with the next category - economic advantages. Having a more bicycle-friendly city would result in new employment possibilities in the bicycle selling and repair industry. Moreover, such economic growth will attract educated and ambitious people. Some of the benefits from social categories are affordability and accessibility to jobs, schools, entertainment centers. Ecological benefits are represented by better air quality and microclimate in general as well as reduction of noise that is being emitted. Most importantly, the greatest benefit is seen in healthcare. Cycling daily can prevent diseases such as obesity, diabetes or respiratory illnesses (Koch et al., 2017). It is astonishing that only in Copenhagen the estimated yearly health benefit of cycling is 228,000,000 euros (City of Copenhagen, 2011). Overall, systematic introduction and support of cycling facilities are the best policy cities can use to preserve cultural heritage and move forward in their future development. Currently, the main issue concerning Novi Sad is the lack of concrete plans for making this city more bike-friendly despite its great potential. Novi Sad has a suitable surface area and climate as well as a growing population, yet, the number of trips made by bicycle remains low, at 9% in 2017 (Bogdanovic et al, 2019). Hence, the focus of the paper is to grasp why people are drawn to cycling and to understand the needs and concerns of those who have yet to adopt cycling as a means of transport in the city. Most importantly, we will present the role of social activism in making curtail changes.

## MATERIALS AND METHODS

The study area of this paper is Novi Sad, covering an area of 699km<sup>2</sup>. It is located in Vojvodina, the northern province of the Republic of Serbia, and represents its capital city (Manojlovic, 2015). It is also the largest city in Vojvodina and the second largest in the Republic of Serbia, with a population of 231,798 (Statistical Office of the Republic of Serbia, 2011). One of the biggest advantages of this city is its relatively flat surface area with an altitude between 79 and 89m. The climate is also considered as a benefit with an average yearly temperature of 11.3°C and 605mm of precipitation. In addition, Novi Sad was awarded the titles of European Youth Capital for 2019 and European Capital of Culture for 2021. Despite before mentioned assets of the urban area and cycling infrastructure of 65.6 km - 63.3 km being cycling paths-, only 9% of all trips were made by bicycle in 2017 (Bogdanovic et al, 2019). In order to better understand citizens' attitudes towards cycling, surveys and interviews were organized.

The survey was conducted via Google Forms and shared on social media. The first three questions were general information about gender, age and level of education. In the next question, participants were asked if they cycle in Novi Sad, which divided them into two groups. Those who said they are cycling were asked how frequently they use this type of transportation. The next two multiple-choice questions were about why they prefer cycling and which of the listed projects, associations and promotion campaigns are familiar. The most important question from this group was to rate satisfaction with different areas of cycling. In the end, the participants were asked if they want more cyclists in Novi Sad and for the ways in which we can accomplish that. On the other hand, the second group that does not cycle was asked to choose reasons for it. The last question was whether or not they will be willing to start cycling in the future. Statistical significance was analyzed using basic operations in Excel. The data were gathered in the period between 19<sup>th</sup> of May till 8<sup>th</sup> of October 2020. To gain an additional perspective, the president of the leading NGO, Novi Sad Cycling Initiative, was interviewed. The interview itself was semi-structured consisting of open-ended questions and with only main topics predetermined. Having in mind that the NGO was awarded in 2013 with the Cycling Visionaries Award and in 2018 with the Winter

Cycling Award in Category: Volunteer organization the crucial insights were provided (Internet 1). Finally, case studies from other countries were studied and were given as a suggestion for future planning.

## RESULTS AND DISCUSSIONS

The total number of participants was 345, from which 210 (69%) were women and 135 (31%) were men. Furthermore, the majority of respondents were from the 19-29 age group (Figure 1).

Over fifty percent of participant's level of education was some type of university degree (Figure 2).

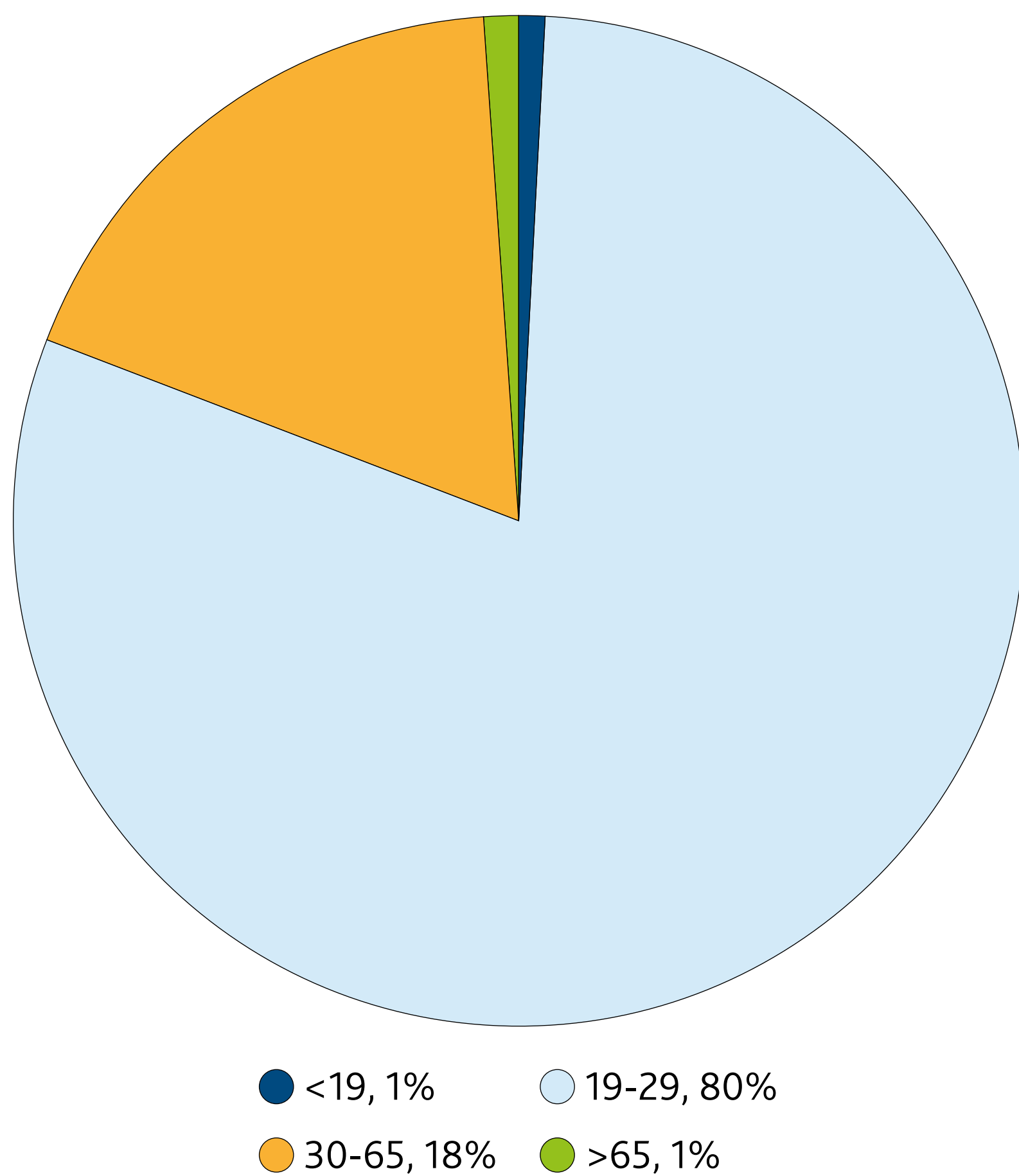


Figure 1. Participants of survey by age groups

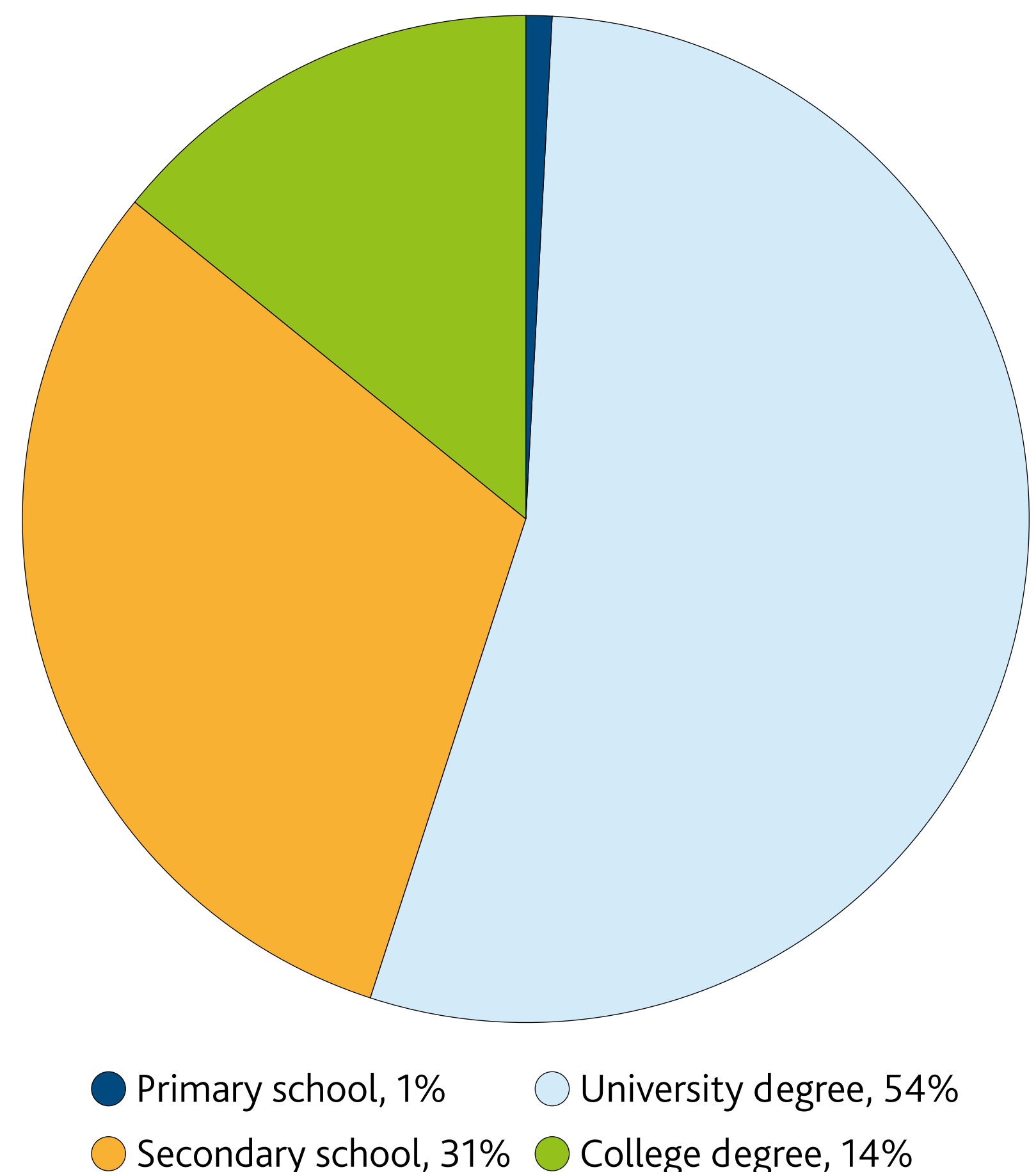


Figure 2. Survey participant's level of education

Surprisingly, 237 (68.7%) said they are cycling, of which 167 (70,5%) cycle on a daily basis. Further questions showed us that the main reasons for choosing this type of transport, in order of likelihood, are following: easiest transport, physical health, relaxation, cheapest transport and environmental reasons. This result showed us a significantly positive attitude towards cycling. However, satisfaction ratings of parking spots, storage space at home, safety in traffic, quality of cycling paths and density of cycling paths showed contrasting results. Major dissatisfaction was observed across all areas (Figure 3) which will probably cause a further decrease in the number of cyclists if no action is taken. Thus, these results must be taken into serious consideration in the next planning process.

On the other hand, 108 (31.3%) of participants said that they were not cycling, however, fortunately, 89 of them (82%) responded that they would like to start. The reasoning behind not using bicycles for transportation (Figure 4) is similar to the areas in which current cyclists feel disappointed. Intriguingly the largest number of participants said that their obstacle is not possessing a bicycle.

Based on these findings, the subsections, firstly, aim at explaining the main issues regarding cycling in Novi Sad. Secondly, present examples of previous solutions to similar problems. Thirdly, this section aims at demonstrating the current situation as accurately as possible and finally offers suggestions based on case studies from other countries that managed to overcome these difficulties in the past.

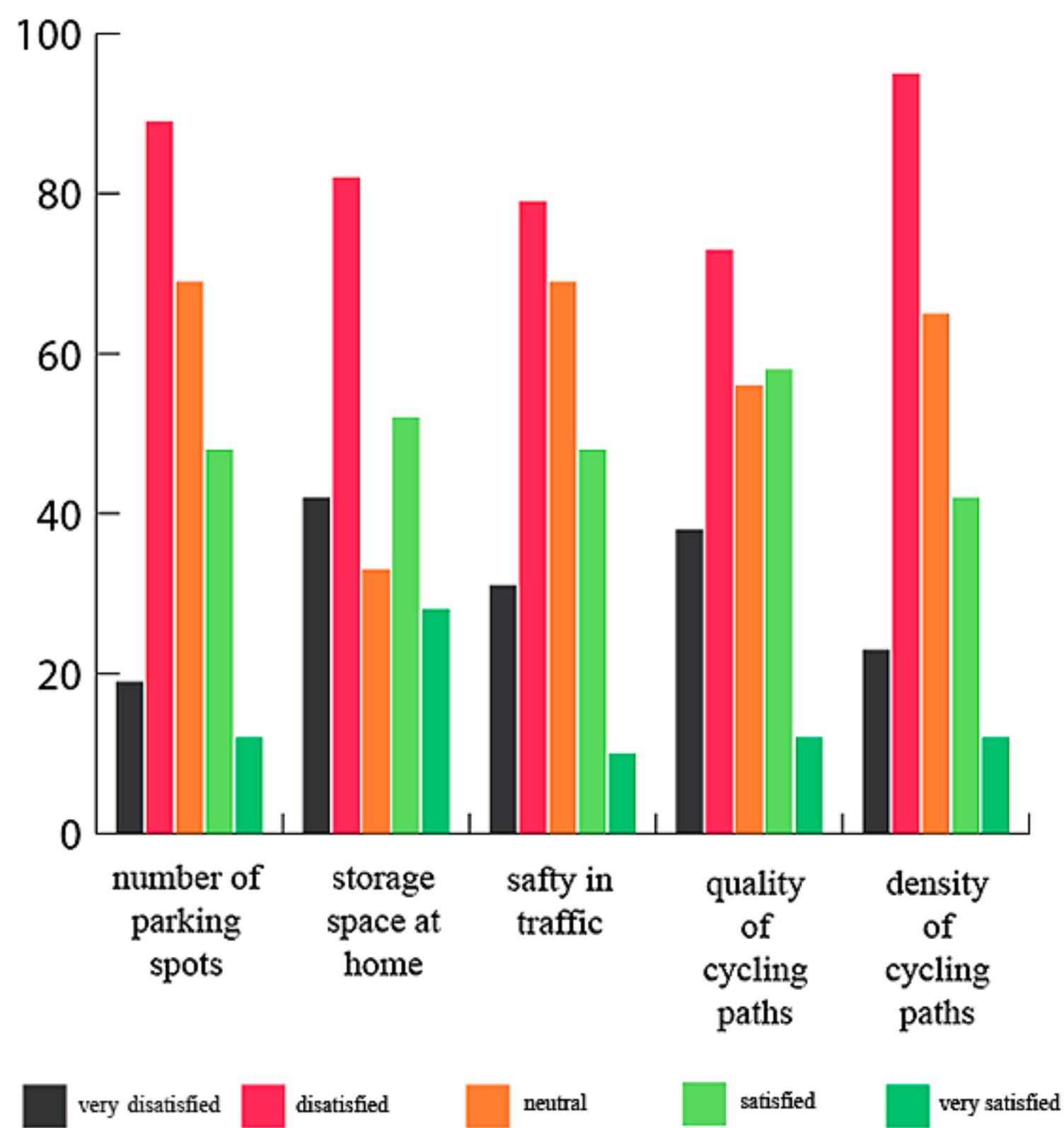


Figure 3. Satisfaction with different areas of cycling

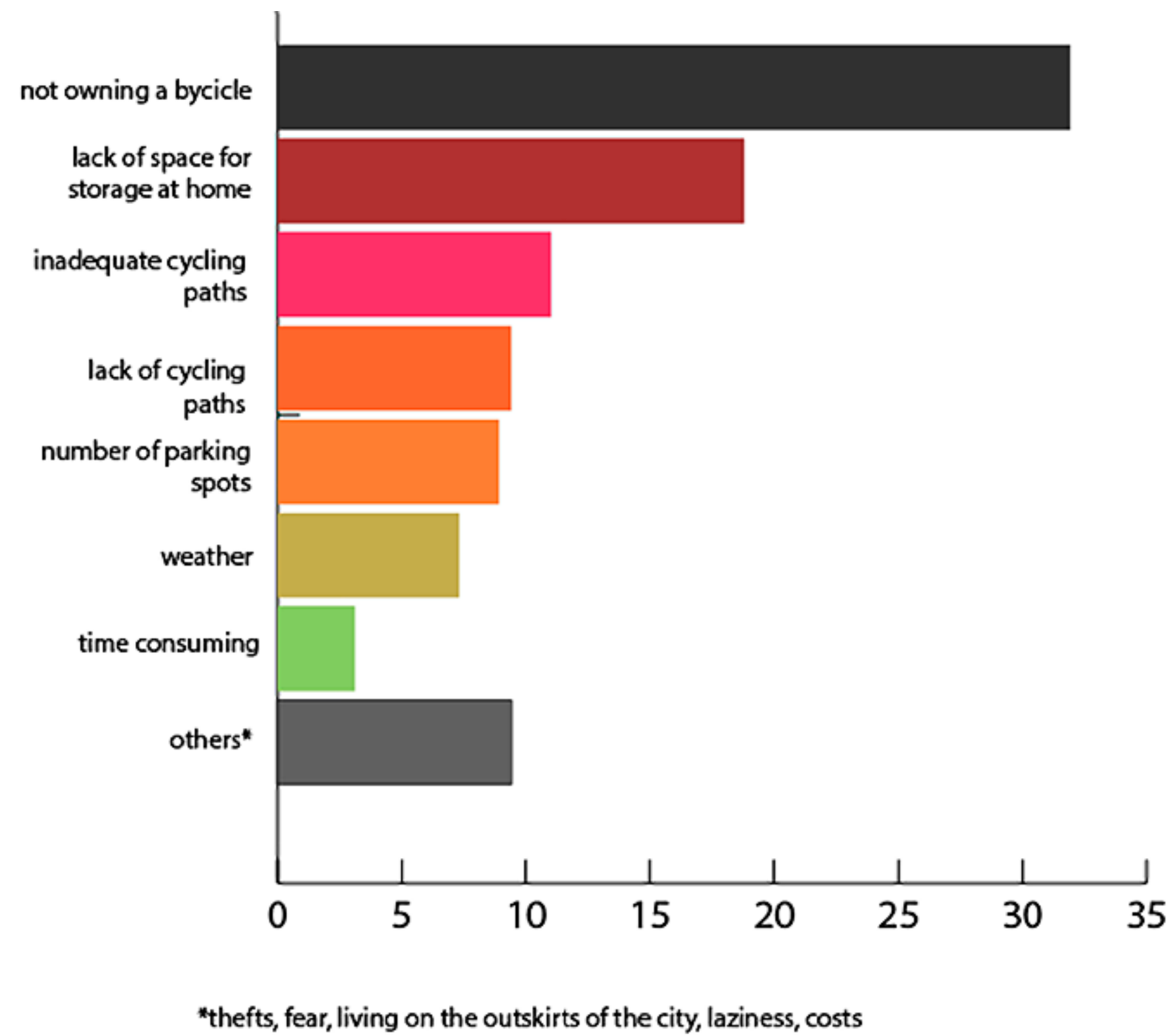


Figure 4. Reasons for not using the bicycle as a type of transportation

## Owning a Bicycle

The largest number of participants said that they are reluctant to start cycling because they do not own a bicycle (Figure 4). In 2011 Novi Sad introduced a bike-sharing system called NSBike providing a solution for those in need of bicycles. Currently, renting is enabled on 15 stations (Figure 5). Apart from this, a mobile application was made to make the whole experience easier (Internet 2). To reach more people with this solution,

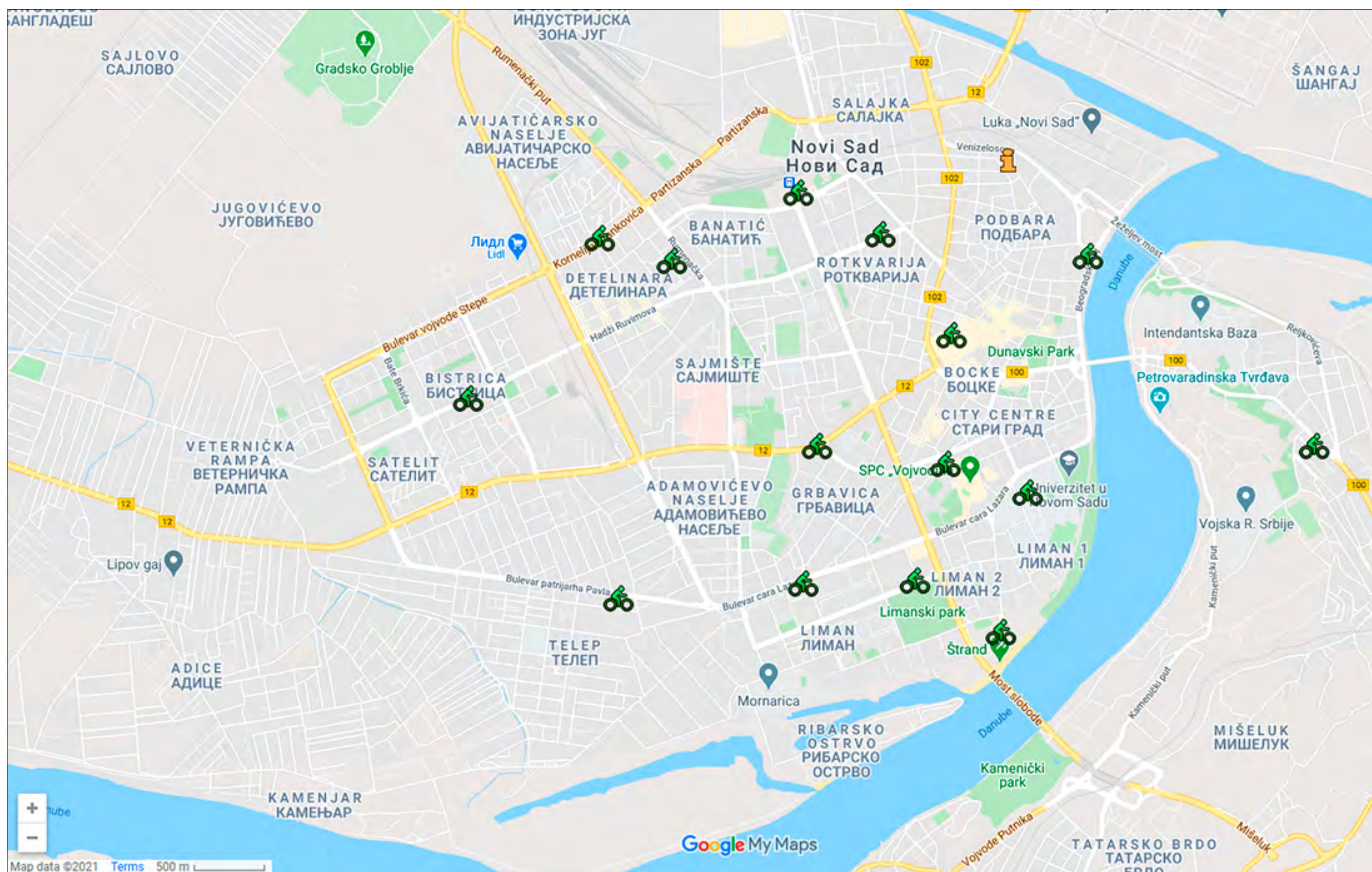


Figure 5. Stations in bike sharing system  
(Source: Internet 3)

we propose improvements in the app's features as well as increasing the number of bicycles and stations for rental. To give an illustration of possible improvements, we offer an example of Germany's Call The Bike system. The process for renting a bicycle is fairly convenient. After downloading the app and registering, one can find the nearest free bike and rent it right away in two clicks, without a customer card needed. An additional benefit of the app is the flexibility providing opportunities to take rests and parking the selected bicycle at a fixed station or in a return zone (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2014). This is one of the examples of how new technology can be implemented in cycling and make it 'smart cycling' which will only lead to more efficient use of bicycles (Oliveria et al., 2021).

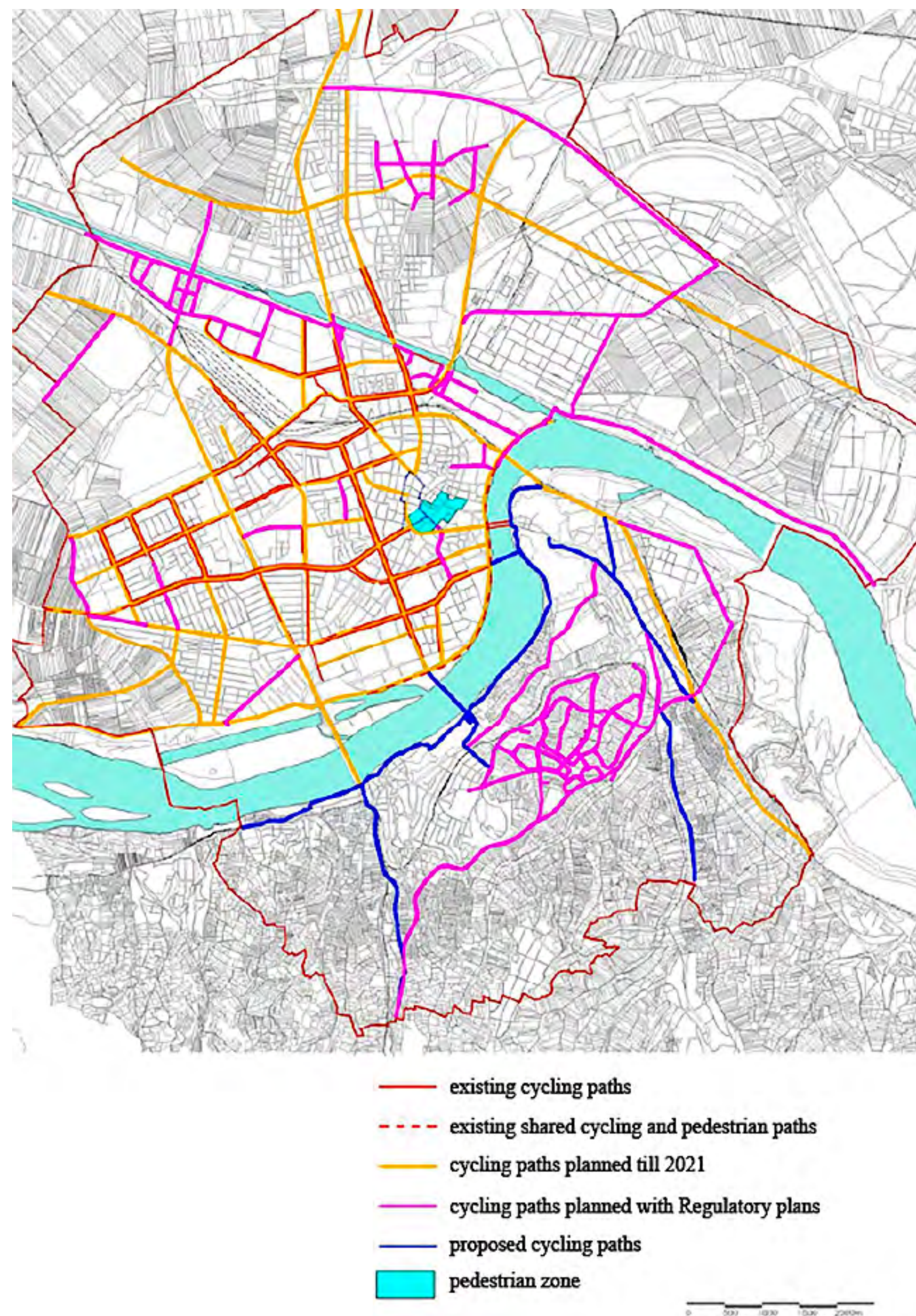
Novi Sad Cycling Initiative, hereinafter NSCI, started another successful action. Namely, the proposition was that the city offer funding to citizens for buying a new bicycle. The city accepted it and approved 8 million RSD (~68,376 euros) for this project, 10 000 RSD (~85 euros) per person for 2021 (Internet 4). Owning a bicycle - In the future, it also can be considered a similar example of Ireland's program of tax-free loans to purchase bicycles (Caulfield, 2014).

## Safety in the Traffic

Cycling in Novi Sad was unsafe during the 2000s which resulted in a large decline in the number of cyclists (resulting in only 2.5% of cyclists in 2009) (Mrkajic, Anguelovski, 2015). One of the main reasons for this was the rapid growth in population that the city could not control and as a consequence cyclists were part of motor traffic as any other vehicle which certainly made them feel uncomfortable (Mrkajic, Anguelovski, 2015). The number of cyclists over years had increased to 9% in 2017 (Bogdanovic et al, 2019). However even today, roughly ten years later people are still worried about their safety (see Figure 3). To seek improvement, knowing how to behave in traffic, and being aware of one's rights and responsibilities are of crucial importance (National Cycling Plan 2020. Berlin: Federal Ministry of Transport, Building and Urban Development). This can be managed by educating all age groups and promoting helmet use as well as regular services of their bikes. Similar projects were organized in Novi Sad by NSCI. Volunteers were giving lights to cyclists and educated them on law requirements (Internet 5). Furthermore, the importance of analyzing data about accidents that involve cyclists (National Cycling Plan 2020. Berlin: Federal Ministry of Transport, Building and Urban Development). A great example of this is research conducted in 24 Californian cities for the period of 11 years (1997-2007). Study was focused on making the correlation between lower mortality rates in traffic accidents and number percentage of cyclists in those cities. The main reasons they pointed out were network density and the presence of a greater number of cyclists that shifted the behavior of other drivers (Wesley, Norman, 2011). Another solution regarding the safety was introduced on The Third Global Ministerial Conference on Road Safety created the Stockholm Declaration in February 2020. They strongly suggested the speed limit to be 30 km/h in all urban areas where motor vehicles are intersecting with pedestrians and cyclists (Stockholm Declaration, 2020). In support of this initiative, Oslo and Helsinki adopted the rule which resulted in no deaths of pedestrians or cyclists in 2019 (Internet 6). What we can do in Novi Sad is to start with identifying the most problematic sections and working on them first. Another thing to bear in mind is a new technology that we can use such as helmets that can communicate with the surrounding or different sensors that will collect data and be able to calculate routes or warn us about accidents (Oliveria et al., 2021).

## Quality of the Cycling Paths and Their Density

Both subject groups reported dissatisfaction with both the quality and density of Novi Sad's cycling paths (see Figure 3 and 4). Quality was greatly improved by NSCI's initiative to encourage citizens to take a picture and report problematic areas in the city. In the end, they collected it all and sent it to the authorities which led to multiple repairs of the paths. The most significant ones were the removal of curbs on cycling paths (Internet 7). Hopefully,



**Figure 6.** Network of cycling roads

(Source: JP Urbanizam, Zavod za urbanizam, 2009)

this project and project of repairing Futoska Street that was in a critical condition will continue. Another important study on this matter was the master's thesis defender on Faculty of Technical Sciences, Department for Architecture and Urbanism (Marinkov, 2016). The analysis was conducted regarding the problems cyclists face on the cycling paths. The great contribution of that paper was a detailed map of different problems as well as explaining the problem in-depth and giving constructive solutions for the future. When it comes to the density of the paths, a plan has already been made by the city that will hopefully be applied completely (see Figure 6).

## Parking Spots

No available parking spots for bicycles around areas such as schools, administrative buildings and shopping areas often lead people into choosing different types of transportation. Furthermore, those trips can be daily requirements for most people which only escalates this problem. The significant part of development in cycling in Novi Sad was an initiative called 'Let's return Novi Sad back to cyclists' started in 2009. One of the main goals was creating new parking spots, which they fulfilled by building 500 bicycle racks. In the following years, NSCI conducted research that showed 75.7% of participants were dissatisfied with the location of those bicycle racks (Mrkajic, Anguelovski, 2015). Fortunately, our results showed that this number is lower today, 45% of people who cycle, but still more can be done. Today, Novi Sad has 160 stations for parking with surveillance cameras (Manojlovic, 2015). In the Portland Bicycle Plan was proposed reviewing the guidelines regarding the law and design to adjust future plans. They also draw attention to funding and the importance

of making an efficient plan in this area as well. Another key point, they covered, is encouraging public institutions as well as private buildings to always think about cyclist needs and to provide them with safe parking racks (Portland Bicycle Plan For 2030, 2010). Speaking of safe parking racks, depending on the flow of the people and length of parking there are three types. Stands are suggested for short use, enclosures are more suitable for workplaces, dorms, universities but it requires additional means of security such as cards. Lastly, bike lockers are advised for a longer time period with installing multiple security mechanisms and design (Ryan et al.,2004).

## Storage Room at Home

After World War II when massive public housing was built it was required by law to provide bicycle storage for every building. However, over time, those were converted into saloons or small shops (Mrkajic, Anguelovski, 2015). Today, there is a small number of these storages in the same function as it was in the beginning. Even if bicycle storage exists, people are not comfortable leaving their bicycles due to a great number of thefts. Together, this led to keeping a bicycle in an apartment if it's spacious enough or leaving it in the hallway, which is not only illegal but also not safe (Internet 8). Additional consideration must be that some older buildings do not have elevators and carrying the bicycle upstairs requires a lot of physical strength which is another thing that can make people choose other types of transport.

## Role of Social Activism

Novi Sad Cycling Initiative - NSCI, is an association of volunteers passionate about cycling and making Novi Sad a better and safer cycling city. The association was established in 2011 with the main goals of promoting and educating citizens. Throughout this study, we managed to illustrate their massive contribution to the development of cycling in Novi Sad. One of the events that they are proud of the most is Critical Mass, especially the one organized in 2015 which gathered more than 1500 people. Critical Mass is an event that gathers cyclists every last Friday in the month and promotes this way of transport by making undisturbed routes through the city with help of the police. When talking about promotion among citizens, the president of NSCI, pointed out the importance of targeting the concrete groups and concrete problems. When asked about safety the response was that we should analyze mistakes in behavior in traffic and focus on discovering the problem behind it and solving it rather than punishing people. It is admirable what NSCI did for cycling in Novi Sad in the past decade. Other cities in Serbia are looking up to them and we will be extremely proud to see other European cities following Novi Sad's example.

Finally, when the subjects were asked about how we can involve more people their responses were: building new cycling paths, creating more parking spots, improvements in cycling paths, excluding cyclists from traffic, with education, promotion on social media and interactive projects - in order of preference from most to least chosen answer. This can serve as a good direction for city planners.

## CONCLUSION

Novi Sad is full of potential of becoming a more bike-friendly city in the future. By analysing citizen's attitudes to cycling it will be possible to develop even earlier. People who cycle rated their satisfaction with different areas of cycling, but most importantly we collected the data for the reason why citizens are not cycling yet. Having an understanding of what troubled people, but also the cause of these problems as well as the study cases of other countries will be beneficial for future planning. For further studies, it is suggested to lim-

it guidance in questions and focus on fewer areas for better and more concrete results. A further point is that priorities must be set beforehand to maximize efficiency. If we try to plan all aspects of cycling in the whole city, we will still solve superficial problems. Another key advantage of Novi Sad is really active social activism that was the initiator for projects that helped with almost every aspect of cycling. This makes a great impact on other cities in Serbia who are following their examples. In conclusion, this is a complex issue and it cannot be expected to be solved in a short period, but it requires constant work of different professions and constant revision of results. Overall, Novi Sad is making progress towards being a more bike-friendly city and we are hopeful that it will stay on that path.

## ACKNOWLEDGMENT

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