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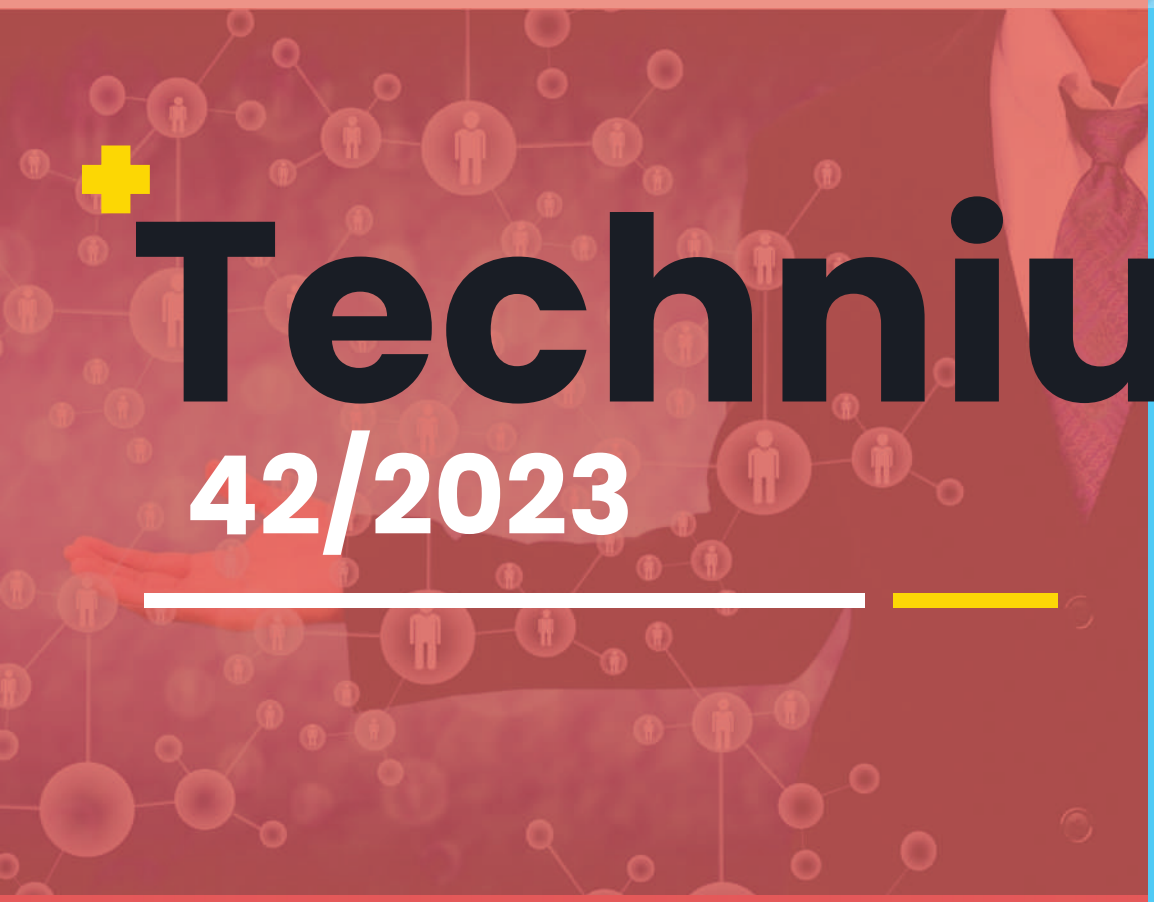

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Challenges and opportunities regarding the COVID-19 pandemic on urban mobility in Constanta, Romania

Mari-Isabella Stan

"Ovidius" University of Constanța, Faculty of Law and Administrative Sciences

stanisabella@yahoo.com

Tănase Tasențe

"Ovidius" University of Constanța, Faculty of Law and Administrative Sciences

tanase.tasente@365.univ-ovidius.ro

Mihaela Rus

"Ovidius" University of Constanța, Faculty of Law and Administrative Sciences

psiholog_m@yahoo.com

Abstract. The global COVID-19 pandemic has had a significant impact on urban mobility in Constanta, Romania and other cities around the world. This has resulted in reduced travel, increased bicycle and pedestrian trips, fewer taxicabs, and shorter public transport hours. It has also generated increased challenges for local authorities regarding safety, hygiene, air quality, road network management and public trust in public transit systems. On the other hand, the pandemic presents many opportunities for cities to rethink their urban mobility plans and adopt more sustainable transport solutions. This paper will look at the challenges and opportunities posed by the pandemic on urban mobility in Constanta and the measures that can be taken to mitigate the negative impacts while taking advantage of the opportunities it provides. This paper aims to provide an overview of the perception of urban mobility in the city of Constanța, Romania. It draws upon the results of a survey conducted among citizens in the city, which asked respondents to assess their perception regarding the quality, availability, and efficiency of urban mobility services in their area. The results show that most respondents feel that the availability of urban mobility services is limited and that the quality and efficiency of these services are poor. Additionally, majority of respondents feel that the lack of public transportation options and the lack of bicycle lanes impede urban mobility in Constanța. The paper concludes by suggesting that the city should consider investing in improved public transportation options and bike lanes in order to increase its urban mobility. Additionally, public education surrounding urban mobility and transportation safety is recommended.

Keywords: urban mobility, COVID-19 pandemic, challenges and opportunities, Constanța, Romania

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1. Introduction

Urban mobility is a critical issue for public policy all over the world. How to ensure the citizens of cities, towns, and villages can access urban services and resources through different modalities of transportation is essential for the development and quality of life of citizens.

Quality of life is a key element in the sustainable development of countries, regions and cities. However, because of the difficulties involved in measuring it, there are no clear criteria as to which aspects of the economy should be improved in order to raise living conditions. Conceptually, quality of life has an objective dimension, capturing social and economic aspects, and a subjective dimension, introducing aspects of psychological state of satisfaction (Aivaz, 2021a).

It is known that public policies refer to measures or initiatives implemented by government authorities to address societal problems (Rus, Sandu and Tasențe, 2020a). Over the years, public policy regarding urban mobility has evolved from focusing solely on the construction and maintenance of roads and infrastructures to a more holistic approach, incorporating economic, environmental, and social aspects concerning the quality of life.

The main characteristics of public policy regarding urban mobility should focus on promoting sustainable mobility by reducing car ownership and use, encouraging walking, and cycling, using more efficient public transport systems, and introducing carpooling and electric cars.

Furthermore, public policies should prioritize road safety and infrastructure maintenance, improve accessibility, improve urban design, create economic incentives and disincentives related to car use, strengthen the air quality, and reduce pollution, promote educational campaigns to raise awareness, and minimize the cost of public transport while incentivizing its usage.

In addition, public policies should consider the impact of urban mobility on marginalized communities and ensure that these communities can access potential benefits from mobility policies. Moreover, promoting multimodal transportation as well as deploying emerging technologies such as automated vehicles and networked mobility can be beneficial.

Ultimately, urban mobility public policies should strive for equity and fairness, considering the needs of all user groups and incorporating an integrated, interdisciplinary, and technological approach.

The COVID-19 pandemic has caused unprecedented disruption to urban mobility across the world (Oestreich et al., 2023), with the city of Constanta, Romania, being no different. This paper examines the challenges and opportunities for urban mobility in Constanta brought about by the current pandemic and how the city is responding to these. To promote sustainability in transportation, it is necessary to achieve a decoupling between the growth of transportation and economic growth, and to achieve a modal shift that increases the use of sustainable modes of transportation (Roberto et al., 2023).

Challenges. The COVID-19 pandemic has changed the way in which citizens are able to commute and move around the city. The public health emergency has rendered traditional transportation systems, such as buses and taxis, unusable due to individuals' fears of infection, ultimately leading to reduced public mobility in Constanta. This has had the knock-on effect of slowing the movement of goods and services, leading to economic disruption and possible job losses.

The pandemic has also influenced the city's parking systems. These have been temporarily reduced or even removed to reduce the number of vehicles on the streets and ensure

social distancing measures are being followed. This also serves to reduce the generation of emissions, both of which help improve the air quality in the city.

Furthermore, the pandemic has encouraged many individuals to turn to their own vehicles in order to get around. This has led to an increase in vehicular traffic, with reports of longer journey times, higher levels of pollution, and increased driver fatigue. All of which can have negative impacts on the health and well-being of the city's inhabitants.

Opportunities. The current pandemic has led to the emergence of new mobility solutions in Constanta, such as e-scooters and bike-sharing schemes. These solutions provide citizens with increased levels of mobility, allowing them to travel around the city without needing to use shared transportation options or rely on their own vehicles. This reduces the reliance on private cars, which in turn helps to reduce congestion levels and carbon emissions in the city.

Furthermore, the COVID-19 pandemic has been an opportunity to promote the use of public transportation in Constanta. For example, the local authorities have implemented a wealth of measures, such as contactless ticketing, enhanced sanitization, and capacity limits on buses and trams, to ensure the safety of passengers.

Finally, the current pandemic has also provided an opportunity for the city of Constanta to undertake a wide range of transport-related projects such as pedestrianization, bicycle paths, and improved public transport infrastructure. All of which can help to reduce levels of congestion, improve safety for cyclists and pedestrians, and encourage more sustainable forms of transportation across the city. Also, COVID-19 pandemic has presented both challenges and opportunities for urban mobility in Constanta, Romania. While it has caused disruption to traditional forms of transportation, it has also presented an opportunity to promote newer, more sustainable forms of mobility and to undertake various transportation-related projects. It remains to be seen what lasting effects the current pandemic will have on urban mobility in Constanta, but the city has been proactive in responding to the challenges and ensuring the continued safety of its citizens.

2. Literature review

The city of Constanta, located in the coastal area of Romania, hosts a multitude of economic activities (Stan et al., 2021a), its transport infrastructure comprising various transport networks such as roads, railways, air transport, river transport, as well as maritime transport on the Black Sea (Stan and Vintilă, 2022). At the same time, transport in Constanta takes in important flows of visitors generated by tourism activity (Aivaz et al., 2021; Stan et al., 2021b) in the Mamaia resort, while also serving citizens living in the area.

The COVID-19 pandemic has brought significant changes to urban mobility worldwide. The global outbreak forced many countries to impose restrictions (Rus, Sandu and Tasențe, 2020b; Stan, Rus and Tasențe, 2020) on public transportation and reduce traffic volume in city centers. The measures taken to curb the spread of the virus have resulted in various challenges and opportunities for urban mobility in Constanta, Romania. This literature review aims to provide insights into the challenges and opportunities that emerged due to the COVID-19 pandemic on urban mobility in Constanta, Romania, by synthesizing relevant scientific articles.

One of the most significant challenges of the COVID-19 pandemic on urban mobility is the reduction of demand for public transportation. The fear of contracting the virus on crowded public transport and the restrictions on capacity have resulted in a decline in the use of public transport in many cities worldwide, including Constanta, Romania. Abdullah and Robles (2021)

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suggest that this situation might have long-lasting effects on the public's attitude towards public transport and create an opportunity for alternative transportation modes.

The pandemic has also provided an opportunity to rethink and reshape urban mobility in Constanta. The reduction in traffic volume in city centers due to the pandemic's restrictions has offered a unique opportunity to implement alternative transportation modes, such as cycling and walking. Aloi et al. (2020) suggest that this change in mobility behavior is an opportunity to transition towards more sustainable transportation modes. The study conducted by Mesfin et al. (2022) in Melbourne, Australia, also indicates a surge in demand for cycling and walking, with the pandemic increasing the attractiveness of these modes.

Bouhouras et al. (2022) suggest that the COVID-19 pandemic has also created an opportunity to evaluate and improve bike-sharing systems. The authors studied the effects of the pandemic on bike-sharing systems, which have become more popular due to the public's concern for their safety on public transport. Bouhouras et al. (2022) conclude that bike-sharing systems' expansion and improvement might result in long-term benefits for urban mobility in Constanta.

The pandemic has also posed challenges to urban mobility in terms of traffic congestion and the resulting air pollution. Broomandi et al. (2022) estimate the benefits of the traffic and urban mobility reductions during COVID-19 lockdowns in terms of material corrosions on built cultural heritage. The authors suggest that the reductions might have resulted in an 8.5% reduction in material corrosion on the buildings in Tehran, Iran. A similar study by Li and Lasenby (2023) in Cambridge, UK, indicates that the lockdown measures have resulted in a reduction in air pollution levels and carbon emissions.

In addition to the reduction in public transport use, the pandemic has also posed challenges in terms of equity and access to urban activities. Bracarense and Oliveira (2021) discuss how the pandemic has exposed pre-existing inequalities in urban mobility, with low-income individuals being more affected by the pandemic's effects on urban mobility. The authors suggest that policymakers should address these inequalities in their urban mobility policies to improve accessibility and equity.

Recent studies (Chiriac et al., 2022; Aivaz et al., 2022) have pointed out that certain aspects of transport policy need to be further developed, such as: common rules for access to the market and to the profession; fair conditions of competition; social aspects (working hours, working and rest periods, tachograph); road transport charging (taxes and charges); constraints and sanctions; promotion of international agreements; traffic restrictions.

Moreover, the pandemic has impacted the spatial distribution of urban mobility patterns in Constanta. García-Ayllón and Kyriakidis (2022) used a case study in Cartagena, Spain, to analyze the spatial distribution of environmental impacts linked to changes in urban mobility patterns during COVID-19. The study highlights the need to analyze the impacts of urban mobility on the environment and design policies that prioritize sustainable mobility options to reduce negative environmental impacts.

In this holistic approach, a study conducted by Aivaz (2021b), based on all registered companies in Constanta County operating in the health and social care sector, presented a picture and an explorative model of analysis that can help entities make better decisions in infrastructure investments, essential in supporting mobility on the one hand and staffing on the other. This study highlighted the links between financial indicators of health and social care businesses with specific indicators aimed at increasing quality of life.

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3. Methodology and data

Research objectives:

The overall objective of the research is to analyze the preferred modes of transportation by the citizens of Constanța city, in order to obtain data on sustainable mobility and their preferences regarding public transportation modes.

Specific objectives:

1. To determine the degree of utilization of public transportation means in a typical month.
2. To analyze the preferred modes of transportation by the citizens of Constanța city.
3. To identify the factors that would determine citizens to use public transportation.

Study participans

A total of 544 respondents answered the questionnaire, of which 84.03% were female and 15.97% were male. The average age of the respondents is 25.99 years, with the youngest respondent being 17 years old and the oldest being 70 years old. The first quartile (Q1) is 20 years old, the median is 22 years old, and the third quartile (Q3) is 27.5 years old. The majority of the respondents (80.56%) have higher education, while 19.44% have secondary education. All respondents are from the city of Constanța, Romania (European Union).

The research instrument

The research instrument is a structured questionnaire and includes both open and closed questions. Open-ended questions allow participants to answer in their own words, while closed-ended questions prompt them to select from a list of options or assign a grade.

The questions are divided into four sections, each addressing a different theme of urban mobility: using public transport, encouraging the use of public transport, using bicycles and other alternative means of transport and improving mobility conditions.

In the public transport use section, participants are asked about their usual mode of travel, how often they use public transport, their monthly expenditure on transport and the means of transport used for different activities.

In the section on encouraging the use of public transport, participants are asked about the factors that would lead them to use public transport more, such as lack of parking spaces, congested traffic, or affordable price.

In the section on the use of bicycles and other alternative means of transport, participants are asked about the use of bicycles and facilities for bicycles in Constanța, as well as the possibility of introducing ecological public transport.

In the section on improving mobility conditions, participants are asked about priority options for improving sustainable mobility, such as developing a network of bicycle paths, rehabilitating streets and developing a public transport system.

Overall, this questionnaire can provide valuable information about the participants' opinions and habits regarding urban mobility in Constanța, and the collected data can be used to develop policies and projects that improve mobility in the city.

4. Results and discussion

Most of the respondents (64.58%) use their personal car most frequently when traveling in the city of Constanța, followed by 20.83% who prefer walking and 13.89% who use public transport. Only a negligible percentage (0.69%) use taxis as a means of transportation in the city (Figure 1).

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These results show that the most common way of getting around in the city of Constanța is by personal car, followed by walking and public transport. A large portion of respondents prefer to drive because it is a convenient option for those who own a car and/or live outside the city. In contrast, public transport and taxis are less preferred than individual modes of transportation, possibly due to a lack of adequate infrastructure and frequent service delays.

Some of the strengths of personal car transportation, such as control over the route and flexibility in terms of schedules, cannot be replicated when using public transport or taxis in the Constanța area. This makes the former option preferred by respondents. However, this mode of transportation also has some disadvantages, such as excessive traffic congestion and air pollution emissions.

These disadvantages can only be eliminated through the implementation of targeted measures and the education of drivers, as well as the improvement of infrastructure and services available to residents of the city of Constanța. These may include developing an efficient and better-connected public transport network, reducing taxi costs, and using innovative technologies to reduce road congestion. Additionally, local authorities should contribute to informing citizens about the benefits of public transport and provide the necessary resources to facilitate their implementation. In the long run, these measures should contribute to promoting public transportation, reducing pollution and congestion on roads, and also providing a more efficient and safer alternative to walking when crossing the city of Constanța.

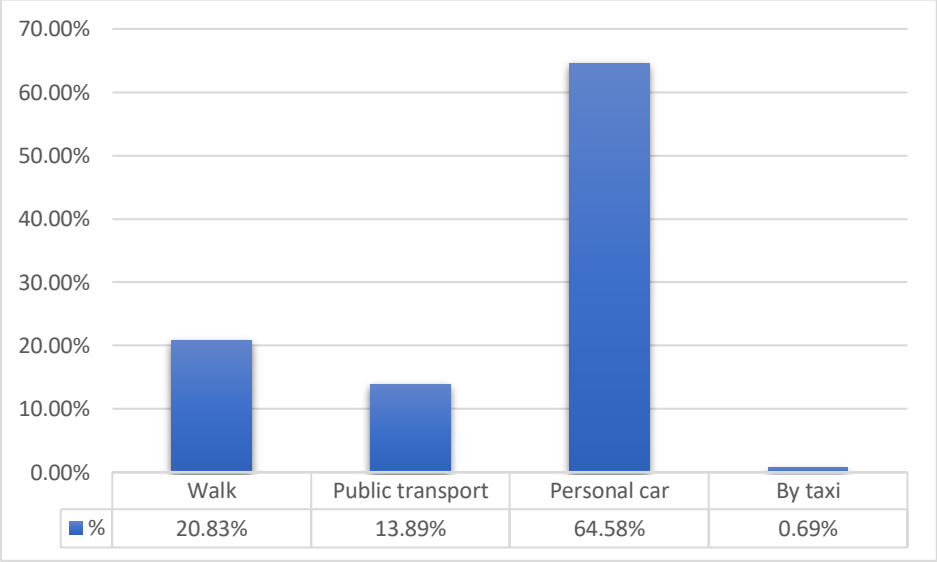

Figure 1. Way of getting around in the city of Constanța (Source: Author's work)

However, when asked if they occasionally use public transportation, 50.69% answered positively, while 49.31% answered negatively. Among them, 68.75% rarely or very rarely use public transportation, 15.97% use it often or very often, and 15.28% with a medium frequency. The main reasons identified by respondents that would encourage them to use public transportation are: increased traffic in the city (39.58%), lack of parking spaces (31.25%), not having a driver's license (22.22%), not owning a personal vehicle (13.19%), or other reasons (9.72%), such as: lower ticket prices, introduction of electric buses, guarantee of passenger safety, constant disinfection of public transportation, or the end of the Covid-19 pandemic (Figure 2).

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To ensure that public transportation is and will remain as attractive as possible, the majority of respondents suggested the introduction of modern technologies in these means of transport, including the implementation of flexible systems that provide updated information about the public transportation stop/route, contactless payment, real-time information systems, and extension of working hours based on the level of traffic and peak hours. Additionally, many of those who participated in the survey suggested introducing "premium buses" or upgrading public transportation means to ensure passengers more comfort.

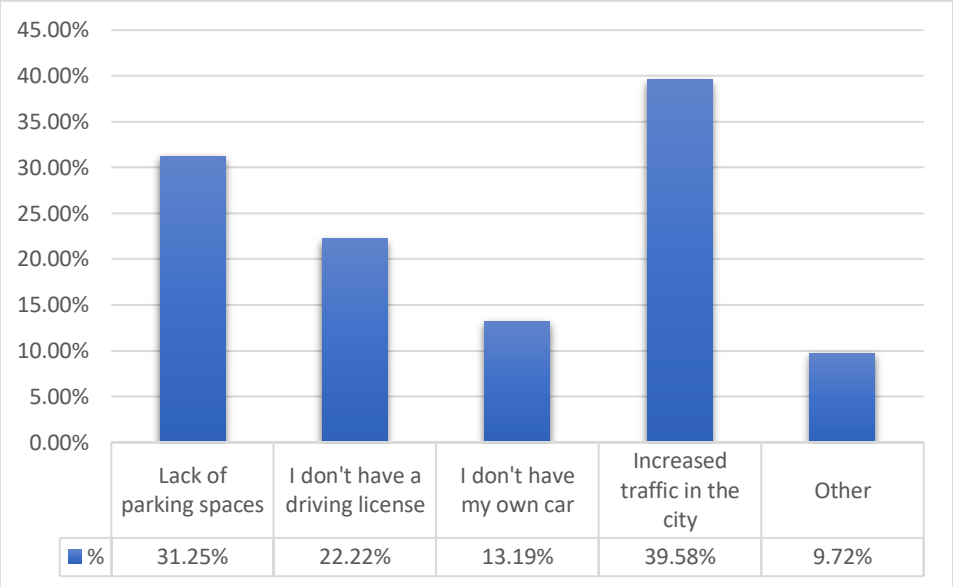

Figure 2. The main reasons identified by respondents that would encourage them to use public transportation in Constanța (Source: Author's work)

The majority (87.50%) of respondents described cleanliness as an important and very important aspect when it comes to public transportation in Constanța. This suggests that more efforts should be made to ensure that transportation stations and vehicles are clean and well-maintained. Speed and frequency of travel were considered very important, with 86.81% suggesting that the city needs to make more efforts to provide adequate transportation and a more frequent itinerary. Respondents also emphasized that Constanța needs to have appropriate means of transportation (86.11%), suggesting that intermodal transportation is important to meet the needs of travelers. Additionally, travelers need to be assured of the comfort of transportation vehicles (82.64%), indicating that the quality of the transportation means used in the municipality of Constanța should be improved. Finally, 81.94% indicated the price of public transportation as important, suggesting that measures should be taken to ensure that public transportation is accessible to all travelers (Figure 3).

The results show that in addition to cleanliness, the majority of respondents also considered frequency, speed of travel, sufficient number of transportation means, comfort, and price of public transportation to be important. These indicators suggest that an integrated approach should be considered to improve public transportation in Constanța, both in terms of quality and accessibility. Furthermore, the results indicate that most respondents focused on the aspect of the quality of public transportation services, suggesting that local authorities should invest in optimizing infrastructure and equipping it with modern means.

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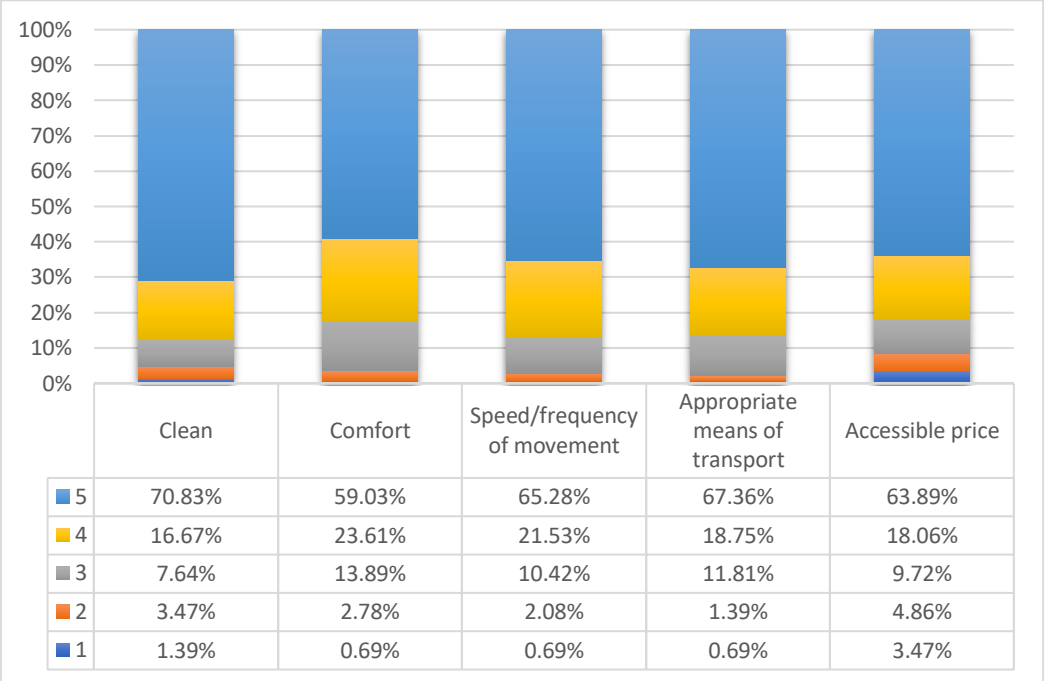
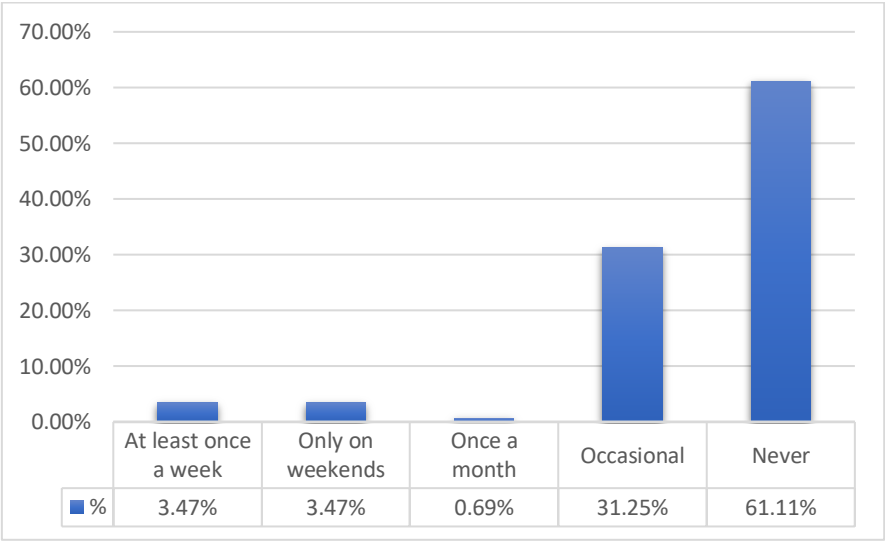


	Clean	Comfort	Speed/frequency of movement	Appropriate means of transport	Accessible price
5	70.83%	59.03%	65.28%	67.36%	63.89%
4	16.67%	23.61%	21.53%	18.75%	18.06%
3	7.64%	13.89%	10.42%	11.81%	9.72%
2	3.47%	2.78%	2.08%	1.39%	4.86%
1	1.39%	0.69%	0.69%	0.69%	3.47%

Figure 3. Important aspects for citizens regarding public transport in Constanța (Source: Author's work)

According to the majority of the study participants (61.11%), bicycles are not a means of transportation that the residents of Constanța use. Only 31.25% of them use this mode of transportation occasionally. However, 45.83% feel that there are not enough bike lanes, while 43.06% were unsure of how to answer this question, and 11.11% of the study participants believe that there are enough bike facilities in Constanța. At the same time, 85.42% agree on the introduction of eco-friendly public transportation to reduce pollution, such as electric vehicles (Figure 4).



	At least once a week	Only on weekends	Once a month	Occasional	Never
%	3.47%	3.47%	0.69%	31.25%	61.11%

Figure 4. Citizens' perception of bicycles as means of transport in Constanța (Source: Author's work)

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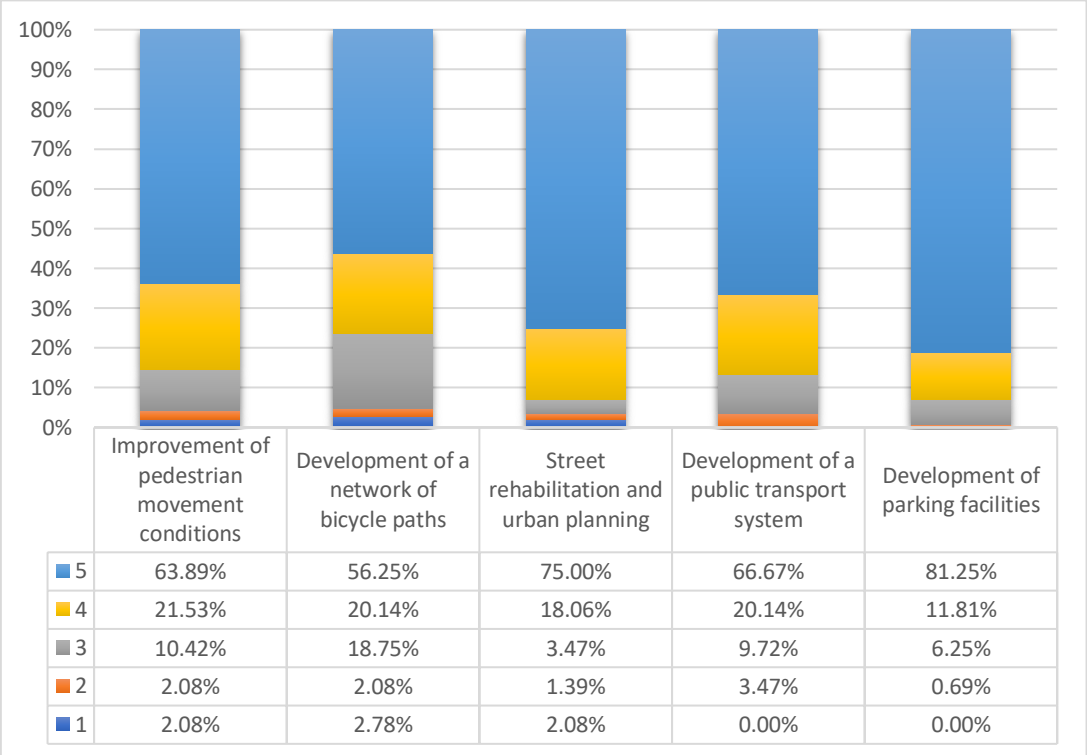
The results suggest that although there is some interest in cycling as a means of transportation, the lack of infrastructure in the form of bike lanes could be a significant barrier for residents. Therefore, the local authorities could consider investing in creating safe and accessible bike lanes to encourage more people to adopt this sustainable form of transportation.

The study also highlights the need for eco-friendly public transportation options, which are supported by a large majority of the participants. The use of electric vehicles for public transportation could be an excellent solution to address environmental concerns, and it could also improve the quality of life for the residents of Constanța by reducing traffic congestion and improving air quality.

When asked if they have any knowledge about mobility improvement projects in the municipality of Constanta, 52.78% of the study participants stated that they do not know of such projects, 28.47% preferred not to answer, and only 18.75% of the respondents affirmed that they have knowledge of mobility improvement projects. However, when asked to evaluate, in order of importance, the main directions of action for promoting sustainable mobility in Constanta, the majority of respondents (93.06%) considered the development of parking facilities and the rehabilitation of streets and urban arrangements as the most important.

On the other hand, the development of a public transportation system (86.81%), the improvement of pedestrian mobility conditions (85.42%), and the development of a network of bicycle lanes (76.39%) represent other relevant aspects for the development of sustainable urban mobility, according to the study participants (Figure 5).



	Improvement of pedestrian movement conditions	Development of a network of bicycle paths	Street rehabilitation and urban planning	Development of a public transport system	Development of parking facilities
5	63.89%	56.25%	75.00%	66.67%	81.25%
4	21.53%	20.14%	18.06%	20.14%	11.81%
3	10.42%	18.75%	3.47%	9.72%	6.25%
2	2.08%	2.08%	1.39%	3.47%	0.69%
1	2.08%	2.78%	2.08%	0.00%	0.00%

Figure 5. The average salary at the level of the companies in Constanța County operating in the field of *Real estate transactions* (Source: Author's work)

5. Conclusions

Transportation is of crucial economic importance at the level of local communities, being the responsibility of both the public and private sectors (Stan, 2022), and the cooperation between these two sectors leads to an increase in the level and quality of service provision (Stan, 2014).

The study reveals that personal cars are the most frequently used means of transportation in Constanța, followed by walking and public transport. Respondents use personal cars as they offer more control over the route and are more flexible in terms of schedules. However, this mode of transportation is also associated with excessive traffic congestion and air pollution emissions. The study highlights the need for targeted measures to reduce pollution and congestion on the roads, which include developing an efficient and better-connected public transport network, reducing taxi costs, using innovative technologies to reduce road congestion, and educating drivers.

The study indicates that public transportation could become more attractive to travelers by implementing modern technologies that provide updated information about the public transportation stop/route, contactless payment, real-time information systems, and extension of working hours based on the level of traffic and peak hours. Respondents also emphasized that Constanța needs to have appropriate means of transportation, intermodal transportation, and a comfortable means of transport. In addition, public transportation must be accessible to all travelers in terms of affordability.

The study highlights the need to invest in creating safe and accessible bike lanes to encourage more people to adopt cycling as a sustainable form of transportation. Finally, the study underlines the importance of eco-friendly public transportation, which is supported by a large majority of the participants. The use of electric vehicles for public transportation could be an excellent solution to address environmental concerns and improve the quality of life for the residents of Constanța.

6. Recommendations

Based on the study, there are several recommendations to address the transportation issues in Constanța:

1. *Develop an efficient and better-connected public transport network*: This could include implementing modern technologies, such as updated information, real-time systems, and contactless payment, as well as extending working hours based on the level of traffic and peak hours.
2. *Reduce taxi costs*: This would make public transportation more affordable and competitive with personal cars.
3. *Use innovative technologies to reduce road congestion*: This could include promoting carpooling, implementing smart traffic management systems, and encouraging the use of eco-friendly vehicles.
4. *Educate drivers*: This could include raising awareness about the negative impact of personal cars on the environment and encouraging them to use public transport and sustainable modes of transportation.
5. *Create safe and accessible bike lanes*: This would encourage more people to adopt cycling as a sustainable form of transportation.
6. *Invest in eco-friendly public transportation*: The use of electric vehicles for public transportation could be an excellent solution to address environmental concerns and improve the quality of life for the residents of Constanța.

References

[1] H. ABDULLAH E. SERRANO ROBLES: Urban Mobility after COVID-19: Long-Term Strategies for the Sustainable Mobility Transition in European Cities. *CIDOB*, ISBN: 978-84-92511-96-9, Barcelona, 2021.

[2] K.A. AIVAZ: The Impact of ICT on Education and Living Standards. Case Study in Constanta County, Romania. *Monograph „Under the presure of digitalization: challenges and solutions at organzational and industrial level"*, First Edition july 2021a, ISBN 979-12-80225-27-6, Filodiritto International Proceedings, pp. 8-16.

[3] K.A. AIVAZ: Correlations Between Infrastructure, Medical Staff and Financial Indicators of Companies Operating in the Field of Health and Social Care Services. The Case of Constanta County, Romania. *Monograph „Under the presure of digitalization: challenges and solutions at organzational and industrial level"*, First Edition july 2021b, ISBN 979-12-80225-27-6, Filodiritto International Proceedings, pp. 17-25.

[4] K.A. AIVAZ, I.F. MUNTEANU, M.I. STAN, A. CHIRIAC: A Multivariate Analysis on the Links Between Transport Noncompliance and Financial Uncertainty in Times of COVID-19 Pandemics and War. *Sustainability*, ISSN: 2071-1050, **14**(16), 10040 (2022), https://doi.org/10.3390/su141610040.

[5] K.A. AIVAZ, M.I. STAN, D.F. VINTILĂ, I. IONIȚIU: Considerations of Public and Private Entities on Tourism in the Romanian Coastal Area in the Context of Maritime Spatial Planning. In Pamfilie, R. et al. (Eds.), *BASIQ International Conference: New Trends in Sustainable Business and Consumption*, ISSN: 2457-483X, Bucharest, RO: ASE, 151-157 (2021), DOI: 10.24818/BASIQ/2021/07/019.

[6] A. ALOI, B. ALONSO, J. BENAVENTE, R. CORDERA, E. ECHÁNIZ, F. GONZÁLEZ, C. LADISA, R. LEZAMA-ROMANELLI, Á. LÓPEZ-PARRA, V. MAZZEI, L. PERRUCCI, D. PRIETO-QUINTANA, A. RODRÍGUEZ, R. SAÑUDO: Effects of the COVID-19 Lockdown on Urban Mobility: Empirical Evidence from the City of Santander (Spain). *Sustainability*, ISSN: 2071-1050, **12**(9), 3870 (2020), https://doi.org/10.3390/su12093870.

[7] M. ARIMURA, T. VINH HA, K. OKUMURA, T. ASADA: Changes in urban mobility in Sapporo city, Japan due to the Covid-19 emergency declarations. Transportation Research Interdisciplinary Perspectives, ISSN 2590-1982, **7**, 100212 (2020), https://doi.org/10.1016/j.trip.2020.100212.

[8] E. BABALIK: Urban Mobility after COVID-19: A Developing-Country Perspective. *The Town Planning* Review, **92**(2), 165-170 (2021).

[9] J. BERT, D. SCHELLONG, M. HAGENMAIER, D. HORNSTEIN, A. K. WEGSCHEIDER, T. PALME: How COVID-19 Will Shape Urban Mobility. *City*, **25**, 28–1 (2020).

[10] E. BOUHOURAS, S. BASBAS, S. FTERGIOTI, E. PASCHALIDIS, H. SIAKANTARIS: COVID-19′s Pandemic Effects on Bike Sharing Systems: A New Reality for Urban Mobility?. *Applied Sciences*, **12**(3), 1230 (2022), https://doi.org/10.3390/app12031230.

[11] B. LÍLIAN DOS SANTOS FONTES PEREIRA, R.L. MAGALHÃES DE OLIVEIRA: Access to urban activities during the Covid-19 pandemic and impacts on urban mobility: The Brazilian context. *Transport Policy*, ISSN 0967-070X, https://doi.org/10.1016/j.tranpol.2021.05.016.

[12] P. BROOMANDI, A. TLEUKEN, S. ZHAXYLYKOV, A. NIKFAL, J. RYEOL KIM, F.

KARACA: Assessment of potential benefits of traffic and urban mobility reductions during COVID-19 lockdowns: dose-response calculations for material corrosions on built cultural heritage. *Environmental Science and Pollution Research*, **29**(5), 6491-6510 (2022). https://doi.org/10.1007/s11356-021-16078-5.

[13] A. CHIRIAC, I. MUNTEANU, K.A. AIVAZ: The Financial Implications of Non-Compliance in the Transportation Business. In: R. Pamfilie, V. Dinu, C. Vasiliu, D. Pleșea, L. Tăchiciu eds. 2022. *8th BASIQ International Conference on New Trends in Sustainable Business and Consumption*, ISSN: 2457-483X, Bucharest, RO: ASE, 298-305 (2022), DOI: 10.24818/BASIQ/2022/08/039.

[14] Z. CUI, M. ZHU, S. WANG, P. WANG, Y. ZHOU, Q. CAO, C. KOPCA, Y. WANG: Traffic Performance Score for Measuring the Impact of COVID-19 on Urban Mobility. *arXiv: Physics and Society*, (2020), https://doi.org/10.48550/arXiv.2007.00648.

[15] M.R. FATMI: COVID-19 impact on urban mobility. *Journal of Urban Management*, **9**(3), 270–275 (2020), https://doi.org/10.1016/j.jum.2020.08.002.

[16] S. GARCÍA-AYLLÓN, P. KYRIAKIDIS: Spatial Analysis of Environmental Impacts Linked to Changes in Urban Mobility Patterns during COVID-19: Lessons Learned from the Cartagena Case Study. *Land*, ISSN: 2073-445X, **11**(1), 81 (2022). https://doi.org/10.3390/land11010081.

[17] Y. JIANG, J.R. LARANJO, M. THOMAS: COVID-19 lockdown policy and heterogeneous responses of urban mobility: Evidence from the Philippines. *PLoS ONE*, **17**(6), e0270555 (2022), https://doi.org/10.1371/journal.pone.0270555.

[18] C. KAKDERI, E. OIKONOMAKI, I. PAPADAKI: Smart and Resilient Urban Futures for Sustainability in the Post COVID-19 Era: A Review of Policy Responses on Urban Mobility. *Sustainability*, ISSN: 2071-1050, **13**(11), 6486 (2021), https://doi.org/10.3390/su13116486.

[19] D.V. RODRIGUEZ LARA, P. PFAFFENBICHLER, A. NÉLSON RODRIGUES DA SILVA: Modeling the resilience of urban mobility when exposed to the COVID-19 pandemic: A qualitative system dynamics approach. *Sustainable Cities and Society*, ISSN 2210-6707, **91**, 104411 (2023), https://doi.org/10.1016/j.scs.2023.104411.

[20] D. LI, J. LASENBY: Investigating impacts of COVID-19 on urban mobility and emissions. *Cities*, ISSN 0264-2751, 135, 104246 (2023), https://doi.org/10.1016/j.cities.2023.104246.

[21] C. MACHARIS, S. TORI, A. DE SÉJOURNET, I. KESERU, L. VANHAVERBEKE: Can the COVID-19 Crisis be a Catalyst for Transition to Sustainable Urban Mobility? Assessment of the Medium-and Longer-Term Impact of the COVID-19 Crisis on Mobility in Brussels. *Frontiers in Sustainability*, **2**, 725689 (2021). https://doi.org/10.3389/frsus.2021.725689.

[22] P.C. MELO: Will COVID-19 Hinder or Aid the Transition to Sustainable Urban Mobility? Spotlight on Portugal's Largest Urban Agglomeration. *Regional Science Policy & Practice*, **14**, 80-106 (2022), https://doi.org/10.1111/rsp3.12518.

[23] B.G. MESFIN, D. SUN, B. PENG: Impact of COVID-19 on Urban Mobility and Parking Demand Distribution: A Global Review with Case Study in Melbourne, Australia. *International Journal of Environmental Research and Public Health*, **19**(13), 7665 (2022), https://doi.org/10.3390/ijerph19137665.

[24] G. Nian, B. Peng, D. (Jian) Sun, W. Ma, B. Peng, T. Huang: Impact of COVID-19 on Urban Mobility during Post-Epidemic Period in Megacities: From the Perspectives of Taxi Travel and Social Vitality. *Sustainability*, ISSN: 2071-1050, **12**(19), 7954 (2020),

https://doi.org/10.3390/su12197954.

[25] L. OESTREICH, P. SANDRI RHODEN, J. DA SILVA VIEIRA, A. RUIZ-PADILLO: Impacts of the COVID-19 Pandemic on the Profile and Preferences of Urban Mobility in Brazil: Challenges and Opportunities. *Travel Behaviour & Society*, ISSN 2214-367X, **31**, 312-322 (2023), https://doi.org/10.1016/j.tbs.2023.01.002.

[26] A. ÖZDEN, S. N. A. ŞAHIN: Urban Mobility in Covid-19: How We Adapted to Change and How Should We Respond. A*cademic Platform Journal of Natural Hazards and Disaster Management*, **1**(2), 96-109 (2020).

[27] J. PARK, B. KIM: Associations of Small Business Closure and Reduced Urban Mobility with Mental Health Problems in COVID-19 Pandemic: A National Representative Sample Study. *Journal of Urban Health*, **98**, 13-26 (2021), DOI: 10.1007/s11524-020-00511-0.

[28] S.M. RAHMAN, N. RATROUT, K. ASSI, I. AL-SGHAN, U. GAZDER, I. REZA, O. RESHI: Transformation of urban mobility during COVID-19 pandemic – Lessons for transportation planning. *Journal of Transport & Health*, ISSN 2214-1405, **23**, 101257 (2021), https://doi.org/10.1016/j.jth.2021.101257.

[29] R. RAUNAK, N. SAWANT, S. SINHA: Impact of Covid-19 on Urban Mobility in Indian Cities'. *Transport and Communications Bulletin for Asia and the Pacific*, **90**, 71-85(2020).

[30] R. ROBERTO, A. ZINI, B. FELICI, M. RAO, M. NOUSSAN: Potential Benefits of Remote Working on Urban Mobility and Related Environmental Impacts: Results from a Case Study in Italy. *Applied Sciences*, **13**(1), 607 (2023), https://doi.org/10.3390/app13010607.

[31] M. RUS, M. L. SANDU, T. TASENȚE: Introduction to the analysis of public policies. *Technium Social Sciences Journal*, ISSN: 2668-7798, **3**(2), 3-6 (2020a), https://doi.org/10.47577/tssj.v3i2.155.

[32] M. RUS, M. L. SANDU, T. TASENȚE: Covid-19 crisis in Romania - between perception and attitude. *Technium Social Sciences Journal*, ISSN: 2668-7798, **6**(1), 69–87 (2020b), https://doi.org/10.47577/tssj.v6i1.332.

[33] A. DE SÉJOURNET, C. MACHARIS, S. TORI, L. VANHAVERBEKE: Evolution of Urban Mobility Behaviour in Brussels as a Result of the COVID-19 Pandemic. *Regional Science Policy & Practice*, **14**, 107-21(2022), https://doi.org/10.1111/rsp3.12525.

[34] J.-P. R. SOUCY, S. L. STURROCK, I. BERRY, D. J. WESTWOOD, N. DANEMAN, D. R. MACFADDEN, K. A. BROWN: Estimating Effects of Physical Distancing on the COVID-19 Pandemic Using an Urban Mobility Index. *medRxiv*, 2020, https://doi.org/10.1101/2020.04.05.20054288.

[35] M.I. STAN: Does the activity of passenger transport have growth potential for the sustainable development of Constanța County?. *Technium Social Sciences Journal*, ISSN: 2668-7798, **29**(1), 509–522 (2022), https://doi.org/10.47577/tssj.v29i1.6183.

[36] M.I. STAN: Public-Private Partnership-a solution for sustainable urban development of cities. *Curentul Juridic*, ISSN: 1224-9173, **56**(1), 139-147 (2014).

[37] M.I. STAN, D.F. VINTILĂ: The priorities of transport activities from the perspective of the spatial approach of the Land-Sea interactions in the Romanian coastal area. In: R. Pamfilie, V. Dinu, C. Vasiliu, D. Pleșea, L. Tăchiciu eds. 2022. *8th BASIQ International Conference on New Trends in Sustainable Business and Consumption*, ISSN: 2457-483X, Bucharest, RO: ASE, 367-374 (2022), DOI:

10.24818/BASIQ/2022/08/049.

[38] M.I. STAN, M. RUS, T. TASENȚE: Young people's perception of the measures taken by the authorities in the context of the Covid-19 pandemic. *Technium Social Sciences Journal*, ISSN: 2668-7798, **7**(1), 18–27 (2020), https://doi.org/10.47577/tssj.v7i1.516.

[39] M.I. STAN, K.A. AIVAZ, D.F. VINTILĂ, I. IONIȚIU: Synergistic Perceptions on the Regulations Oriented Towards the Development of Romanian Coastal Tourism in the Context of Maritime Spatial Planning. In Pamfilie, R. et al. (Eds.), *BASIQ International Conference: New Trends in Sustainable Business and Consumption*, ISSN: 2457-483X, Bucharest, RO: ASE, 135-141 (2021a), DOI: 10.24818/BASIQ/2021/07/017.

[40] M.I. STAN, K.A. AIVAZ, D.F. VINTILĂ, I. IONIȚIU: Assessing the perception of stakeholders regarding the impact of coastal tourism on the environment in the Romanian Black Sea coastal area. *Journal of Eastern European and Central Asian Research (JEECAR)*, **8**(4), 628-639 (2021b), https://doi.org/10.15549/jeecar.v8i4.695.

[41] D. SURACI: New Urban Mobility Strategies After the COVID-19 Pandemic. In: Howlett, R.J., Jain, L.C., Littlewood, J.R., Balas, M.M. (eds) *Smart and Sustainable Technology for Resilient Cities and Communities*. Advances in Sustainability Science and Technology. Springer, Singapore, 61-71 (2022), https://doi.org/10.1007/978-981-16-9101-0_5.

[42] A. SYED, J. ZHANG, M. MONIRUZZAMAN, I. ROUSTA, T. OMER, G. YING, H. OLAFSSON: Situation of Urban Mobility in Pakistan: Before, during, and after the COVID-19 Lockdown with Climatic Risk Perceptions. *Atmosphere*, **12**(9), 1190 (2021). https://doi.org/10.3390/atmos12091190.

[43] A. THOMBRE, A. AGARWAL: A Paradigm Shift in Urban Mobility: Policy Insights from Travel before and after COVID-19 to Seize the Opportunity. *Transport Policy*, **110**, 335-53 (2021), https://doi.org/10.1016/j.tranpol.2021.06.010.

[44] G. YOU: The Disturbance of Urban Mobility in the Context of COVID-19 Pandemic. *Cities*, ISSN 0264-2751, **128**, 103821 (2022), https://doi.org/10.1016/j.cities.2022.103821.