What Would Make People Use Shared Mobility Services (More)? Policy Recommendations Based on Empirical Evidence in Budapest

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Abstract. Bike-sharing provides an efficient transport option for short urban rides, and for the first/last kilometers in the case of multimodal transport. Though the modal split increase of bike-sharing is a global trend, there is still room for improvement. In our paper, we aim to provide policy recommendations to the stakeholders to improve shared bike services in Budapest. Accordingly, we revealed the experiences and expectations regarding the 'Bubi' station-based bike-sharing service (BSS). To support our arguments, we used a combination of empirical data. We conducted focus group discussions and interviews with BSS users. Moreover, we completed all this data with our findings from the representative survey carried out in the Autumn of 2024. We found, as preliminary results, that BSS users would like to see an increased fleet and service area, technological improvements to vehicles (such as electrification), and more flexible pricing.

Keywords: bike-sharing · policy recommendation · focus group · mini-interviews

1 Introduction

Bike-sharing services/systems (BSS) are emerging as increasingly popular transportation options worldwide [1]. Their adoption in urban areas is driven by the economic opportunities of the sharing economy [2] and by the need to reduce the negative consequences and environmental impacts of conventional transport modes, especially private car use [3]. Shared micro-mobility also has the potential to enhance public transport (PT) networks by providing first- and last-mile solutions and improving accessibility in areas underserved by PT. Consequently, shared bikes may serve as appealing substitutes for car travel and contribute to additional health benefits [4].

The COVID-19 pandemic reshaped travel behavior as many shifted to private modes to maintain distancing and reduce infection risks (see, for example, in [5]). The crisis

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underscored the importance of resilient transport systems offering sustainable options that enable social distancing. PT rides decreased sharply due to infection concerns [6–8], undermining the ability of PT to safely move people and risking reinforcing car dependency. In response, many cities promoted active mobility through new cycling lanes, car-free zones, and wider sidewalks [9, 10]. Budapest added 20 km of temporary bike lanes to the existing 256 km, mainly by reducing car lanes [11], most of which became permanent. Such measures proved effective; cycling rose by 11–48% in European cities where temporary bike lanes were implemented [12].

All in all, the size of the shared mobility market is growing. Based on data from 115 European cities, the station-based bike fleets grew 9% and free-floating bikes 50% in 2023 compared to 2022. Furthermore, the ridership increased by 13% for station-based BSS, 54% for free-floating BSS [13]. Although the growth is constant, the modal split is low. The local strategies in Budapest aim to raise the modal shift of micromobility by 2030 to 20% walking, 10% micromobility, and 50% PT from the current 19, 5, and 40%, respectively [14].

To achieve this goal, new policies should be introduced, but first, understanding the usage habits, needs, and problems/challenges is essential.

Accordingly, this study summarizes users' attitudes and norms regarding BSS use in Budapest. It synthesizes the results of focus group interviews, on-site mini-interviews, and a representative questionnaire survey, and formulates development recommendations. The paper is structured as follows: Sect. 2 presents the case study area and methods, Sect. 3 the main results, Sect. 4 the user-based implications for development, and the final section the conclusions.

2 Data and Methods

2.1 Biking Infrastructure and Bike-Sharing in Budapest

The municipality-operated station-based BSS (Bubi) has been in operation since 2014. The service area of BSS covers the city center, currently 37.8 km2. 211 stations are in the system, resulting in 5.6 stations per km^2, which is lower than in Paris (33) but similar to Seoul (6.5). In 2021, the system was completely renewed (lighter bikes, a new mobile application, and a new rental process), boosting use (651,592 rentals in 2015; 3.5 million in 2024). Another renewal round is planned for 2026. Unfortunately, the system is suspended between March and June 2026, due to the transition to the new system. During the study period (2024–2025), 2460 of the same type of regular bikes were available. The monthly pass costs 2.5 EUR, including the first 30 min free for each ride. Bubi was the only BSS system in Budapest, but there were private scooter-sharing services providing free-floating services, except in the city center, where the so-called Mobi-points should be used. Mobi-points provide designated parking for micromobility and were introduced to create more organized parking.

The continental climate influences rentals. From May to October, the monthly trips are around 400,000, but a significant decrease is observed in winter (slightly under 200,000 per month). In general, based on data from May 2024, the average hourly rental is 561, which is the highest on weekday afternoons (1140) and Saturday afternoons

(908). The average rental time is about 14 min: 13 min on weekday afternoons and nearly 15 min on Saturday afternoons.

2.2 Data Collection and Analysis

The questionnaire survey was conducted by TÁRKI (Social Research Institute) between 20 October and 10 November 2024. It consisted of three main sections: (1) general travel behavior, (2) shared mobility use, and (3) socio-demographic characteristics. In total, 836 valid responses were collected, forming a dataset representative of Budapest's population by age, gender, and educational attainment. To reduce sampling bias and improve external validity, post-stratification weights were applied using statistics from the Central Statistical Office. The data were analyzed in SPSS. General descriptive statistics on shared mobility use in Budapest are presented in [15].

Focus group interviews were applied to explore aspects of using shared services. This qualitative method does not allow for generalization, but since focus groups are designed to cover a range of perspectives within one issue [16], it is suitable for our goals. We held 6 online focus group discussions in June 2024, each with 5–11 participants recruited via shared service providers, lasting 90–120 min. There were 46 participants, the majority of whom were men (37 versus 9). The qualitative data were analyzed manually with coding.

And lastly, in the Spring of 2025, we conducted 77 mini-interviews with BSS users in different locations (Mobi points) in order to learn from their customs and experiences. There were three blocks: (i) the general use of all modes of transport, (ii) BSS usage and problems, and (iii) general sociodemographic characteristics. There were 55 men and 22 women among the respondents; the average age was 28 (the youngest was 18 and the oldest was 62 years old), 51 out of the 77 had a diploma.

There are limitations of these methods (such as the sampling during the interviews, recruitment in focus groups, and only respondents with a driving license in the questionnaire survey because the main goal was to analyze car-sharing users, therefore, having driving license was a requirement for participating), but since in this paper we combine the methods, we believe that it is sufficient to provide recommendations.

3 Results

3.1 Basic Distributions

Based on the representative survey, 14% of respondents were active BSS users, and 13% were former users (who used to use it but no longer do). The rest (73%) never used it. However, most likely, there are more users since the sample includes only respondents who have a driver's license.

Regarding the socio-demographic indicators (Fig. 1), the following can be stated. Active users include a higher share of men than the full sample (57% vs. 49%), although this difference is not statistically significant. By contrast, age shows a significant negative relationship with activity: BSS use decreases with age, meaning that younger respondents are overrepresented among active users, while older age groups are underrepresented.

In particular, the 18–29 and 30–39 age groups account for 35% and 30% of active users, compared to 22% and 22% in the full sample, whereas the 40–49 and 50–65 groups account for 25% and 10%, compared to 26% and 31%, respectively. Education and income also influence usage, as respondents with higher education and income are somewhat more likely to use BSS, although differences by education are relatively small (2–3%). In terms of income, those with a net monthly income below EUR 770 per capita are underrepresented among active users. This partly contradicts one of the broader aims of shared mobility services, namely to improve accessibility for all and reduce social inequalities, as such services often favor already advantaged groups [17]. It should also be noted that access requires a smartphone, internet connection, and a registered bank card, which may further narrow the user base. Finally, there is a slight relationship with car ownership: respondents without regular access to a car are somewhat overrepresented among active users. Those who live in the city center and in the Bubi service area use it in higher ratios than those who live on the outskirts (where the service is not available, Fig. 2.).

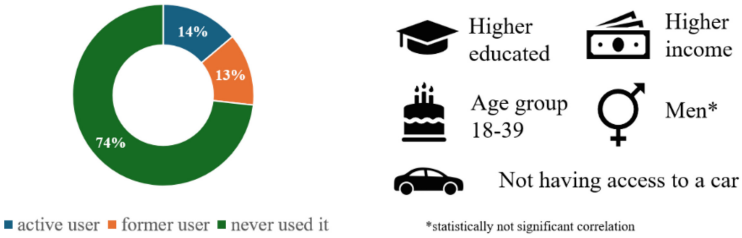


Fig. 1. Basic characteristics of bike-sharing users

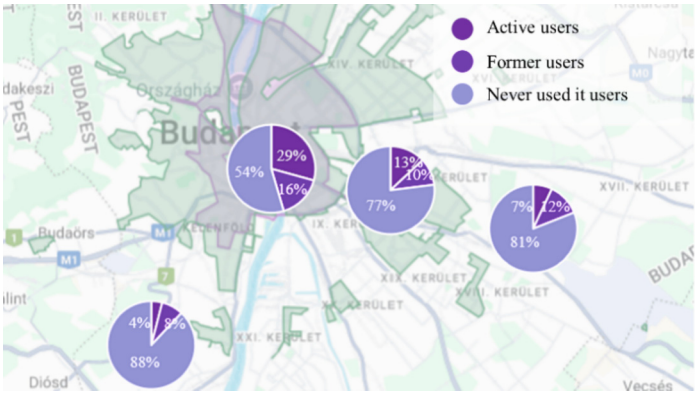


Fig. 2. Bike-sharing users by residence, % (N = 836)

3.2 Usage in Practice

16 of the interviewees use BSS on a daily basis, and another 17 use it more than once a week. According to the questionnaire, there were 108 active users, of whom 5 use it daily, 19 several times a week, 45 several times a month, and 39 rarely. The difference can stem from the different methods, but the results still indicate a realistically limited yet clearly identifiable user group, in line with the relatively low modal share of BSS in Budapest (app. 1–2%). A bit less than half of the interview respondents (31) used it mainly for commuting to work or to university, and 13 to reach a leisure activity (e.g., gym, restaurant).

Regarding the replacement of the BSS ("If this service was not available, what means of transport would you use for your various journeys?"), foot and car were chosen at the highest rates across the whole sample, but PT and car were chosen at the highest rates among active users (Fig. 3). This indicates that BSS can replace car use in the city, but the service needs to be improved.

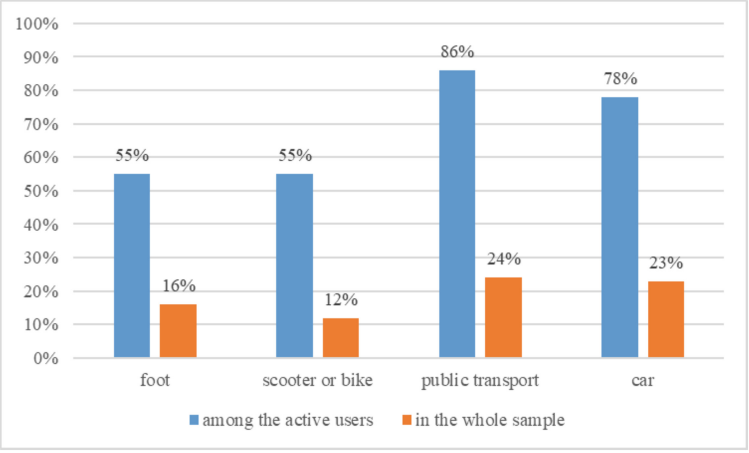


Fig. 3. Replacement of bike-sharing (multiple choices), % (N = 836)

The fact that almost all our interview respondents had a monthly pass and most of them would use PT instead of BSS supports the idea that many use BSS and PT in an integrated way, but mostly instead of PT. Only 29 of the 77 interviewees use cars as well (6 of them on a daily basis)

3.3 Motivations and Evaluation

Weather is an important factor in using BSS: our interviewees and the participants of the focus groups also mentioned good weather (but not too hot) as a positive factor in choosing the service, and bad weather as an obstacle. This also came up in other research [18, 19]. Furthermore, many interviewees consider it fast as well, but this was not a consensus in the focus group discussions.

Focus group participants were asked to rate several factors based on their perceived importance in choosing transport (with the help of the 'Mentimeter' tool). Environmental consciousness was rated 6.4 out of 10. It means that it is not a priority, but it is still an important factor.

The results of the focus group discussions showed that the users of BSS were unanimously positively evaluated: the words 'environmentally conscious', 'sporty', 'young', 'brave', 'practical', and 'conscious' were used the most frequently. Regarding the system, some participants highlighted their "positive disappointment" after the system renewal in 2021. (Before that, the BSS had a rather negative reputation (see in [18].) Safety concerns came up often during the focus group discussions, quoting the lack of helmets and insurance. However, mandatory helmet use may deter existing users; therefore, helmet use should remain optional, for example by equipping some bicycles with helmets and marking these bicycles in the application. The lack of helmets came up in other research as well as a hindrance for using BSS [18].

The most significant problems of the interviewees were the following, in decreasing order from frequent mentions: the lack of proper technical condition, the lack of availability, and the difficulty of opening/locking the bike.

4 User-Based Implications for BSS Development

Based on the experiences and issues that occurred in conversations or in questionnaires, the following recommendations can be formulated.

1. Flexible pricing: in terms of increasing the renting period from 30 min and having a pass for only half of the year. For example, a participant in the focus group discussion said that he would like to use the bikes for longer periods (as opposed to the thirty-minute limit), and another one said she is not using the BSS throughout the whole year (due to weather conditions), so she would prefer a half-year pass, which will be introduced according to the system renewal plan.
2. Enlarging the service area (coverage): many respondents in the focus group discussions and in the interviews mentioned that most of the sharing services are not available on the outskirts of Budapest, which would be very important to replace private cars. This is especially relevant because some participants argued that in the city center, one could easily commute by PT. Hence, the shared services are more important in the suburbs. For example: "I have the same problem with the Bubi and the shared cars because they are in places where PT is dense anyway." (man, 57)
3. Increasing the fleet: since some respondents mentioned that there are no available bikes, it would be beneficial to increase the number of bikes.
4. Technological improvements are meant to improve the mechanical status of the bikes because now they face issues with locking and unlocking the vehicle, and it also means improvements, such as electrification, which is also in the renewal plan.

However, these user-based implications may also entail higher operational costs; for example, a larger service area or a more flexible, quasi-free-floating service may require more intensive bicycle rebalancing. Accordingly, such user-based implications should only be implemented after careful evaluation of their costs and benefits.

5 Conclusion

BSS in Budapest has become more popular during the past years due to the general (global) trends, the COVID-19 pandemic (which paved the way – via social distancing – to the different forms of micromobility), and the improvements of the Bubi service in 2021. However, there are still some complaints, which we summarized in this paper based on empirical data collected with a combination of methods, such as on-site interviews, focus group interviews, and questionnaire surveys. The main user-based implications for BSS development are as follows: a flexible tariff structure, an increased service area, and an increased fleet size. The formulated recommendations also reinforce the development plans. Most of the recommendations will be implemented through the developments planned for 2026. Beyond Budapest, these findings may also be relevant for other cities with a station-based BSS and a strong public transport backbone. Rather than fixed prescriptions, the recommendations should be seen as transferable development principles: more flexible tariffs may better serve seasonal and occasional users, wider coverage can improve access in underserved districts, and a larger fleet and technological improvements can enhance reliability and everyday usability. At the same time, their applicability depends on local urban structure and operational capacity, so these measures should be assessed against local costs and benefits. From a research perspective, the study advances the literature by showing how a mixed-method approach can translate user perceptions and barriers into concrete development directions. With further improvements, some of which are already in the plan, Budapest can expect a growth in BSS usage and therefore will need to prepare the infrastructure to accommodate it.

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