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# Cycling Tourism on the Danube Cycle Route in Serbia: Residents' Perspective

## Abstract

Cycling tourism is a rapidly developing type of tourism in Europe and it is recognised in the tourism strategic documents of the Republic of Serbia as one of the key tourist products that should be developed specifically in the Danube region. This paper aimed to examine residents' perceptions towards cycling tourism on the Danube cycle route in Serbia using the modified Tourism Impact Attitude Scale (TIAS). In addition, a multiple regression model was used to test the effects of the independent variables on residents' perceptions towards cycling tourism development. The research findings indicate that residents have a favourable attitude towards cycling tourism, which is in the initial phase of development in the study area, and that the independent variables are predictors of residents' perceptions. Implications for tourism development and planning are discussed and future research opportunities provided.

**Keywords**: tourism, case study, quantitative research, community, destination marketing.

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## Introduction

To reduce transportation emissions and improve the quality of life of residents, major cities and tourist destinations throughout the world strive to increase non-motorised transport use, specifically walking and cycling (Buehler & Dill 2016; Karanikola, Panagopoulos, Tampakis, & Tsantopoulos 2018). In the last two decades, the bicycle has become a symbol of sustainable transportation with many benefits for cyclists, society, and the environment (Karanikola et al. 2018). In 1995, the European Cyclists Federation (ECF) initiated EuroVelo, a European cycle route network of fifteen long-distance cycle routes that connect the whole continent, which aimed to promote cycling as healthy and sustainable travel for locals making daily trips, as well as cycling tourism (www.eurovelo.com). Many international bodies, such as the European Commission, acknowledge the positive effects of cycling, especially for public health and the environment (Behrendt 2016). In addition, major tourist destinations, as well as destinations that are not tourist honey pots or destinations with a high potential in tourism, may benefit from cycling tourism development. Namely, cycling tourism is a growing tourism market, particularly in Europe, which can provide economic, social and environmental benefits for residents (Lumsdon 2000; Lumsdon & McGrath 2011; Ritchie, Tkaczynski, & Faulks 2010). However, in many countries, especially in emerging ones such as Serbia, residents' perception of the benefits and costs of cycling tourism development is an empirically under-researched area.

Serbia presents an interesting area for researching this topic, as it is an emerging tourist destination where cycling tourism is defined in the tourism strategic documents as one of the key tourist products that should be developed in selected tourist destinations, specifically the Danube region (Ministry of Trade, Tourism, and Telecommunications of the Republic of Serbia 2016). Moreover, it is important to note that the level of cycle tourism development differs across countries through which the Danube cycle route passes (Piket, Eijgelaar, & Peeters 2013). While Austria is by far the most important destination on the Danube for tour operators according to EuroVelo study 2012 (Weston, Davies, Peeters, & Eijgelaar 2012), Serbia is lagging in cycling tourism development although its potential is huge.

Therefore, this study aimed to examine residents' perceptions towards cycling tourism on the Danube cycle route in Serbia using the Tourism

Impact Attitude Scale (TIAS), which was adapted to suit the specific context of cycling tourism. In addition, this study examined the effects of certain independent variables and sociodemographic characteristics on residents' perceptions towards cycling tourism development.

## Literature review

Cycling tourism is mostly defined as a form of sustainable and active travel (Aldred & Jungnickel 2014) and it enjoys growing popularity in Europe. Recently, the interest of academic circles on cycling and cycling tourism has increased. Lamont (2014) noted that cycling tourism research tends to fall into two fields: the socio-economic impacts of cycling tourism, and management, planning and policy.

Previous studies highlighted that cycling tourism is seen as positive in the context of primarily economic benefits to the local community (Lumsdon, Downward, & Cope 2004; Lumsdon et al. 2009; Ritchie et al. 2010; Weed et al. 2014). Weston et al. (2012) estimated that 2.3 billion cycle tourism trips were made in Europe each year, with a total value of over €44 billion. France is the main destination for cycle tourists in Europe, while Germany is the main origin (Weston et al. 2012).

Piket et al. (2013) in their study on the economic impacts of cycling tourism on European cycle routes concluded that cycle tourism had the potential to bring considerable economic benefits, particularly to underdeveloped areas. Also, they noted that the growth of cycle tourism, both in terms of provision and market demand, is uneven across Europe. In countries such as Austria, Denmark, France, Germany, Switzerland and the Netherlands, cycle tourism is important and still growing, while in other countries, such as the Central-Eastern European states, markets are less well developed. They added that there was the growth of cycle tourism in these countries, but it was difficult to measure it in the absence of data. Similarly, Weston et al. (2012) found that while countries with established cycling culture and high cycling rates continued to be the most attractive, other tourist destinations such as Italy, Spain, Hungary and Poland perceived an increase in cycle tourism (Weston et al. 2012). In addition, many cities worldwide and particularly in Europe, have established cycling-friendly policies, bike paths, and bike-sharing schemes as part of

their transport policy (Pucher et al. 2011) to stimulate cycling among visitors and residents for daily purposes as well as to attract cycle tourists. Blondiau et al. (2016) examined the economic benefits of increased cycling, specifically employment in the cycling sector in the European Union. They noted that cycling not only improved the liveability of cities, public health, and air quality, also creating "hard economic value and jobs". They pointed out that cycling could create more local jobs and more jobs for lower-skilled workers.

Besides the economic impact, the literature emphasises the health benefits of cycling tourism as a physically active mode of travel for the user and society (Cavill, Kahlmeier, Rutter, Racioppi, & Oja 2008). The EuroVelo study 2012 indicated that cycle tourism brings major benefits to destinations from direct tourist spending, specifically in those localities, which currently do not enjoy mainstream tourism development (Weston et al. 2012). A few studies indicate that local communities support the development of cycling routes for recreational use and tourism, as they improve local businesses, community involvement and pride in local heritage (Bennett, Tranter, & Blaney 2003; Bowker et al. 2007), which further contribute to the quality of life of residents (Schafer, Bong, & Turner 2000).

In Serbian tourism strategic documents, development of cycling tourism in the Danube region is regarded as an opportunity for the improvement of the tourism offered and quality of life of residents. However, research on this topic is scarce (Kaloyano. 2016) and mostly one-sided from the cycle tourists' point of view (Vujko & Gajić 2014; Vujko, Plavša, & Ostojić 2013). If cycling tourism is to appropriately contribute to the economic and social wellbeing of a destination, residents' perceptions towards cycling tourism development must be acknowledged.

There is a common agreement that residents' involvement in tourism planning can result in a variety of benefits to both residents and governments. Thus, destinations strive to increase residents' participation in tourism planning projects and decision making to provide sustainable tourism development (Lalicic & Önder 2018). There are many studies, which refer to residents' role and perceptions of tourism development (Carneiro, Eusébio & Caldeira 2018; García, Vázquez & Macías 2015; Sinclair-Maragh, Gursoy & Vieregge 2015; Teye, Sirakaya, & Sönmez 2002), which report that residents usually have a positive attitude towards tourism development when it is sustainable towards the community and nature and

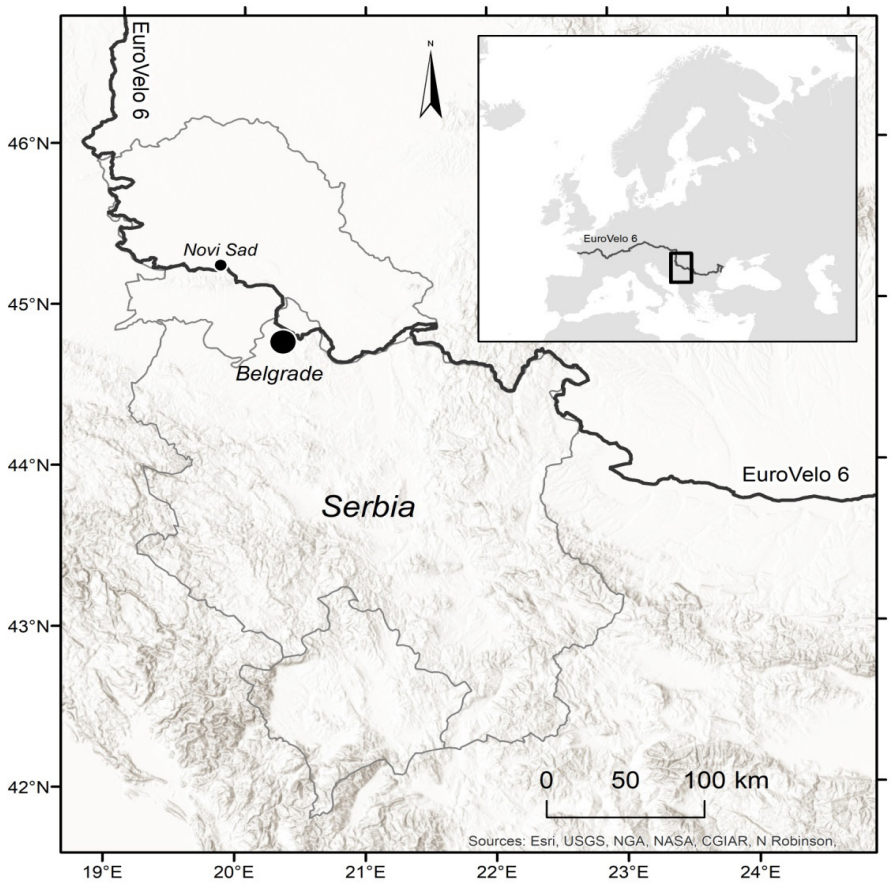
they are included in the decision-making process. However, all those studies examined attitudes towards tourism development in general, while there might be differences in the residents' attitudes towards the development of different types of tourism. In line with this, several authors emphasised the need to specify the type of tourism development against which the residents' perceptions were measured (Suess, Baloglu & Busser 2018; Vargas-Sanchez, Porras-Bueno & Plaza-Mejía 2011).

One of the first standardised instruments for measuring residents' perceptions towards tourism development was the TIAS developed by Lankford and Howard (1994), which inspired the authors of the present research. The original TIAS consisted of twenty-seven attitudes/variables used to measure residents' perception of tourism development regarding infrastructure, public services, recreation, employment opportunities, income generation, the role of residents in tourism planning and other impacts of tourism development on the local community. After the scale was first tested in the United States, the authors called for additional testing in different settings. In response to this call, the scale was used in other countries, with certain modifications depending on the destination and form of tourism (Bachleitner & Zins 1999; Chen & Hsu 2001; Harrill & Potts 2003; Petrović, Bjeljac & Demirović 2016; Rollins 1997; Shariff 2002; Vesey & Dimanche 2001; Wang & Pfister 2008; Woosnam 2012). In previous studies, the scale was mostly used in the rural tourism context. Despite cycling tourism being recognised in most countries as an important sustainable and active mode of travel with numerous benefits and low costs for society compared to other forms of tourism and other modes of transport, there is a lack of academic research regarding residents' perceptions towards cycling tourism development. Therefore, we believe that the present study is of significant importance as it applies TIAS in a novel research setting of cycling tourism.

## Methodology

### 1. Study area – the Danube cycle route in Serbia

The Danube cycle route, part of EuroVelo 6 route, is one of the most attractive European corridors for cycling tourists, particularly the Danube




**Map 1.** *Eurovelo 6 and the Danube cycle route*

section in Austria (Lumsdon 2000; Weston et al. 2012). The Danube River itself connects ten European countries: Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Romania, Bulgaria, Moldavia and Russia (via the Black Sea). The Tourism Development Strategy of the Republic of Serbia for the period from 2016 to 2025 recognised the Danube region as one of the primary tourist destinations in Serbia, which is divided into four segments: Upper Danube, Central Danube, Belgrade and Novi Sad and Lower Danube. For the purpose of this study, we focused only on Belgrade and the Novi Sad section of the Danube region in Serbia because this section

is the most populous (2,000,000 inhabitants in total) and the most visited in Serbia, with developed cycling infrastructure and bike-sharing systems for locals and visitors. Today, the Danube cycle route is the backbone for developing cycling tourism in Serbia (Vujko et al. 2013).

The route connects peripheral regions in border areas of the above-mentioned countries, consequently, route development has become a subject of many cross-border and transnational projects funded by the EU (see Kaloyanov 2016). As a result, some developments focusing primarily on the supply side of cycling tourism have been conducted, particularly in Hungary, Croatia, Serbia, Romania and Bulgaria, while little attention is given to tourist's expectations and satisfaction from cycling on the route (Kaloyanov 2016) and residents' perspective of cycling tourism development. Kaloyanov (2016) adds that there is little information available about the above-mentioned countries as emerging cycling tourism destinations.

## 2. Research instrument, sampling and data collection

A three-step procedure was conducted to achieve the study objective. First, to adapt the original TIAS to the research setting of cycling tourism, three academics from Serbia with research experience in tourism and specifically, cycling tourism, were asked to discuss TIAS. Based on this discussion, the original scale was refined and 24 out of 27 items from TIAS were adapted to the cycling tourism context. Therefore, the final scale used in this survey consists of 24 items with good internal consistency ($\alpha$=0.894).

Second, the questionnaire was created and distributed using Survey123 for the ArcGIS mobile application. It was composed of three sections, the first part included sociodemographic characteristics of respondents, the second part consisted of eleven questions, independent variables that can influence residents' perceptions towards tourism (see Table 3), which were identified from the literature and specifically, from the work of Lankford and Howard (1994), and the third part asked residents to evaluate 24 items adapted from the original TIAS using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Third, the main survey included residents of Belgrade and the Novi Sad section of the Danube cycle route in Serbia. The survey was conducted in

October and November 2018 by 15-trained researchers using a convenience sampling approach. To target the residents from Novi Sad and Belgrade section only, respondents were obliged to respond to the question regarding their place of residence. If the respondent was not a resident of Novi Sad or Belgrade area, they were excluded from the survey. The total number of respondents was 491 and a descriptive summary of the respondents' characteristics is provided in Table 1. The data was processed with the statistical package SPSS 20.

**Table 1.** *Sociodemographic profile of respondents % (N=491)*

| **Gender** | | **Education** | |
|---|---|---|---|
| Male | 41.1 | Elementary school | 0.8 |
| Female | 58.9 | High school /vocational school | 34.4 |
| **Age** | | 2-years higher education | 15.5 |
| 18–24 | 35.4 | Faculty | 37.1 |
| 25–34 | 22.2 | Master's degree | 10.4 |
| 35–44 | 26.1 | Specialised degree | 0.6 |
| 45–54 | 11.6 | Doctorate degree | 1.2 |
| 55–64 | 4.7 | | |
| **Occupation** | | **Length of residence** | |
| Student | 28.7 | ≤ 10 years | 27.5 |
| Full-time employee | 44.4 | 11–20 years | 22.4 |
| Part-time/temporary/seasonal employee | 13.4 | 21–30 years | 25.9 |
| Retiree | 7.3 | 31–40 years | 12.4 |
| Unemployed | 6.1 | ≥ 40 years | 11.8 |

## Results

### 1. Exploratory factor analysis (EFA) of the modified TIAS

Exploratory factor analysis (EFA) with principal component analysis was performed to explore the dimensions of the modified TIAS. Representative-

ness was good (KMO = 0.908) and Bartlett's sphericity test was significant ($\chi 2(276) = 5114.821$ $p<0.001$), which confirmed that the data were suitable for the analysis. All items had factor loadings more than 0.3 (Hair, Anderson, Tatham & Black, 1998) and were loaded heavily on one factor. Based on the parallel analysis and scree plot suggestions, four dimensions/factors were extracted explaining 55.24% of the variance. Promax rotation was applied since the extracted components were correlated. The Cronbach's alpha for the four factors ranged from 0.672 to 0.879, which is between the recommended values of 0.60–0.90 (Norman & Streiner, 1994). The results of the EFA analysis are shown in Table 2.

Factor 1 is labelled "community benefits", as it is comprised of eleven items related to the perceived benefits of cycle tourism for the local community. Factor 2 is interpreted as the "cycle tourism development support". The third factor "concern for cycle tourism development" involves three items connected to the perceived negative effects caused, or that might be caused by cycle tourism development. The fourth factor is "personal benefits".

**Table 2.** *Excerpt of the structured matrix of modified TIAS (N=491)*

| **Statements** | **Community benefits (F1) (α=0.879)** | **Cycle tourism development support (F2) (α=0.815)** | **Concern for cycle tourism development (F3) (α=0.672)** | **Personal benefits (F4) (α=0.793)** |
|---|---|---|---|---|
| In my community, cycling tourism development should be actively encouraged (I1) | | 0.765 | | |
| I am against new tourism facilities development which will attract a larger number of visitors as well as cycle tourists in my community (I2) | | -0.505 | | |
| Local authorities should develop a long-term plan for cycling tourism (I3) | | 0.754 | | |

**Table 2.** *Excerpt of the structured matrix of modified TIAS (N=491)*

| Statements | Community benefits (F1) (α=0.879) | Cycle tourism development support (F2) (α=0.815) | Concern for cycle tourism development (F3) (α=0.672) | Personal benefits (F4) (α=0.793) |
|---|---|---|---|---|
| The community should not attract a great number of cycle tourists (I4) | | -0.480 | | |
| The community should stimulate a more intensive building of cycle-friendly tourist facilities (I5) | | 0.756 | | |
| Benefits of cycling tourism outweigh costs (I14) | | 0.653 | | |
| Local authorities are right if they support cycling tourism development and its promotion (I7) | | 0.777 | | |
| Cycle tourists are valuable and have a positive impact on the community (I11) | | 0.763 | | |
| The Danube cycle route and cycling tourism development have provided more outdoor recreation opportunities for the community (I12) | 0.467 | | | |
| Cycling tourism as a sustainable form of tourism should be one of the main types of tourism in my community (I15) | 0.718 | | | |

**Table 2.** *Excerpt of the structured matrix of modified TIAS (N=491)*

| Statements | Community benefits (F1) (α=0.879) | Cycle tourism development support (F2) (α=0.815) | Concern for cycle tourism development (F3) (α=0.672) | Personal benefits (F4) (α=0.793) |
|---|---|---|---|---|
| Long-term planning of cycling tourism development can control impacts on the environment (I16) | 0.674 | | | |
| Cycling tourism development will provide more jobs in the community (I17) | 0.730 | | | |
| My community has better roads, pavements and cycle paths due to cycling tourism development (I18) | 0.775 | | | |
| The quality of public services in my community has been improved due to cycling tourism development (I19) | 0.771 | | | |
| Cycling tourism provides highly desirable jobs (I22) | 0.641 | | | |
| In my community, the number of bicycle shops, bicycle repair shops and other cycle-friendly services has risen as a result of cycling tourism development (I23) | 0.712 | | | |
| In the future, I would like to provide services to cycle tourists (I24) | 0.502 | | | |

**Table 2.** *Excerpt of the structured matrix of modified TIAS (N=491)*

| Statements | Community benefits (F1) (α=0.879) | Cycle tourism development support (F2) (α=0.815) | Concern for cycle tourism development (F3) (α=0.672) | Personal benefits (F4) (α=0.793) |
|---|---|---|---|---|
| Cycling tourism plays an important role in the economy of the community (I6) | 0.648 | | | |
| My community has resources to become an attractive cycling tourism destination (I8) | 0.689 | | | |
| The increase in cycle tourists' volume will negatively impact the environment (I9) | | | -0.701 | |
| In my community, the amount of litter has risen due to cycle tourism development and a larger number of cycle tourists (I10) | | | -0.733 | |
| Crime in the community has increased due to cycling tourism development (I13) | | | -0.699 | |
| I have more money to spend thanks to cycling tourism (I20) | | | | 0.883 |
| Cycling tourism has an impact on the improvement of my standard of living (I21) | | | | 0.867 |

## 2. Regression analysis with independent variables

The research included eleven independent variables to explore their impact on the factors of modified TIAS. Descriptive statistics for the analysed variables are shown in Table 3.

**Table 3.** *Descriptive statistics for independent variables*

| Independent variables | Mean | Std. |
|---|---|---|
| I am employed in a job related to tourism | 2.54 | 1.649 |
| I am involved in tourism decision making in my community | 1.96 | 1.296 |
| I am a member of the community/local organisation | 1.79 | 1.354 |
| I live close to the Danube cycle route | 3.02 | 1.581 |
| I spend leisure time in outdoor recreation | 4.00 | 1.092 |
| I ride a bicycle in everyday life | 3.09 | 1.597 |
| I am familiar with the fact that the Danube cycle route, which is part of European cycling corridor EuroVelo 6, passes through my community | 3.57 | 1.463 |
| I frequently communicate with cycle tourists | 3.16 | 1.502 |
| I have formed a friendship with cycle tourists | 2.80 | 1.557 |
| I frequently visit tourist areas in my community | 3.64 | 1.347 |
| I have knowledge of the main industries in my community | 4.04 | 1.077 |

The results indicate that respondents mostly have knowledge of the main industries in the city, spend leisure time in outdoor recreation, frequently visit tourist areas in the city and are familiar with the fact that the Danube cycle route passes through their community. However, few respondents were members of community/local organisation and involved in tourism decision making in their community.

The next step was to explore the relationship between eleven independent variables and four factors of modified TIAS, as shown in Table 4. It is interesting to notice that all independent variables have a significant positive influence on *community benefits* and *personal benefits*.

**Table 4.** *Regression beteen independent variables and four factors of modified TIAS*

| Independent variables | Community benefits | | | Cycle tourism development support | | | Cycle tourism concern | | | Personal benefits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | R2 | β | F | R2 | β | F | R2 | β | F | R2 | β |
| *I am employed in a job related to tourism* | 19.316 | 0.038 | 0.195** | 4.482 | 0.009 | 0.095 | 3.386 | 0.007 | -0.083 | 79.178 | 0.139 | 0.373** |
| *I am involved in tourism decision making in my community* | 29.962 | 0.058 | 0.240** | 6.679 | 0.013 | 0.116** | 1.068 | 0.002 | -0.047 | 92.642 | 0.159 | 0.399** |
| *I am member of community/local organisation* | 15.778 | 0.031 | 0.177** | 2.330 | 0.005 | 0.069 | 324 | 0.001 | 0.026 | 50.406 | 0.093 | 0.306** |
| *I live close to the Danube cycle route* | 53.644 | 0.099 | 0.314** | 31.380 | 0.060 | 0.246** | 2.693 | 0.005 | 0.074 | 35.055 | 0.067 | 0.259** |
| *I spend leisure time in outdoor recreation* | 34.697 | 0.066 | 0.257** | 21.218 | 0.045 | 0.212** | .868 | 0.002 | -0.042 | 10.729 | 0.021 | 0.147** |
| *I ride a bicycle in everyday life* | 58.012 | 0.106 | 0.326** | 12.799 | 0.026 | 0.160** | 1.763 | 0.004 | -0.060 | 27.783 | 0.054 | 0.232** |
| *I am familiar with the fact that the Danube cycle route, which is part of European cycling corridor EuroVelo 6, passes through my community* | 67.336 | 0.121 | 0.348** | 32.118 | 0.062 | 0.248** | 1.180 | 0.002 | 0.049 | 27.783 | 0.054 | 0.232** |

**Table 4.** *Regression beteen independent variables and four factors of modified TIAS*

| Independent variables | Community benefits | | | Cycle tourism development support | | | Cycle tourism concern | | | Personal benefits | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | F | R2 | β | F | R2 | β | F | R2 | β | F | R2 | β |
| *I frequently communicate with cycle tourists* | 64.387 | 0.116 | 0.341** | 35.268 | 0.067 | 0.259** | 10.854 | 0.002 | -0.147** | 28.902 | 0.056 | 0.236** |
| *I have formed friendship with cycle tourists* | 80.875 | 0.142 | 0.377** | 32.812 | 0.062 | 0.251** | 49.155 | 0.091 | -0.302** | 20.178 | 0.040 | 0.199** |
| *I frequently visit tourist areas in my community* | 87.491 | 0.152 | 0.390** | 77.146 | 0.136 | 0.369** | 14.588 | 0.029 | -0.170** | 26.878 | 0.052 | 0.228** |
| *I have knowledge of the main industries in my community* | 65.511 | 0.118 | 0.344** | 86.737 | 0.151 | 0.388** | 2.553 | 0.005 | -0.072 | 14.611 | 0.028 | 0.170** |

** $p<0.01$

Regarding cycle tourism development support, there was no significant influence, only in the case of two variables: *employed in a job related to tourism and membership in community/local organisation.*

Finally, concern for cycle tourism development factor is negatively influenced by four independent variables – *I support cycling tourism development in my community, I frequently communicate with cycle tourists, I have formed a friendship with cycle tourists* (being the strongest predictor) and *I frequently visit tourist areas in my community.*

## 3. The role of sociodemographic variables

One of the goals of the study was to analyse how different sociodemographic characteristic influence extracted factors of the modified TIAS. For this purpose, the authors conducted an independent sample t-test to explore gender differences, while ANOVA was performed to check differences in age, education, employment status, and length of residence.

*Gender*. The independent sample t-test showed no gender differences in any of the extracted factors of modified TIAS.

*Age*. ANOVA indicated that there are some differences between people of different ages and all cycling tourism perception factors, except personal benefits (community benefits ($F=3.429$, $p<0.01$), cycle tourism development support ($F=3.157$, $p<0.01$), and concern for cycle tourism development ($F=3.849$, $p<0.01$). The LSD post hoc test showed that people belonging to the age group of 55–64 perceived fewer community benefits from cycling tourism, are more concerned about cycling tourism development and are less development supportive than all other age categories.

*Education*. ANOVA to test for differences in cycling tourism perceptions between different educational groups revealed significant differences in the case of community benefits ($F=2.339$, $p<0.05$) and cycle tourism development support ($F=2.196$, $p<0.01$). Regarding community benefits, the LSD post hoc test showed that those who have a bachelor's degree see more community benefits than those who finished college and secondary school, whereas people with a bachelor's and master's degree show more support than those with college and secondary school education regarding cycle tourism development support.

*Employment status*. In case of employment status, ANOVA showed significant differences in all four factors [personal benefits ($F=3.801$, $p<0.01$), community benefits ($F=4.305$, $p<0.01$), cycle tourism development support ($F=3.232$, $p<0.01$), concern for cycle tourism development ($F=5.109$, $p<0.01$)]. Regarding personal benefits, the LSD test showed that the retired and unemployed see less personal benefits than all other employment categories, whereas the employed see more community benefits than unemployed and part-time employed. The retired see fewer community benefits and are less development supportive than students, full-time employed and unemployed people, while part-time employed see fewer community benefits than students and unemployed people. Finally, students are more cycle tourism supportive than part-time and full-time employed individuals. Regarding cycle tourism concerns, students are less concerned than part-time employed and retired, while retired are more concerned than students and full-time employed.

*Length of residence*. ANOVA test did not show any statistically significant difference in terms of people with different length of residence and their perceptions of cycling tourism development.

## Discussion

The results of this EFA indicate that the TIAS, even if modified, continues to be a reliable and valid instrument in a new context, which is what authors of TIAS, Lankford and Howard (1994), as well as recent studies (e.g. Woosnam, 2012) called for. The results show the four-factor structure of the modified TIAS: "community benefits" (F1), "cycle tourism development support" (F2), "concern for cycle tourism development" (F3) and "personal benefits" (F4). These findings are somewhat similar to the original work of Lankford and Howard (1994), their scale showed two-factor structure: "concern for local tourism development" and "personal and community benefits", whereas in our study, personal and community benefits emerged as two independent factors. Also, support for cycle tourism development and its negative impacts emerged as two factors in our study, while they were encompassed by the factor "concern for local tourism development" in Lankford and Howard (1994). Our findings are in line with the work of Rollins (1997) who also reported a four-factor structure of TIAS

and Petrović et al. (2016) in their study on residents' attitudes towards agritourism in northern Serbia.

In addition, this study confirms that independent variables, as well as sociodemographic and economic variables, are significant predictors of residents' perceptions towards tourism. The research findings revealed that age, education and employment status impact the residents' perceptions, which is in line with previous studies. Our study showed that younger residents have more positive attitudes and perceive more benefits of cycling tourism than older respondents, who were more concerned about cycling tourism development, less development supportive and perceive fewer community benefits from cycling tourism, which is in line with previous studies on residents' attitudes towards tourism (Blešić, Pivac, Besermenji, Ivkov-Džigurski, & Košić 2014; Cavus & Tanrisevdi 2002). As the population ages, policy makers and tourism planners should acknowledge the perceptions of the elderly and attempt to educate them about the potential benefits of cycling tourism, enhancing their involvement in the tourism industry, and support them to take part as entrepreneurs in the diverse market of the cycling tourism industry (Kurek & Rachwal 2011). According to Blondiau et al. (2016), the cycling sector in the European Union, including cycling tourism, provides job opportunities for the elderly and people with relatively low qualification levels for whom finding employment can be a challenge nowadays. They add that by providing easily accessible employment for locals that are disadvantaged on the labour market, this offers an opportunity to contribute to the objectives of an inclusive Europe.

In our study, educational level was a predictor of the residents' perceptions towards cycling tourism, indicating that the higher the level of formal education, the more likely respondents were to perceive the community benefits and be supportive of cycling tourism development. This coincides with several previous studies (Andriotis & Vaughan 2003; Sinclair-Maragh et al. 2015; Sinclair-Maragh 2017) which revealed that more educated people are more likely to have positive perceptions of tourism development because of their level of awareness. Regarding employment status, the study showed that employed residents see more benefits of cycling tourism development than unemployed and retired. As the employment status is often connected with the level of income, the results are in line with the study of Haralambopoulos and Pizam (1996)

who discuss that wealthier residents tend to be more pro-tourism development than those economically average, or less than average residents.

This study, however, did not confirm previously reported gender differences towards tourism development (Mason & Cheyne 2000; Sinclair-Maragh 2017), however, there are no consistent findings regarding gender influences on this issue. The study of Sinclair-Maragh (2017) revealed that women are more positive towards tourism development. The lack of gender differences in our study may be the result of the specific type of low impact tourism, where the differences in concern between men and women were not emphasised. Furthermore, the current level (initial stage) of cycling tourism development may also explain why no differences in residents' perceptions towards cycling tourism were found by gender and length of residence. The same conclusion was drawn by Wang and Pfister (2008) who conducted a study in a small community in the initial stage of tourism development.

In general, residents in the study area have a positive and supportive attitude towards cycling tourism development, which was expected, as cycling tourism development in Serbia is in its initial phase (Vujko et al. 2013) and negative impacts are still not evident.

Both community and personal benefits (F1 and F4) of cycling tourism development are influenced by all independent variables, which is in line with general literature which emphasises that residents' attitudes towards tourism development are affected by the economic benefits of tourism (Suess et al., 2018), community attachment (Vesey & Dimanche 2001) and the level of contact with tourists (Lankford & Howard 1994).

Strong support for cycling tourism development (F2) is associated with perceived community and personal benefits of cycling tourism. This has been supported by several studies which found a relationship between the perceived positive tourism impacts on a community and residents' subsequent support for tourism development (Choi & Murray 2010; Suess et al. 2018). This study also indicates that the residents' knowledge of the main local industries has a strong influence on their perceptions towards cycling tourism as in the work of Lankford and Howard (1994), but employment in the tourism industry and membership in a community/local organisation have no impact on residents' perceptions. These findings are not surprising as, in our study area, tourism is one of the main local industries, cycling infrastructure has been built, and there is a well-developed cycling culture

among residents. Wang and Pfister (2008) also found that community attachment measured in the respondents' length of residence and active membership in local organisations was not the predictor of residents' attitudes towards tourism, which is in the line with our findings.

Interestingly, the four independent variables related to the Danube cycle route (*living close to the Danube and familiarity with the fact, that the Danube cycle route passes through their community*) and outdoor recreation (*spend leisure time in outdoor recreation and ride a bicycle in everyday life*) influenced all factors except the "concern for cycle tourism development" factor which represents negative impacts of cycle tourism development. In addition, the level of contact with cycle tourists (communication and forming friendship) influence all factors of the modified TIAS. The residents of Belgrade and Novi Sad area might have viewed cycling tourism as a way to improve cycling infrastructure and outdoor recreation facilities, which could further contribute to their health and overall quality of life. It seems that they accept cycling tourism as a positive development tool for their community and them personally. This finding is important for tourism planners, who should focus on the economic gain for the community and on improving recreation opportunities for locals in their cycling tourism development agenda. Local authorities should ensure that residents are aware of the long-term benefits to them as a consequence of cycling tourism development and that those benefits outweigh costs. It is advised that tourism planners and local authorities organise actions that will boost local's perceived benefits, such as training/workshops for residents who provide or would like to provide cycle-friendly services, incentives for local cycling tourism businesses, build or improve cycling infrastructure and public services, as well as implement environmentally friendly projects particularly related to the Danube cycle route (e.g. renewable energy project, waste management, tree planting close to the river, support educational programmes on the topic of Danube and cycling, playground adaptations close to the river, etc.).

The costs or negative impacts of cycle tourism development encompassed in the factor labelled "concern for cycle tourism development" (F3) are most strongly influenced by forming a friendship and communicating with cycle tourists. Namely, residents who frequently visit tourist areas in the community, feel close to tourists and have forged friendships are in a greater position to recognise the benefits and minimise the costs of cycling

tourism to the community, therefore, have a higher level of support for cycling tourism development. On the contrary, residents who do not interact with cycle tourists might perceive more negative impacts of cycle tourism. This finding is in line with the work of Woosnam (2012) and supports the idea that in assessing residents' perceptions towards tourism development, measures of the relationship or interaction between residents and tourists should be included. Moreover, this finding has practical implications for tourism planners who should promote cycling and cycling tourism as an environmentally friendly activity, with numerous benefits for individuals and society and low costs, particularly compared to other types of tourism and transport. This could be done through broad community consultation in the form of town hall meetings, social media campaigns, social media discussion groups, resident surveys, and residents' focus groups that would discuss development directions and possibilities for engaging locals in cycle tourism or other less formal ways of communication. Also, tourism planners should foster positive relationships between residents and cycle tourists in the community, increasing opportunities for interaction at key attractions particularly close to the Danube, planning special events at the river, etc.

"Involvement of locals in the planning and operational stages can ensure that development will be socially and environmentally responsible and that resulting impacts will be perceived as appropriate by the host community" (Gursoy, Chi, & Dyer 2010: 383). Understanding residents' opinions of cycling tourism impacts on the community may help tourism stakeholders and sports organisations to create successful strategies for cycling tourism development.

## Conclusion

Given the growing importance of cycling tourism in Europe, particularly in the Danube region, the present study assessed residents' perceptions towards cycling tourism on the Danube cycle route in Serbia using a modified TIAS in the novel research context of cycling tourism. So far, most studies on cycling tourism focus on the tourists' attitudes and economic benefits of cycling tourism, while the research on cycling tourism development from

the residents' perspective is scarce. Therefore, this study makes a significant contribution to the literature in this field.

Findings from this research have theoretical and practical contributions. Firstly, the paper expands the existing body of work concerning residents' perceptions towards tourism development and the relationship with the relevant independent variables. Secondly, the practical recommendations given in this study may be of interest to tourism planners and managers outside of the immediate study area.

Similar research regarding residents' perceptions towards cycling tourism should be conducted in other countries through which the Danube cycle route passes, as these countries differ in their level of economic and cycling tourism development, and there are differences in a cultural and geographic context. Deery, Jago and Fredline (2012) indicated that residents with varying social, political and economic values would hold different representations of tourism's impact. Moreover, Aldred and Jungnickel (2014) highlighted that there is little work on the importance of local/national cycling culture in supporting cycling practice. In this context, in some future research, it would be interesting to conduct a comparative study on cycling tourism among Danube countries that are established cycling tourism destinations (e.g. Austria, Hungary) and emerging countries (e.g. Serbia, Romania, Bulgaria).

Future research should identify whether independent variables influence residents' perceptions of cycling tourism at the different stages of cycling tourism development and whether residents' support for it declines. Another potential moderator that may have important practical implications is the frequency of use of cycling infrastructure by residents, including cycle-friendly services as well as the level of cycle culture among residents.

As local perceptions about tourism development and its impacts on their communities are likely to change over time (Gursoy et al. 2010), research similar to the present study should be conducted continually.

Finally, we suggest further testing of the TIAS in different environments, with different types of tourism and including additional items to existing TIAS depending on the type of tourism examined. For example, in our study, negative impacts such as crowding, parking problems, traffic jams, noise, abuse of alcohol and drugs, etc. were not included as these impacts are not associated in the literature with cycle tourism.

It should be noted that the current study collected a sample of residents by a convenient sampling technique, and only focused on the Belgrade and Novi Sad section of the Danube cycle route in Serbia due to limited time, funding and manpower. Although the results provide valuable insights into residents' perceptions towards cycling tourism, they cannot be generalised to a wider population without more validation being undertaken, thus more research evidence from other countries on the Danube cycle route is suggested.

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