# TEACHING MATERIAL GUIDANCE

## 1) Title of the material

***Nikiforiadis, A.; Ayfantopoulou, G.; Stamelou, A. Assessing the Impact of COVID-19 on Bike-Sharing Usage: The Case of Thessaloniki, Greece. Sustainability 2020, 12, 8215. https://doi.org/10.3390/su12198215***

*https://www.mdpi.com/2071-1050/12/19/8215*

## 2) Which section of the SUMP it is relevant to?

This paper aims to investigate the impact that COVID-19 had on travellers' perceptions about bike sharing systems and whether the pandemic could result in a higher or lower share of trips that are being carried out with shared bikes. The results also provide evidence of the importance of safety for COVID-19 in engaging more bike users, providing them with a safe mobility option and contributing to the resilience and sustainability of the city. Therefore, the article can be linked to the third, fourth and fifth sections of the SUMP circle related respectively to the determination of planning framework, analysis of the mobility situation (in particular the analysis of problems and opportunities for all modes of transport - subsection 3.2.), scenario building and joint evaluation (development of scenarios of possible futures - subsection 4.1.) and vision and strategy development (arguments for stakeholders – subsection 5.1).

## 3) Which Mobility Manager knowledge this material is the most relevant to?

It is related to Transport and mobility planning (section 1 of the Mobility Manager competencies) especially 1d (development of mobility solutions meeting community challenges).

## 4) Problem approached and content overview

Problem approach – providing bike-sharing users with a safe mobility option and contributing to the city's resilience and sustainability in a pandemic situation. The COVID-19 pandemic has had a significant impact on urban mobility, with significant changes in travel behaviour observed. Travelers have in many cases shifted to other modes of transport, especially walking and cycling, to minimise the risk of infection. This study attempts to investigate what impact COVID-19 had on travellers' perceptions of bike sharing systems and whether the pandemic may have resulted in a higher or lower proportion of bike sharing journeys. For this purpose, a survey was conducted in the city of Thessaloniki, Greece, and the responses of 223 people were statistically analysed. The results of the analysis show that COVID-19 will not have a significant impact on the number of people who use public bikes for their trips. However, many people now find it more attractive to use the public bicycle. In addition, the results indicate that bike sharing will now become a more preferred mobility option for people who previously commuted by private car as passengers (not as drivers) and for people who were already registered bike sharing users. The results also provide evidence of the importance of safety in



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relation to COVID-19 to involve more users in cycling, to provide them with a safe mobility option, and to contribute to urban resilience and sustainability.

This article aims to explore people's views on bike-sharing after the COVID-19 survey and to determine whether they are motivated to use these systems more often. Specifically, the article aims to shed light on whether bike sharing is considered safer compared to 'competing' modes of transport, whether people believe that bike-sharing operators take all necessary safety measures, and most importantly, who are the people who are more likely to be affected by the pandemic and switch to bike sharing. To answer these questions, a survey was designed and conducted in the city of Thessaloniki, Greece, and the collected data were analysed using descriptive statistics, principal component analysis, and statistical modelling techniques (see Figure 1 for the general methodology).

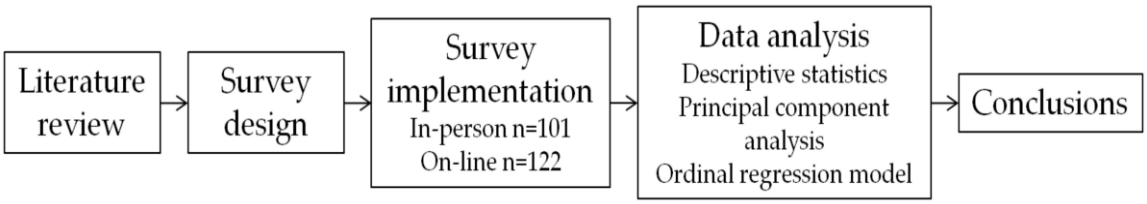


Figure 1. Overall methodology of the present study

## 5) Who could be interested in this material?

The article is aimed at students and those looking for inspiration in implementations of shared mobility services in cities when such measures are applied in SUMP.

## 6) What is worth mentioning as an innovative factor for the reader?

This study investigated people's perceptions of bike sharing systems after the emergence of the COVID-19 pandemic and the attractiveness of these systems in new times. Descriptive analysis showed that people share the view that cycling is not as safe as walking or using a private car, but may be a safer option compared to using taxis and especially compared to using public transport. Many respondents question whether operators regularly disinfect vehicles and whether it is easy to use the system without contact with their staff, which could potentially increase the risk of cross-infection. Furthermore, based on descriptive statistics, there also appears to be doubt as to whether the existing cycling infrastructure in the city is sufficient to avoid overcrowding and maintain a safe distance from other travellers.

Most of the respondents said that COVID-19 would not affect their intention to use bike sharing systems, probably indicating that in societies that rely heavily on private cars, which are considered to provide a higher level of hygiene, bike sharing systems will not succeed in attracting many new users. However, some people were positively affected (i.e. now more likely to use a bike-sharing system) and some who were negatively affected (i.e. now less likely to use a bike-sharing system). Based on the results of the ordinal regression model, it becomes clear that cycling has become a more attractive mobility option for those who traveled by private car as passengers before the pandemic. It also

became more attractive to those who had already registered with bike-sharing schemes before the pandemic and therefore had a higher propensity to travel on public bikes. This indicates the difficulty of attracting new users to shared mobility and active mobility options if they have no previous contact and experience with them. Furthermore, people who rate shared bikes more positively in terms of safety compared to COVID-19 are significantly more likely to switch to shared bikes. The results of the ordinal regression model highlight the important role of perceived safety in relation to COVID-19 in the choice of transport modes in the post-pandemic era. These results lead to the conclusion that a significant increase in the share of trips using bicycle sharing cannot be expected, at least for Thessaloniki, but it may become a viable option for certain groups of people during the pandemic and thus may become an alternative for people who do not want to use public transport. pandemic, and thus could contribute to the resilience of the city.

Identifying the important role of safety leads to the conclusion that for bike-sharing systems to become a viable and preferred mobility option, specific measures that emphasize the safety of travellers are necessary for the direction of COVID-19. In this direction, bike-sharing companies should:

- use technological solutions, such as mobile apps, to increase the automation of the bike rental and return processes and eliminate the need for contact between users and staff,
- disinfect bikes manually by spraying or preferably automatically with ultraviolet disinfection modules that can be set up at stations (for dock-based systems) or in public spaces (for dockless systems).

As far as bicycle (but also e-scooter) manufacturers are concerned, it is very important to use materials on which the virus is less persistent. Finally, if local authorities want to increase the role of bike-sharing and cycling in general in the post-COVID-19 era, they should develop additional kilometres of safe, comfortable and direct cycle paths that make it easier to get around the city. Cycle paths that will facilitate social distance between cyclists.

## 7) Limitations

The main limitations of data collection are the relatively small sample size and the fact that the survey was conducted during the summer, which may affect the attitudes of the respondents toward cycling. Expanding the sample and collecting additional data could help provide more evidence on the impact of COVID-19 on the use of bike-sharing systems. An additional limitation of this study is that only people's attitudes and intentions are examined, not their actual behaviour. Therefore, future research will be based on bike rental data and will aim to identify differences in usage patterns between before and after the introduction of COVID-19.



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