Characteristics of a regional ride-share platform – Motivations and spatial properties in Hungary, 2020

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Research conducted at the Budapest University of Technology and Economics aimed at exploring the characteristics of the users of a regional ride-share platform through the implementation of a questionnaire survey. Data from drivers and passengers active on the platform were collected to better understand the demographic, psychographic, behavioral and geographic characteristics of the users of the platform. The factors analyzed included the most important motivations for joining and using the platform as well as the spatial characteristics of platform use, such as differences between the behavior of users living and working in cities and in the countryside.

The results based on 681 questionnaires provide an elaborate picture of the platform operated by the ride-share company. the authors found that users represent a diverse set of individuals from different age and income groups and a wide range of educational backgrounds. Looking at factors that determine the use of the platform, the research identified various sources of motivation from financial incentives through comfort and cost to social factors, such as companionship. Finally, the spatial characteristics of platform use were also analysed. The results highlight differences between those who live and/or work in Budapest and in the countryside, as well as between those who use the platform for commuting and those who have other purposes.

Introduction

Companies using innovative business models grow rapidly and threaten incumbents in many sectors of the economy. One such innovative business model, namely, the sharing economy, has gained importance, especially in the tourism and transportation sectors. Many sharing initiatives have grown from marginal endeavours into large, multinational businesses, which have important implications for the economy and society by changing our lifestyles and the way business is done.

The sharing economy replaces ownership by the provision of services and thus offers a better utilization of resources. It is made possible by the widespread use of internet platforms, which provide real-time access to a broad range of services.

Despite the short history of the sharing economy, research results regarding its most important characteristics are accumulating continuously. However, our understanding still lacks detail regarding the motivations to engage in sharing economy activities as well as the spatial patterns of platform use.

The following article intends to introduce the results of a research project assessing the users of Oszkár, a regional ride-share platform based in Budapest, Hungary, which has grown into an important regional player used by tens of thousands of users every day.

First, we outline the typical features and types of the sharing economy, as well as the most important motivations to engage in resource sharing based on the literature. Next, we introduce our research questions and research method to be followed by the presentation of our most important results. Finally, we draw our conclusions and make suggestions to decision-makers influencing the future of the sharing economy.

Literature review

General characteristics and types of the sharing economy

The sharing economy is most often seen as a branch of the economy that brings underutilized resources onto the market, be they objects, spaces or knowledge (Botsman 2013). The sharing economy is based on goods that represent a relatively significant value for consumers yet are available in large quantities – so-called 'mid-grained' goods (Lamberton 2016).

Resources can be shared in exchange for financial compensation or for free (Botsman 2013). The first sharing initiatives that provided the basis of today's solutions were typically available without direct compensation (see, e.g., Couchsurfing). However, as users realized the benefits of such services, businesses also recognized their potential, and the initial initiatives were replaced by profit-oriented enterprises, which quickly outrivaled traditional solutions on the market. As a result, the purpose of many sharing economy initiatives shifted from the solution of environmental and social problems to profit-making, which provoked criticism.

A necessary but not sufficient condition for the rapid rise of the sharing economy is the spread of internet use, especially on mobile devices since sharing economy businesses operate through online platforms that enable supply and demand to match (Wosskow 2014).

The sharing economy also assumes the economic rationality and price sensitivity of consumers, changes in consumer habits, and changes in urbanization and other social factors (PwC 2015). Younger generations use the services of such companies more often due to their more flexible attitude (Frost & Sullivan 2010).

The sharing economy can also be approached from the point of view of the economic effects of providing temporary access to unused assets (see, e.g., Böcker–Meelen 2017, Frenken 2017). With the help of sharing, users can earn income and/or save resources or access services that they could not afford before (Botsman 2013, Belk 2014, Böcker–Meelen 2017).

The novelty of the field is clearly demonstrated by the variety of names found in the literature to identify the different types of resource sharing. We speak of collaborative consumption when "using the coordination of users, a resource is acquired and redistributed in exchange for monetary compensation or other compensation" (Belk 2014: p. 1597). Another frequently used term is the peer economy, which has two important characteristics: internet-based connection and the utilization of goods and resources (Bellotti et al. 2015). The peer economy or peer-to-peer economy specifically refers to those solutions where the goods that are the subject of supply and demand are owned by private individuals (for example: Airbnb, Oszkár, gardrobcsere.hu) (see Selloni 2017). According to Eckhardt–Bardhi (2015), the use of the term 'sharing economy' is not appropriate in cases where sharing is based on the mediating role of a market actor (see, for example, Uber, Airbnb). Such solutions should be called the 'access-based economy', since users are not looking for a social experience but for cheap or convenient solutions, and they pay to access them (Eckhart–Bardhi 2015).

According to Schor's typification, solutions of the sharing economy can be classified based on three aspects: type of service (P2P = peer-to-peer, i.e., between users or B2P = business to peer, i.e., between a business and its users); profit orientation (for-profit or nonprofit); and the type of use (recycling of goods into use, increasing the use of durable assets, exchanging services and sharing profitable assets) (Schor 2014).

According to Frenken (2017), the sharing economy is a combination of peer-to-peer and access-based solutions and the circular economy. Both P2P and B2P business models can be part of the sharing economy (Botsman 2013), which increasingly extends to B2B markets (Brooks 2017). Not only large but also small companies actively participate in the different types of sharing economies. In fact, sharing economy businesses often start up as micro, small and medium-sized companies, which then grow into international businesses (e.g., Airbnb, Uber) (Schor 2014).

The peer-to-peer economy is fundamentally based on trust. This is important for both the company and the users: users will use the "service" of others about whom they find good feedback, while new users will use a given platform because they see that previous users already use it with confidence (Botsman 2013). Platform providers urge their users to record their experiences on the platforms, which creates a so-called 'trust bank' and enlarges the radius of trust of individuals to strangers outside of their families and friends (Szabó–Gupta 2020). The fast accumulation of this database of feedback makes it difficult for competitors to enter a given market since users prefer well-known platforms with a large number of users and evaluations already present (Zilahy 2016).

In spite of the increasing knowledge about the different manifestations of the sharing economy, there are still a number of open questions, which require the attention of researchers and policy-makers alike and the ultimate debate, whether the sharing economy can lead to more prospering societies and if yes, under what circumstances, is still ongoing.

A study commissioned by the European Parliament as early as 2016 summarized the economic, social and environmental impacts of the sharing economy and brought attention to the opportunity cost of missing policy action at the European level (Goudin 2016).

More recently, Frenken–Schor (2019: p. 130) identified a number of issues relating to the societal impacts of the sharing economy, stating that 'precise impacts are likely to remain unclear for a long time to come' for both theoretical and practical reasons. The authors identify a number of issues, which require further research including the environmental, social and economic aspects of the sharing economy by introducing both its potential benefits and adverse effects.

Several authors concentrate on specific issues related to the sharing economy. For example, Beckmann–Hoose (2022) examine work through platforms and how it weakens labor- and welfare-related institutions. Bach et al. (2023) concentrate on spatial access equity and social justice, concluding that there is insufficient evidence of the overall benefits of scooter sharing services and that more research is needed to justify significant public funding in the field.

Sutherland–Jarrahi (2018: p. 338) take a technological perspective and claim that while there is a significant amount of research on the sharing economy as a business model, 'the economic, and social aspects of the sharing economy have not been satisfactorily drawn together into an integrated, sociotechnical understanding of the technological element of the sharing economy'.

While this article cannot provide a comprehensive summary of every aspect of the sharing economy studied in the literature, we can conclude that research has only taken the first steps in this field, and what is missing most is the understanding of the overall, systemic effects of the sharing economy on society.

To contribute to such an understanding, we examined the motivations of individuals to participate in the sharing economy and the spatial aspects of a ride-share platform in Hungary.

Motivations to engage in the sharing economy

Users may have a diverse set of motivations to engage in the sharing economy.

When examining the users of a collaborative consumption platform, Hamari et al. (2015) identified perceived sustainability and enjoyment as factors that have a positive influence on users' attitudes regarding the services of the sharing economy, and while sustainability had only a minor role in actual behavior, enjoyment remained an important factor. They also found that economic benefits do not have a significant effect on attitude toward collaborative consumption, but they have a significantly positive direct influence on intention to participate in collaborative consumption.

Based on Hamari et al. (2015), Yang–Sungsook (2016). studied how motivation for the sharing economy and perceived security affect both attitude and loyalty toward an apartment sharing platform. They found that enjoyment and reputation are significant antecedents of attitude toward the platform, while sustainability and economic benefits play a minor role. Their results also showed that perceived security in online services played an even more important role than enjoyment and reputation.

Böcker–Meelen (2017) investigated the citizens of Amsterdam, the Netherlands, regarding their motivations to participate in different types of the sharing economy, namely, sharing cars, rides, accommodation, tools and meals. They conclude that 'motivations to participate differ between sociodemographic groups, between users and providers, and especially between different types of shared goods examined'. They found that accommodation and car sharing are dominated by extrinsic and economic motivations, while ride, tool and meal sharing are influenced more by intrinsic social and environmental motivations (Böcker–Meelen 2017).

Gazzola et al. (2018) examined the motivation factors of Italian sharing economy users. They found that out of four potential motivation factors (economic benefits, practicality/product availability, socializing and sustainable development/social responsibility), only practicality/product availability was not a significant precursor of sharing economy behavior. According to their assessment, economic factors are the most important motivators, followed by socializing (companionship with other users) and sustainability, which had a much weaker effect.

Sijabat (2019), assessing the motivation factors of users of ridesharing platforms in Indonesia, concluded that economic factors are most dominant, followed by technological factors, while environmental and social factors are less important to users.

Previous studies have uncovered a number of factors motivating the users of sharing economy platforms (see a summary of findings in Table 1); however, the results are not conclusive since different types of sharing economy platforms operating in diverse socioenvironmental contexts may demonstrate different patterns.

Summary of the literature: motivations to use the sharing economy

Authors, year of publication	Context	Main findings	Limitations
Hamari et al. (2015)	Members of a collaborative consumption meta platform	Perceived sustainability and enjoyment influence attitude. Enjoyment and economic benefits influence intensions	Members are registered on different types of sharing economy platforms and do not necessarily actually use the services provided
Yang–Sungsook (2016)	Users of an apartment sharing platform in South Korea	Enjoyment and reputation influence attitude. Perceived security is even more important. Economic benefits and sustainability have a minor role	New platform in South Korea with limited experiences
Böcker–Meelen (2017)	Amsterdam citizens sharing cars, rides, apartments, tools and meals	Different forms of sharing are motivated by different factors. Car sharing and apartment sharing: extrinsic motivations, while meals and tool sharing: intrinsic motivations	Based on willingness to share, not actual participation. Limited number of motivations
Gazzola et al. (2019)	Italian users of sharing economy platforms	Economic factors most important followed by socializing and sustainability. Practical factors not significant.	Type of sharing economy platform not specified
Rosdiana (2019)	Users of ride-share platforms in Indonesia	Economic factors are most dominant, followed by technological factors. Environmental and social factors less important	Members are registered on three different platforms. Local transportation solutions based on ride hailing

Spatial considerations of the sharing economy

Another area that requires research effort is related to the spatial characteristics of platform use, which has been explored before, especially in the case of apartment sharing.

Dudás et al. (2017) analyzed the socioeconomic factors influencing the spatial distribution of Airbnb listings in New York City. They concluded that Airbnb accommodations are more frequent in areas with younger populations and a larger

number of points of interest. They also found evidence of a connection between gentrification and growing Airbnb offers (Dudás et al. 2017).

Kincses et al. (2016) focus on transit tourism in Hungary and note that the sharing economy cannot be neglected in the process of understanding the expenditures of transit tourism participants.

Research by Casado-Diaz et al. (2020) reviewed the literature regarding the spatial characteristics of home exchange (nonmonetized P2P accommodation sharing) and concluded that 'home exchanges constitute an interesting alternative to traditional hospitality, promoting both "off the tourist track" destinations and alternative neighborhoods to stay in when visiting traditional destinations' (Casado-Diaz et al. 2020: p. 13) and called for more research regarding the spatial distribution of home exchange offers.

Monetized accommodation-sharing platforms (such as Airbnb), however, are often criticized based on their influence on city development and tourism. Increasing rental prices (e.g., Lee 2016), elevated pressure on city centers already suffering from over-tourism (e.g., Sans–Quaglieri 2016) and negative impacts on social and environmental sustainability (e.g., Contu 2019) are just some of the few critiques raised over the short lifespan of these platforms.

An early assessment of the rideshare platform Oszkár based in Hungary by Bálint–Trócsányi (2016) concluded that users are young people who have a higher level of education than the general population. Regarding the spatial characteristics of platform use, the authors found that the platform is popular in regions and settlements where 'a huge gap can be found between fixed public transportation schedules and good accessibility of motorways, and it significantly reduces travel time and rationalizes costs' (Bálint–Trócsányi 2016: p. 404). Their results also demonstrate the dominance of the capital city, Budapest, and that no alternative transportation routes have developed in the country, which may contribute to the restructuring of the country's transportation network (Bálint–Trócsányi 2016).

Another attempt to describe the rideshare platform of Oszkár by analyzing basic data of more than 860,000 trips over an eight-year period concluded that trips by drivers and passengers form a network that connects approximately 1600 settlements in Hungary and abroad (Soltész–Zilahy 2020). In the same year, 450 000 trips were made by platform users using the platform. Budapest, the capital city, proved to be the most connected hub within the network (with approximately 1200 connections), followed by large county seats, while smaller settlements have a much more limited number of connections. The research also showed that the identified network follows the characteristics of scale-free networks (Soltész–Zilahy 2020).

The current research aims to extend previous results by analyzing the patterns of platform use by users living and working in different types of settlements and by assessing commuter behavior through the platform.

Research questions and method

To better understand the characteristics of the sharing economy, we aimed to analyze the users of Oszkár, a regional ride-share platform based in Budapest, Hungary. Our objective was to uncover demographic, psychographic, behavioral and geographic features of platform use by answering the following research questions:

1. What are the most important demographic characteristics of different platform users?
2. Which are the most important factors motivating platform use?
3. What are the most important features of platform use (frequency, direction, etc.)?
4. What spatial aspects of platform use can be identified?

The platform of Oszkár connects users to share their long-distance trips (i.e., between different settlements and not within a certain settlement). The network of settlements created by Oszkár includes both Hungarian and foreign settlements, although most of the trips facilitated by the platform aim at domestic destinations and most users are Hungarian.

Users may use the platform as drivers, who pick up passengers; as passengers, who join drivers on their trips or both. Based on this distinction, platform members can be divided into four distinct categories: those who use the platform predominantly as drivers; those who use it mainly as passengers; 'professional drivers', who use the platform for business purposes; and finally those who register on the platform but do not actually use it.

To achieve our research objectives, four electronic survey questionnaires were developed for the four user groups identified. Questionnaires included questions that were common for all user groups and questions specific to the different user groups. The questionnaires were sent to the users through the platform by e-mail with the help of the platform operator in 2020, just before the start of the Covid-19 pandemic, which did not distort our results.

Altogether, 472 drivers and 242 passengers completed the questionnaire, which consisted of both open-ended and multiple-choice questions. Of these, 33 were removed from the database because of duplications and mindless/missing responses, leaving 681 questionnaires for the detailed analysis, which was carried out using the SPSS 28.0 software tool.

This article aims to introduce the results of the two survey questionnaires prepared for drivers and passengers by exploring the association between different variables and by identifying groups of users with the help of cluster analysis.

Our results are limited by several factors. First, patterns of platform use may be influenced by several factors 'outside' the platform, including alternative means of transportation, economic factors and the geographic structure of the country, which limit the relevance of our results for other platforms operating outside of the country.

Second, since our sample is not representative of Oszkár users in general, our results can be deemed an exploratory study rather than an exact description of platform behavior.

Results of the survey

Demographic characteristics of platform users

Approximately two-thirds of the respondents use the platform predominantly as drivers (64.6%), while one-third use it as passengers (33.6%). The average age of respondents in the sample is 43.57 years, with a median age of 44 years and a standard deviation of 11.34 years. The youngest respondent was 18 years old, while the oldest respondent was 73. As indicated in Figure 1, according to the sample, ridesharing is not only for the young: most respondents were middle aged, and representatives of the older generations are also among active users (this is in line with the findings of Berde–Tőkés (2020), who recognized the increasing share of older users on the Oszkár platform). Moreover, no significant differences between the age distribution of passengers and drivers or men and women were found.

Figure 1

### Age distribution of platform users, 2020
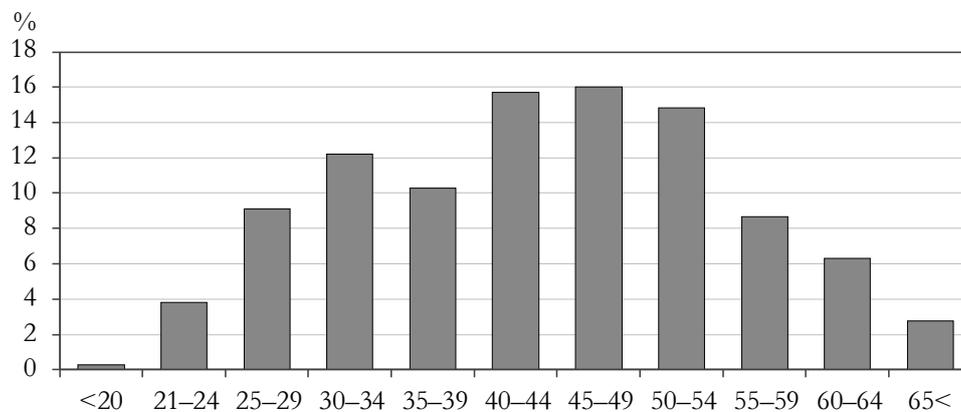
The majority of respondents were male (61.2%), while women accounted for 38.8% of the completed questionnaires. According to the experiences of the platform operator, the frequency of platform use by men and women is similar; however, drivers are more often men than women. This is reflected in the sample, as shown in Figure 2.

Gender of drivers and passengers in the sample, 2020

Platform users are well educated: a bachelor's degree was more often mentioned as the highest degree (34%) than a high school diploma (29.7%), and many have a master's or equivalent degree (23.3%). The difference between passengers and drivers regarding their education did not prove significant.

Type of employment, 2020
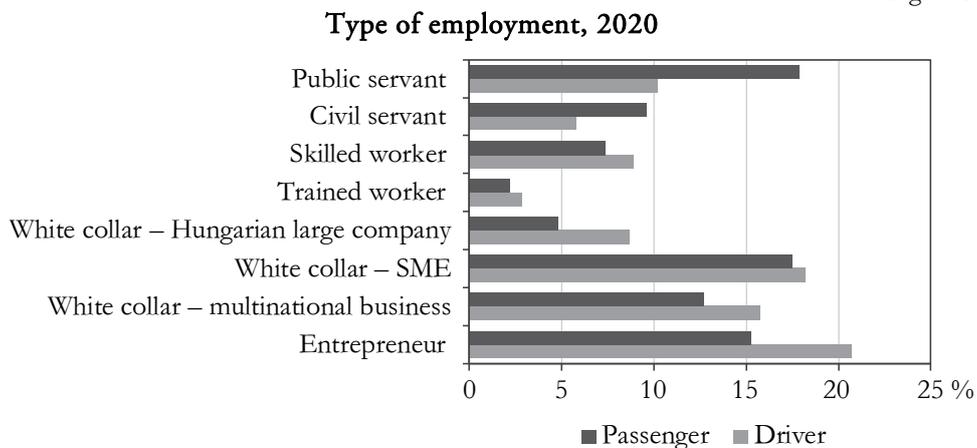
The distributions of the respondents according to occupation are shown in Figure 3, indicating a high share of entrepreneurs and white-collar employees. Public and civil servants also use the platform often; however, only a small number of blue-collar workers are in the sample. While some difference in employment between drivers and passengers can be expected, the difference did not prove significant.

There is a significant difference, however, between the income of passengers and drivers. Figure 4 shows the distribution of the sample by net household income per person for both passengers and drivers. The percentage of drivers in higher income

groups is higher than that of passengers, although the strength of the relationship is moderate (Cramer's V: 0.226 at a significance level of 0.001).

Figure 4

Net income of users in Hungarian forints, 2020
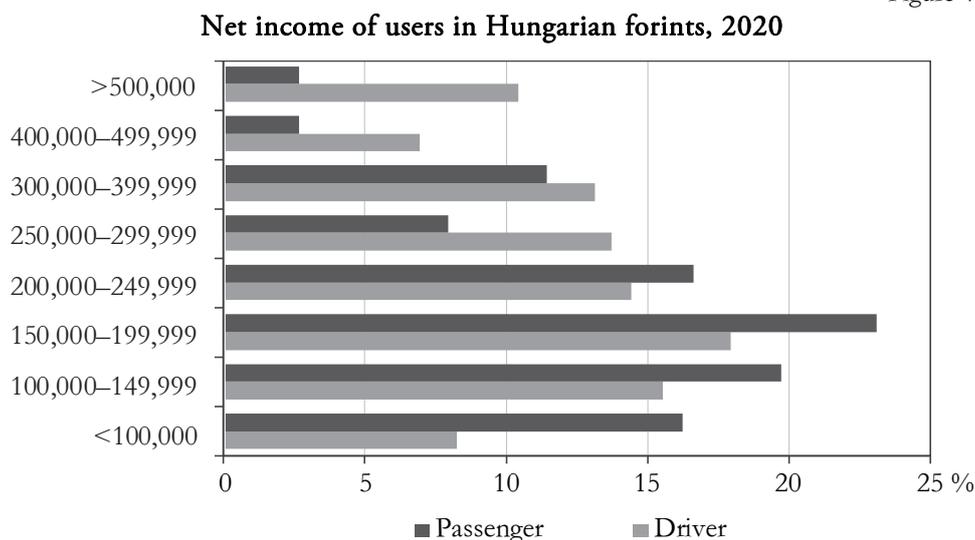
Factors motivating platform use and purpose of trips

More than half (50.6%) of the respondents indicated that their initial source of information about the rideshare platform was friends and acquaintances. The second most common source of information was 'internet advertisement', with 19%, followed by 'family members' (13.2%), 'internet communities' such as Facebook and Instagram (10.7%) and 'colleagues' (4.6%). Printed media plays an insignificant role and was mentioned only on one occasion.

Several questions of the survey aimed at exploring the factors motivating platform users to join and use the platform.

First, *open-ended questions* were asked regarding the *initial motivation* to register on the platform and the motivation to *continuously use* the platform. Figures 5 and 6 summarize the results.

The most important motivation factors are the low cost of travel (meaning cheaper fares for passengers than provided by other alternatives and cost savings for drivers), speed, company to discuss with during the trip (travel companion) and comfort, while other factors, such as curiosity, environmental reasons and reliability/safety, also play a role in user decisions. Additionally, a number of users indicated that limited or inconvenient public transportation options motivate them to use the services of the platform (in Figure 5 denoted by 'better alternative').

Factors of motivation *to register* on the platform, 2020

Factors of motivation *to use* the platform, 2020
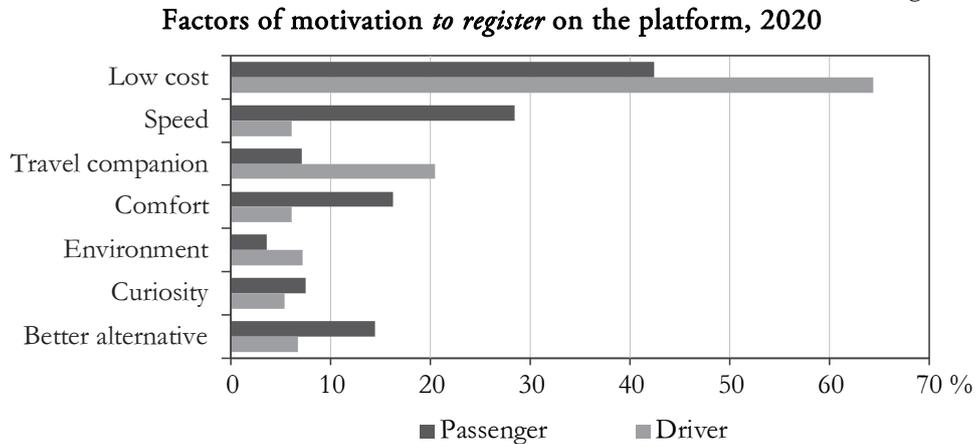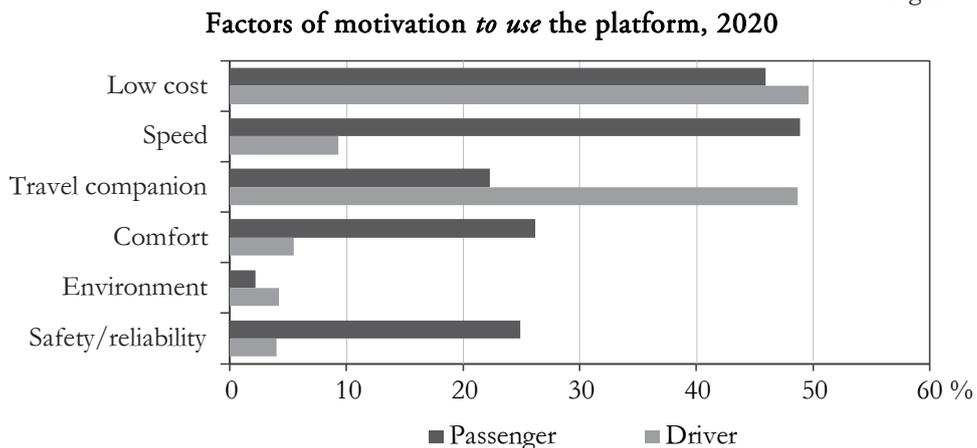

Significant differences between passengers and drivers exist regarding their motivation factors. It was expected that speed is much more important for passengers since drivers are likely to continue to use their own cars and thus do not get to their destinations faster by using the platform. Indeed, they may be even delayed by occasional stops and diversions resulting from picking up and delivering passengers to their desired destinations. Nevertheless, a small share of drivers indicated speed as a motivation factor (6% as their initial motivation to register and 9% as their motivation to continue using the platform): possibly these drivers switched from public transportation to driving their own cars when registering on the platform.

A traveling companion to talk to during a long trip is an important motivation when registering, especially for drivers (20.4%), who prefer to travel in company, while only 7% of passengers named such motivation at the time of registration. The

importance of this factor, however, increases significantly during the continued use of the platform: 22.3% and 48.7% of passengers and drivers, respectively, named it an important factor for the continuing use of the platform.

Curiosity plays an additional motivation when registering on the platform, but it does not show a significant difference between passengers and drivers (7.4% and 5.3%, respectively). Once already using the platform, safety and reliability also become important, especially for passengers, with 24.9% mentioning this factor. For drivers, this is much less important (4%), which can be explained by the fact that picking up passengers does not influence this aspect of driving.

Since in an open question respondents may be reluctant to reveal all their motivation factors, an additional *closed question* also inquired about their motivations at a different point of the survey questionnaire. Respondents were requested to choose one or more from a list of options specifically developed for passengers and drivers with some overlaps.

As expected, this method of inquiry resulted in higher mentions. A total of 78.6% of passengers and 94.5% of drivers mentioned low cost, 42.8% and 65.3% selected a travel companion to discuss with, while 24.5% and 45.8% mentioned the protection of the environment as one of the factors that motivated them to use the platform. Thus, significant differences between passengers and drivers remained present, while each factor was mentioned more often when asked in a closed question.

Passengers and drivers may use the platform for trips aiming at various objectives, including work/business-related trips, trips to visit family and friends, free time (outdoor and/or cultural activities) and other purposes (e.g., to visit trainings, etc.

Figure 7 shows the number of mentions of the different purposes of trips for both passengers and drivers.

Figure 7

**Purpose of trips through the platform, 2020**
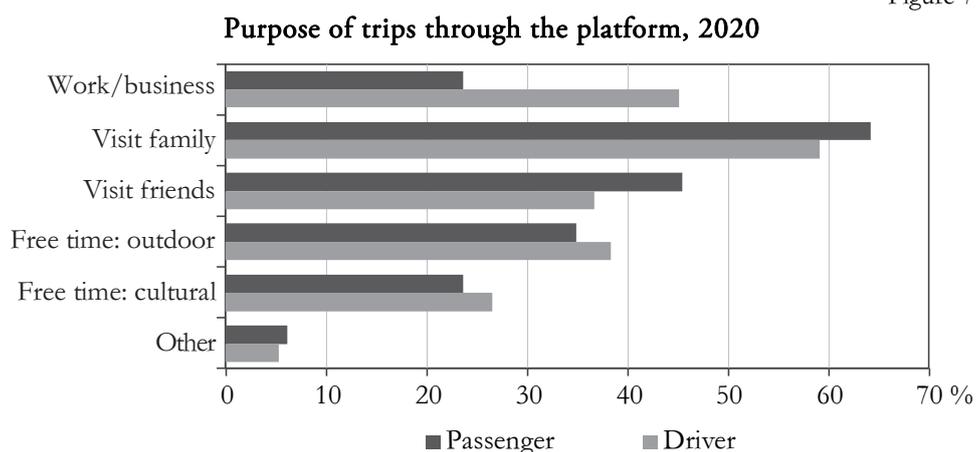
Both drivers and passengers use the platform for several purposes, including work/business-related trips, family/friend visits and outdoor activities. The shares of

drivers and passengers naming different purposes for their trips were similar apart from work/business-related trips, which were named more often by drivers (Cramer's V: 0.21 at a significance level of 0.001).

We also asked if there are any purposes for which users *do not use* the platform – the results are shown in Figure 8. A diverse set of purposes was mentioned by the respondents, ranging from work/business-related trips through family visits to short-distance trips and trips abroad. Differences between drivers and passengers were significant in the case of family programs and trips abroad (Cramer's V: 0.188 and 0.155, respectively, both at a significance level of 0.001).

Figure 8

Purposes for which respondents do not use the platform, 2020
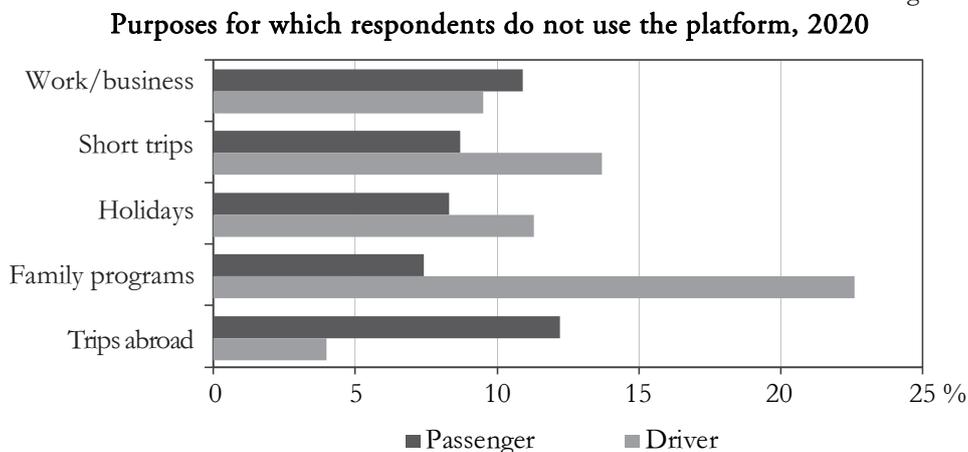
Behavioral patterns of platform use

The platform started its operations in 2007 and has grown rapidly ever since. As many as 7.5% of the users in the sample have used it for more than 7 years. A total of 44.3% of the respondents had been active users for 4-7 years, while 48.2% registered less than 4 years ago.

Platform users may use the platform to reach domestic or international destinations. Meanwhile, they may still use their own cars and other means of transportation at the same time. The average distance traveled during a month by passengers and drivers using the platform and by their own cars on domestic and international trips is illustrated in Figures 9 and 10.

Passengers and users report significantly different amounts of travel both through the platform and by their own cars outside of the platform. While the difference is moderate in the case of platform use (Cramer's V: 0.205 at a significance level of 0.001), the relationship between the mode of transport use and the use of one's own car is strong (Cramer's V: 0.598 at a significance level of 0.001), showing that while more than half of the passengers (54.1%) do not use their own car for travel, only

4.2% of drivers will not use their own cars outside of the platform and as much as 37.2% travel more than 500 kilometers in addition to when they are driving on the platform.

Figure 9

Domestic travel: average monthly distance traveled using the platform, 2020
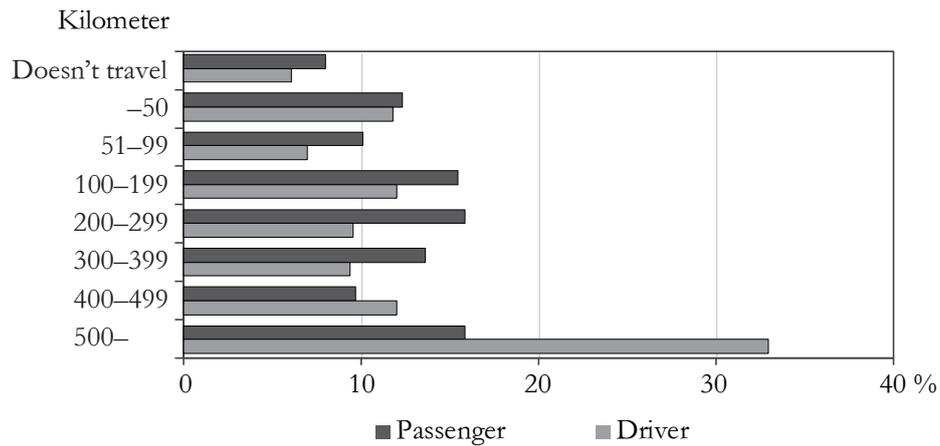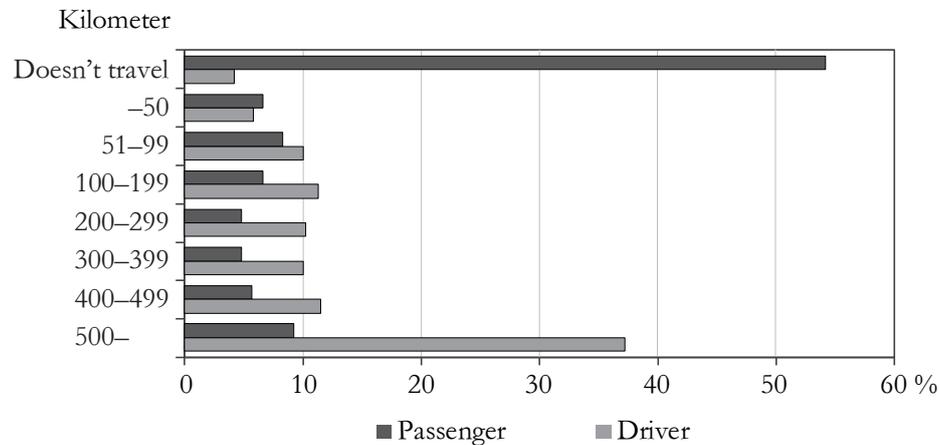
Kilometer

■ Passenger   ■ Driver

Figure 10

**Domestic travel: average monthly distance traveled
by users' own car outside of the platform, 2020**

Kilometer

■ Passenger   ■ Driver

While most of the trips of the regional platform lead to domestic destinations, international trips are also present, as shown in Figures 11 and 12: 15.7% of passengers and 22.4% of drivers use the platform for international travel. The difference between drivers and passengers is still significant regarding the use of their own cars (Cramer's V: 0.414 at a significance level of 0.001), but differences disappear when the platform is used for international travel.
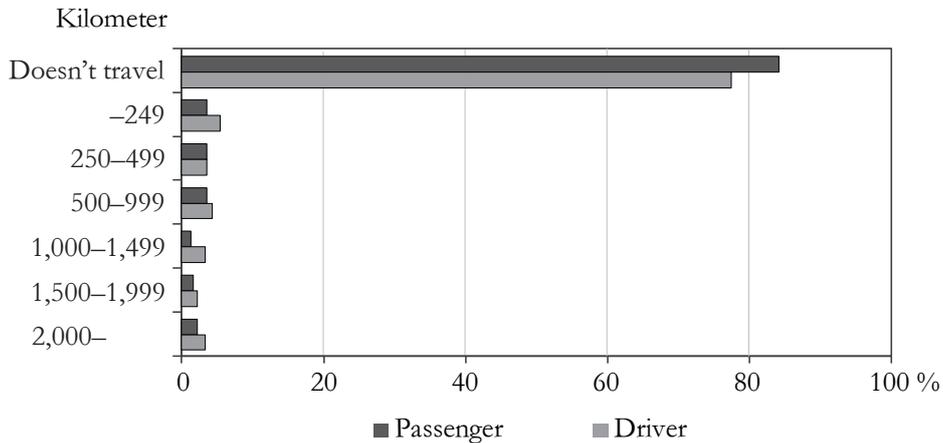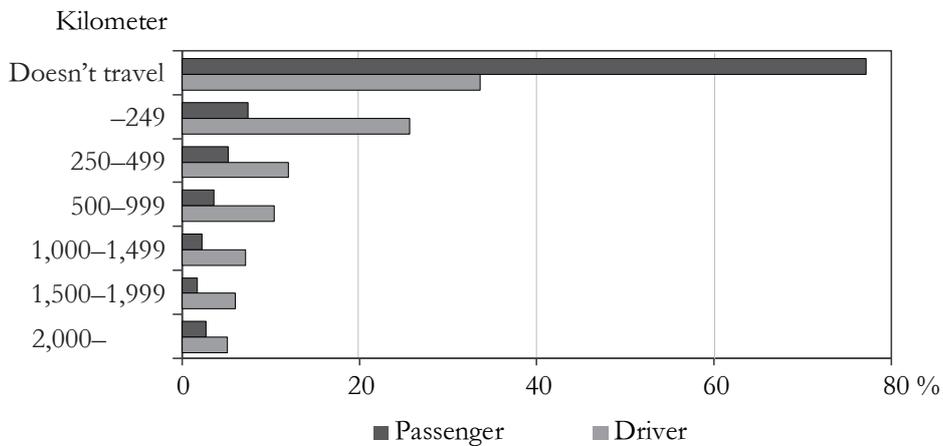
**International travel: average monthly distance traveled using the platform, 2020**

**International travel: average monthly distance traveled
by users' own car outside of the platform, 2020**

The relationship between the average amount traveled during a month and the number of years users spent using the platform is not significant; thus, loyal, long-time users do not seem to travel more.

Both drivers and passengers may use the platform for outbound and return trips (i.e., trips originating in their hometowns and back). While most respondents indicated that they use the platform for these two types of trips equally, a noticeable share of both passengers and drivers responded that they use the platform more often for their outbound trips than on their way back home (8.3% of passengers and 19% of drivers), as indicated in Figure 13.

Figure 13

Direction of trips made through the platform, 2020
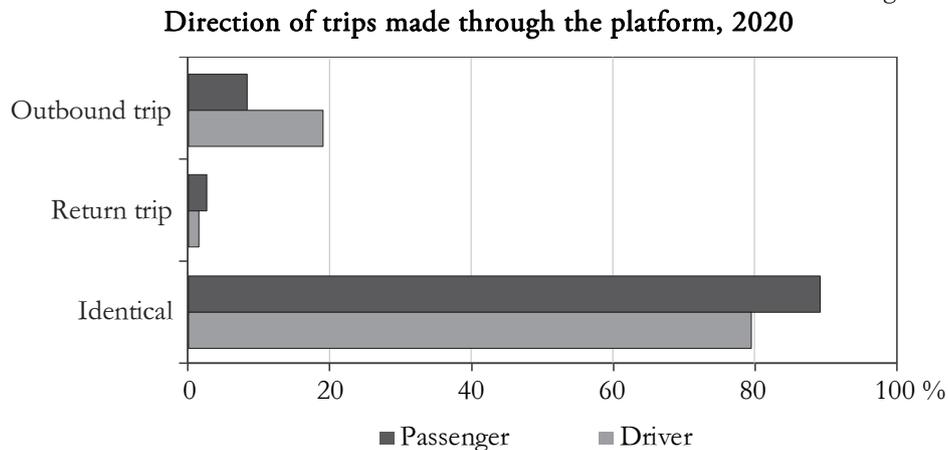
The use of the platform may also have an effect on how travelers plan their trips and how early they make arrangements. Figure 14 shows a significant difference between the behavior of drivers and passengers in this regard (Cramer's V: 0.381 at a significance level of 0.001): the majority of drivers (65.5%) plan their trips on the platform earlier than without using the platform, which seems to be obvious since they have to announce their trips in time on the platform to attract passengers. None of the drivers reported that they would start planning later. Passengers' behavior is, however, more ambiguous. 39.3% plan their trips earlier than without using the platform, but there is a sizeable share, namely, 14.8%, who take a more relaxed approach and start planning later.

Figure 14

**Changes in trip planning as a result of using the platform, 2020**
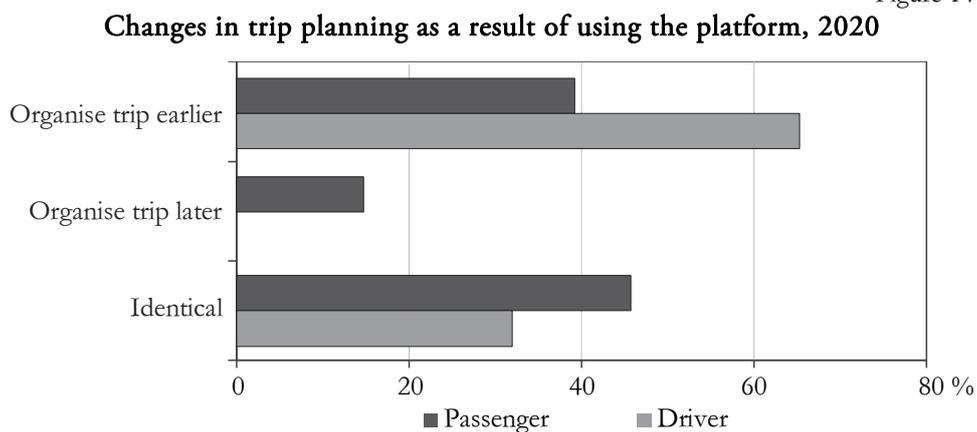
Different user groups may also be distinguished by the timing of their trips: whether they use the platform for trips during the week or on weekends and which

part of the day they travel. Figure 15 shows the results for all respondents (differences between drivers and passengers did not prove to be significant).

Figure 15

Day of the week and time of travel (more than one possible answer), 2020
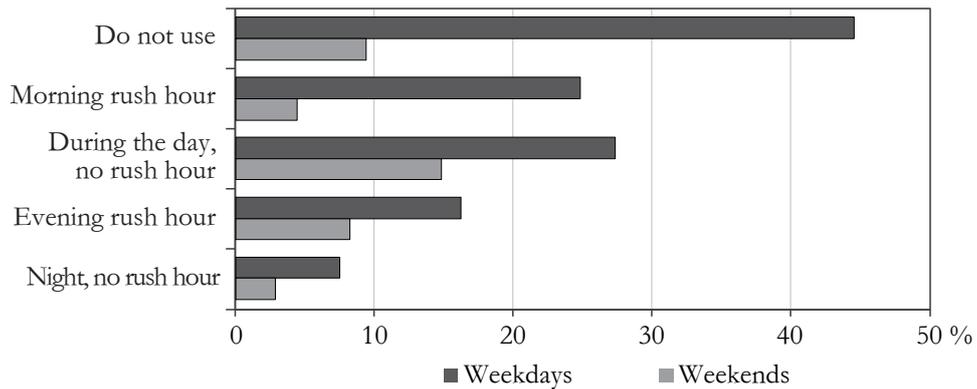
Spatial characteristics of platform use

The current survey questionnaire included questions relating to the settlement where respondents live and work (hometown and job settlement). While most respondents provided the name of the town they resided in, many indicated that they do not have a job (e.g., they are retired) or they travel to various settlements for work-related tasks.

Respondents provided the names of Hungarian and foreign settlements for both their residences and job settlements, although most live and work in Hungary. Some indicated various residences and job settlements. Figure 16 shows the distribution of settlements in the sample.

Figure 16

Hometown and job settlement of respondents, 2020
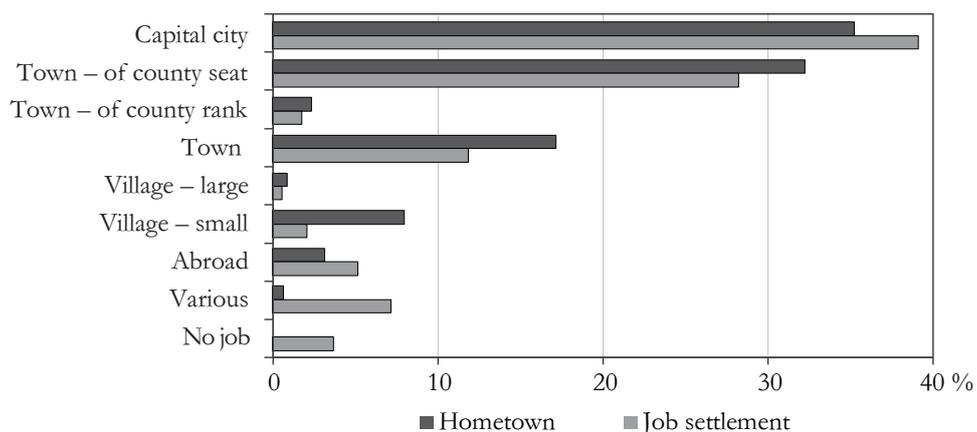
To better illustrate the structure of the data, the relationship between hometowns and job settlements is presented in Figure 17.

Figure 17
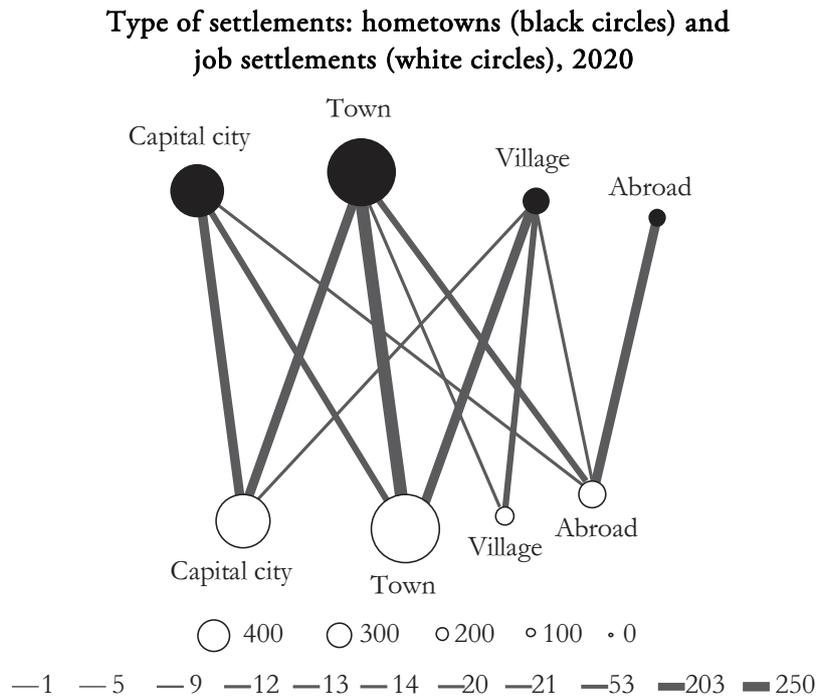
Type of settlements: hometowns (black circles) and job settlements (white circles), 2020

While the platform is often used for work purposes, Figure 17 does not provide an accurate picture of commuter behavior, since, e.g., the 'Town-Town' relationship includes those who live and work in the same town as well as those who commute from one town to another (but not the capital city).

For this reason, a new variable was created based on hometown and job settlement, which uncovered the direction of commuting between different sized settlements. The results are shown in Figure 18 (settlements outside of Hungary, as well those respondents who do not have a job or named several settlements, were omitted).

One spatial aspect that has a high relevance is the difference between those users who live/work in the capital city of Budapest and those who live/work in the countryside. Thus, the association between the variables describing home and job settlement and other relevant variables was analysed. The results show significant relationships between those who live/work in the capital and those who live/work in the countryside across several variables (see Table 2 for the statistical significance and the strength of the association between the variables).

Figure 18

Commuting behavior of respondents
(% of those who live and work in Hungary), 2020
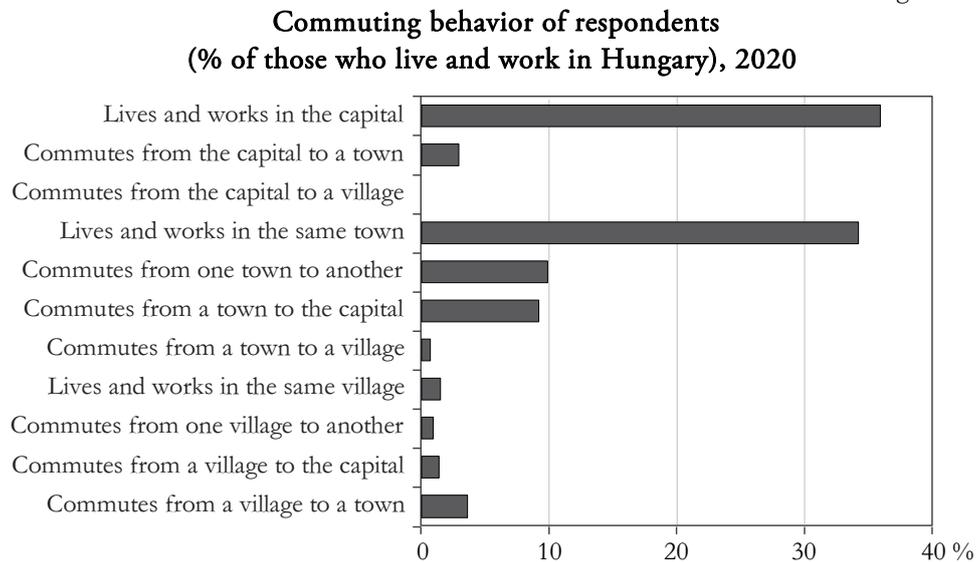
Neither hometown nor job settlement is associated with the mode of the use of the platform (driver vs. passenger) and the gender of respondents. Age, however, has a significant relationship with both variables: platform users who live and/or work in the capital city tend to be younger. Those who live in Budapest are more educated; however, there seems to be no relationship between education and job settlement. Not surprisingly, platform users residing and/or living in Budapest tend to have a higher income and are entrepreneurs or take white collar jobs more often than the average.

People living and/or working in the capital city use the platform less often for work purposes and more often to visit family than the average of the sample. This relationship is markedly stronger when the users' hometown is the capital than when it is the job settlement. Users living and working in the capital use the platform more often than those residing in the countryside. Factors motivating platform use are not related to home or job settlement apart from one variable: those who work in the capital city tend to be slightly more motivated by a company to discuss with than those who live in the capital.

A weak but significant relationship exists between hometown/job settlement and the time of day when respondents use the platform, as well as whether they use it more often to leave their residence or to arrive back (Budapest residents use the platform less during weekday morning rush hours, and respondents living in the countryside use the platform more often to leave their hometown than to arrive back).

Table 2

Association between hometown, job settlement and other variables:
Cramer's V values and respective significance levels, 2020

Denomination	Hometown	Job settlement
Mode of use (driver/passenger)	–	–
Age	0.304***	0.233***
Gender	–	–
Education	0.203***	–
Job type	0.254***	0.234***
Household income	0.244***	0.261***
How did you learn about the platform?	0.149**	–
Means of transportation before registering	0.143**	–
Frequency by own car	0.137*	–
Frequency by the platform	0.179***	0.159*
Purpose: work	0.235***	0.141***
Purpose: visit family	0.212***	0.140***
Purpose: visit friends	–	–
Purpose: cultural events	–	–
Use: weekday morning traffic	0.188***	0.114**
Use: weekday evening traffic	–	0.119**
Use during weekdays	–	–
Direction of use	0.140**	0.125*
Motivation to use: travel companion	–	0.118**
Motivation to use: comfort	–	–

Notes: *: <.05, **: <.01, ***: <.001; '–' indicates no significant relationship between the variables. White: 0.000–0.199; light: 0.200–0.249; dark: 0.250–).

It is also interesting to compare those who commute from one settlement to another with those whose hometown and job settlement are the same (see Table 3 for the statistical significance and the strength of the association between the variables). According to our findings, commuters tend to be middle aged or older and are more often men than the average of the sample. They are also more often drivers than passengers. Commuters travel more using their own cars and by using the platform than average respondents and tend to use the platform for work rather than to visit family members. Regarding the direction of travel, commuters tend to travel from the countryside to the capital and from one countryside settlement to another more often than the average. Those who use the platform for commuting to Budapest and from one countryside settlement to another tend to use the platform on weekdays during the morning rush hour.

Table 3

Association between commuting, the direction of the commute and other variables: Cramer's V values and respective significance levels, 2020

Denomination	Commuter:	
	yes/no	direction
Mode of use (driver/passenger)	0.162**	–
Age	0.254***	–
Gender	0.141**	–
Education	–	–
Job type	0.156**	–
Household income	–	–
How did you learn about the platform	–	–
Means of transportation before registering	0.191***	–
Frequency by own car	0.243***	–
Frequency by the platform	0.270***	–
Frequency by train	0.148*	–
Frequency by bus	0.157**	–
Milage by own car	0.215***	–
Milage by the platform	0.164*	–
Purpose: work	0.296***	0.301***
Purpose: visit family	0.190***	0.244***
Purpose: visit friends	0.118**	–
Purpose: cultural events	–	0.149**
Use: weekday morning traffic	0.168***	0.224***
Use: weekday evening traffic	0.100*	0.146**
Use during weekdays	0.148***	0.189***
Use weekends, when no traffic	0.128***	–
Direction of use	–	0.113*
Motivation to use: company	–	0.127*
Motivation to use: comfort	0.120**	–

Notes: *: <.05, **: <.01, ***: <.001; '–' indicates no significant relationship between the variables. White: 0.000–0.199; light: 0.200–0.249; dark: 0.250–).

The Hungarian Central Statistical Office regularly provides data regarding the behavior of commuters in the country. The latest comprehensive study regarding commuters was published in 2015 and assessed data obtained from the 2011 national census (HCSO 2015). While the definition of daily commuters as used by the national census ('daily commuters are employed persons whose workplace and residence are not in the same municipality') does not fully match the definition of commuters identified by this study (e.g., some users of the Oszkár platform may commute weekly rather than daily), the results are still interesting. (For a detailed analysis of the

commuting links between the settlement hierarchy levels in Hungary, see Gerse–
Szilágyi 2016).

The following tables compare national data of daily commuters to those who
commute through the Oszkár platform. Those who use the platform for commuting
are generally older than the daily commuters of the general population, as shown in
Table 4.

Table 4

Age distribution of commuters according to the national census of 2011 and the platform, 2020

Denomination	15–29	30–39	40–49	50–59	60–	Total
	year-old					
Daily commuters – National census, 2011	201	31.6	25.9	19.9	2.5	100.0
Commuters – Oszkár platform	10.4	18.3	38.1	26.2	6.9	100.0

The following table indicates that the ratio of men within platform commuters is
higher than the ratio of men who commute in the general population.

Table 5

Gender of commuters according to the national census of 2011 and the platform, 2020

Denomination	Men	Women	Total
Daily commuters – National census, 2011	60.6	39.4	100.0
Commuters – Oszkár platform	72.1	27.9	100.0

Finally, Oszkár users are better educated than average commuters, as shown in
Table 6.

Table 6

Highest degree of commuters according to the national census of 2011 and the platform, 2020

Denomination	Elementary school, less than 8 years	Elementary school, 8 years	High school, no diploma	High school with diploma	University, college with degree	Total
Daily commuters – National census, 2011	0.3	11.3	32.6	34.3	21.5	100.0
Commuters – Oszkár platform	0.0	0.5	10.9	29.2	59.4	100.0

The report based on the 2011 national census provides a detailed assessment of
the job types, occupation, and economic sectors of commuters in the country. While

the current survey did not allow for such a detailed analysis, the breakdown of the most important job types among commuters is provided in Table 7.

Table 7

Commuters on the platform by occupation, 2020

	(%)
Entrepreneur	20.9
White collar – multinational business	12.4
White collar – SME	16.9
White collar – Hungarian large company	6.5
Trained worker	4.5
Skilled worker	12.9
Civil servant	6.0
Public servant	13.4
Other	6.5
Total	100.0

Clusters of platform users

To better understand the behavior of users of the rideshare platform, cluster analysis was used to identify meaningful subgroups within the sample.

For this, combinations of several variables were tested, and finally, two variables were identified, which provided interesting results: the mileage traveled by the users using the rideshare platform and the mileage traveled using their own cars outside of the platform.

First, hierarchical cluster analysis was carried out using the Ward method, which indicated that 2, 3 or 4 clusters of users may be identified. Then, k-means hierarchical cluster analysis was implemented to produce 2, 3 and 4 clusters.

The two-cluster solution, while providing clusters with significantly different means (at a significance level of <.001), did not prove to be robust (Eta-squared of 0.057 for one of the variables), and its interpretation was also rather trivial: one cluster containing those who travel more both using their own car and the platform and another cluster containing those who use both their own cars and the platform less.

Thus, the 3 and 4 cluster solutions were further examined, and a post hoc analysis was carried out using the one-way ANOVA method to validate the cluster solutions. Since the sample consists of independent observations and the cluster sizes are larger than 25 in both cases, Tukey's HSD post hoc test was run, which indicated that the means are significantly different in the 3-cluster case, while they are not in the 4-cluster case. The 3-cluster case was thus scrutinized further. Since cluster sizes were similar, but not equal (210, 235 and 236 cases, respectively), the Welch test and Games-Howell test were also run with both of them showing significant differences between the means of the identified clusters at the <.001 level (see Table 8 for the post hoc data for the three different cluster solutions).

Table 8

Post hoc analysis of the cluster solutions, 2020

Denomination	2 cluster solution	3 cluster solution	4 cluster solution
No. of cases in clusters	315/366	210/235/236	124/169/243/145
Eta squared – Own car use	0.784	0.672	0.812
Eta squared – Platform use	0.057	0.603	0.764
Welch test sign. – Own car use		<0.001	<0.001
Welch test sign. – Platform use		<0.001	<0.001
Tukey HSD		<0.001 – for all means	Not significant for all means
Games–Howell test		<0.001 – for all means	Not significant for all means

Figure 19

Means by two cluster variables in three clusters, 2020

Cluster

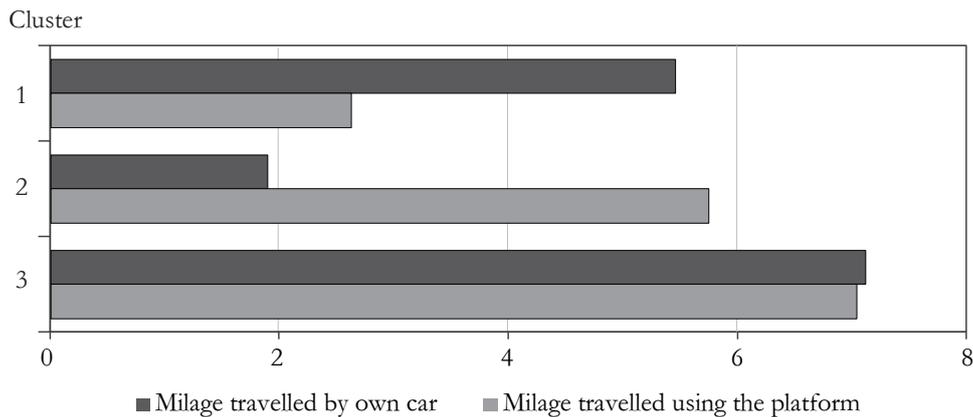■ Milage travelled by own car ■ Milage travelled using the platform

Figure 19 shows the cluster means according to the two cluster variables: mileage traveled by the users' own car outside of the platform and mileage traveled using the platform. Based on these, the three clusters can be interpreted as follows:
  – Cluster 1: 'Casual platform users': clear preference of own car over the platform
  – Cluster 2: 'Platform fanatics': clear preference of the platform over using own cars
  – Cluster 3: 'Globetrotters': high usage of both own car and the platform
After identifying the clusters, the second step involved the description and comparison of the emerging clusters. Descriptive analysis was carried out to characterize the clusters regarding demographic and other variables relating to the use of the rideshare platform.

Demographic characteristics of clusters: Cramer's V values and interpretation, 2020

Denomination	Cramer's V	Casual users	Platform fanatics	Globetrotters
Age	0.301***	Older than average	Younger than average	Older than average
Sex	0.153***	More men	More women	More men
Job	0.103*	Somewhat more physical	More white collar	More entrepreneur
Home settlement	not sign.			
Work settlement	0.148*	Less in capital city	More in capital city	Somewhat more in capital city
Household income	0.158**	Lower income	Lower and medium income	Higher income

Note: Significance levels: *: <0.05, **: <0.01, ***: <0.001.

The clusters show significant differences across a number of demographic and other variables (see Table 9 and Table 10), although the strengths of some of these relationships are weak.

'Casual users' are older and include more men than the sample average. They are also employed more often in physical jobs and earn less compared to the members of the other two clusters.

There are more drivers in the 'Casual users' cluster than the sample average, and most often, they used their own cars before switching to the platform.

The relationship between cluster membership and age is the most prominent: Casual users and Globetrotters tend to be older than the sample average. They are also more often men than women. Casual users, however, differ from Globetrotters regarding their income and job type (Globetrotters tend to have higher incomes and are more often entrepreneurs than the sample average).

There is no significant relationship between hometown and cluster membership; however, platform fanatics live more often in the capital city than Casual platform users, who tend to live in the countryside.

We also examined whether clusters can be characterized across other variables, including mode of use, motivation to use the platform, the purpose of travel and other features of platform use (results of the statistical analysis are shown in Table 10), and found several significant relationships.

Most importantly, clusters can be characterized by the typical mode of platform use: while typical platform fanatics tend to be passengers, globetrotters and casual users are more often drivers than passengers. Another characteristic of different cluster members also stands out: Platform fanatics have used trains and buses prior to joining the platform, while both Casual users and Globetrotters have used their own cars on trips now they offer on the platform.

Table 10

Cluster characteristics: Cramer's V values and interpretation, 2020

Denomination	Cramer's V	Casual users	Platform fanatics	Globetrotters
Mode of use (driver or passenger)	0.418***	More drivers	More passengers	More drivers
Means of transportation before using the platform	0.240***	Own car	Train, bus	Own car
Duration of platform use (years)	0.093*	More than 7 years	Less than 4 years	4–7 years
Motivation to register:				
cost	not sign.			
speed	0.171***	Average importance	Important	Not important
company to discuss with	0.104*	Important	Not important	Important
comfort	0.135**	Average importance	Important	Not important
environmental protection	not sign.			
curiosity	not sign.			
alternative to public transportation	0.134**	Average importance	Important	Not important
Motivation to use:				
cost	0.105*	Not important	Average importance	Important
speed	0.176***	Not important	Important	Not important
company to discuss with	0.152***	Not important	Not important	Important
comfort	0.143***	Average importance	Important	Not important
environmental protection	not sign.			
safety	0.159***	Not important	Important	Not important
Purpose of use:				
work	0.185***	More often	Less often	More often
visit family	0.119**	Less often	More often	Average
visit friends	not sign.			
holiday, outdoor activities	0.144***	More often	Less often	More often
visit cultural events	0.126**	More often	Less often	More often
Will not use platform:				
for family programs	0.164***	Agree more	Agree less	Agree more
to travel abroad	0.120**	Agree less	Agree more	Average
Will use platform:				
during evening rush hours on weekdays	0.126**	Less often	More often	More often
- during weekends, non rush hour	0.297***	Less often	More often	Less often
during weekend evenings	0.189***	Less often	More often	Less often
for travel 'to' or 'from'	0.138***	More 'to'	Less 'to'	About the same
Will not use during weekends	0.180***	Agree less	Agree more	Agree less

Note: Significance levels: *: <0.05, **: <0.01, ***: <0.001.

The duration of platform use has a very weak (although significant) relationship with cluster membership, and several factors of motivation do not significantly differ across the three clusters (e.g., low cost, the protection of the environment and curiosity when registering on the platform and environmental protection when already using the platform).

However, a weak but significant relationship exists between cluster membership and motivation factors, which influence the continued use of the platform. For platform fanatics, speed and comfort are more important than for the average respondent, and globetrotters are motivated more by cost and a company to discuss during their trips. Platform fanatics also seem to put a higher value on the safety of the platform than members of the other two clusters.

Casual users and Globetrotters use the platform more often for work-related trips than platform fanatics, which is strengthened by the fact that their trips are less likely to occur during weekend off-peak hours.

Discussion and conclusions

Understanding the operation of sharing economy businesses is becoming increasingly important as a result of their rapid spread in various economic sectors as well as their impact on the economy, natural environment and society. Sharing economy businesses often operate in 'regulatory blind spots', and while the literature has been dealing with this topic for more than ten years, detailed analysis of the behavior of users of sharing economy platforms is still scarce. Policy-makers thus need more information to make better decisions.

The research introduced in this article focused on the users of a platform operated by a regional ride-share company, both drivers and passengers, and provided details about the motivation of the use of the platform, the spatial characteristics of platform use and other behavioral patterns of users.

The questionnaire survey was conducted just before the Covid-19 pandemic, which disrupted many daily activities, including transportation patterns. Thus, on the one hand, our results are not influenced by the pandemic, while on the other hand, further research is warranted to explore how the pandemic changed the use of the platform.

Our findings reinforce previous results of the literature, namely, that various motivation factors can be identified among users of the sharing economy. Our analysis, however, provided more detailed information than most previous research by assessing the users of a specific rideshare platform and by distinguishing between the different types of users (drivers and passengers). The methodology used, namely, open-ended questions, also enabled us to collect more detailed information than most previous efforts.

Our results show that the environmental benefits of platforms have a very small role in motivating users to join and keep on using the platform. In contrast,

motivations such as speed, cost and comfort play a much more important role. These perceived benefits are, however, dependent on the characteristics of alternative choices, such as the train and bus network as well as personal cars. In a country where public transportation options suffer from a number of problems, including unreliable operations, poor comfort and a relatively high price, individuals will find a number of motivation factors, which move them toward alternative means of transportation, such as that offered by Oszkár.

The results show that apart from economic advantages, social benefits, such as a companion to talk to, also play an important role in choosing the rideshare platform. We could also distinguish between initial motivation factors when registering on the platform and motivation factors of continued use.

When evaluating our results using the framework developed by Nagy–Csiszár (2020) regarding smart mobility services, we can conclude that the Oszkár platform meets a number of relevant requirements of passengers, namely, flexibility, speed, comfortable vehicles, support of smart devices and suitable application. These features of the ride-share platform can, in turn, contribute to the development of smart infrastructures and smart cities.

Our analysis of spatial features included the assessment of differences between those who live/work in the capital city and in the countryside, as well as those who use the platform for commuting and those who do not. No differences can be detected between home/job settlement with regard to gender, and the motivations to join and continue to use the platform show only slight differences. However, other factors, such as the frequency of using the platform and the purpose of travel, are different between those who use the platform for commuting and those who do not. The purpose of travel also varies across the home/job settlement: those who either reside or work in the capital use the platform more often for family visits and less often for work.

With regard to commuting, we found that those users who commute with the help of the platform are markedly different from the commuters identified by the national census of Hungary. 'Platform commuters' are older and better educated and are more often men than average commuters within the country. Additionally, cluster analysis uncovered three distinct groups of platform users – Casual users, Platform fanatics and Globetrotters – based on the mileage covered by their own cars outside of the platform and mileage traveled using the platform. Analyzing the association between cluster membership, demographic variables and behavioral patterns revealed the nature of the three clusters.

It is generally accepted in the literature that sharing economy businesses may contribute to economic development as well as to more sustainable societies. However, to achieve these objectives, policy-makers should make certain that the actual way the sharing economy is implemented can truly contribute to society. For this, it is of utmost importance that we learn as much about the operation of the sharing economy as possible before we implement widespread policy intervention.

Our objective was to contribute to this learning process; however, a number of factors limit the generalizability of our results.

Major differences in the operation of various types of sharing economy businesses mean that results relating to ride-share platforms cannot be generalized for the whole sector. The usage patterns and motivations behind the use of car sharing services are not necessarily the same or even similar to our results found in the case of a ride-share platform. For example, car sharing services (such as the American Zipcar or the Hungarian Greengo) are only offered within high population density urban settings and usually do not facilitate commuting between settlements.

The generalizability of our results may also be limited beyond the borders of the country. The unique characteristics of the Hungarian settlement structure, the characteristics of the transportation infrastructure in the country, and the differences in the use of mobile devices and the internet in general mean that the characteristics of ride-share platforms may show significant variances across regions and countries. However, while these limitations warrant more research into the topic, we believe that our results can contribute to better decisions in both the business sphere and during sectorial policy development.

Acknowledgments

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