

## SHARED MOBILITY AS A FORM OF OVERCOMING SOCIAL BARRIERS IN ACCESS TO TRANSPORT SER- VICES AND SOCIAL EXCLUSION

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**Abstract** Currently, in urban areas, there are a lot of services related to the new mobility concept. The development of such services brings many benefits, from supplementing the transport offer of a given city to environmental and economic aspects. However, it is worth remembering that these services are dedicated to the society and it is the target group of recipients of all the advantages of shared mobility. Due to this, the authors proposed the possibility of considering shared mobility services as a solution supporting the overcoming of barriers in access to transport services and a preventive measure of social exclusion. The work includes aspects of improving transport accessibility, possibilities of adjusting services to the needs of the society, safety of services and reduction of the phenomenon of social exclusion. The work is support for the popularization of shared mobility services and public education.

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## 1. INTRODUCTION

Currently, due to the transport problems of cities with the quality of air, congestions, limited parking spaces etc. (Pawłowska, 2013), various solutions that could contribute to improving both the condition of the environment, the quality of life of residents and have a positive impact on urban planning are sought. The collection of this type of practice refers to the concept of the so-called 'new urban mobility' (Okraszewska, Nosal & Sierpiński, 2014). There are many ways to implement new mobility in cities. These include services of sharing space in private car with others and common commuting for example to work called car-pooling or ride-sharing; traveling with using services like Lyft or Uber operators what is called i.e. ride-hailing, whether, for example, renting vehicles for a short period of time, what is called sharing services related to cars, bikes or scooters. Regardless of the type of service chosen, it should be remembered that they are dedicated to the society for improving its quality of life (Szczepański, 2013; Turoń, Sierpiński & Staniek, 2018). Due to the fact, that in the society there is a lot of people who perceive transport as a negative part of economy (Szołtysek & Twaróg, 2018) authors tried to debunk that myth and to show the positive sides of shared mobility for the society. The article is divided into four main parts. The first in presenting the problem of social exclusion and barriers in access to transportation services in the context of the society. The second one shows principles of shared economy and shared economy services. The third related to shared economy in the case of transportation – shared mobility. Then, the fourth part is connected to the examples of benefits for society flowing from shared mobility services and at the same time eliminating the problem of transport exclusion and improving transport accessibility. The last part of the work is the summary.

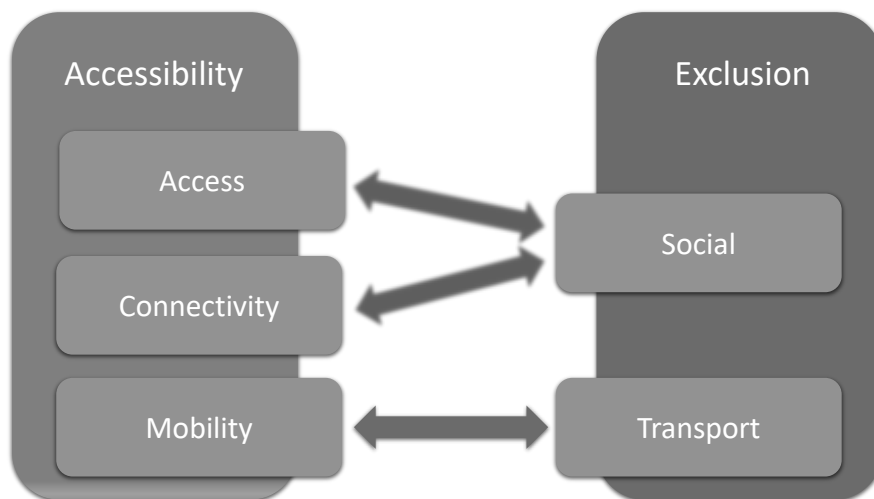
## 2. ACCESS TO TRANSPORT AND SOCIAL EXCLUSION

Transport accessibility is one of the human-relevant aspects of perceiving the surroundings. Historically, it was one of the features affecting the distribution of population near transport routes but also the thing or the seas. Nowadays, "transport accessibility is the main product of the transport system, which determines the advantage of the location of a given area (region, city or route) in relation to other

areas" (Spiekermann & Neubauer, 2002). Transport accessibility affects the inflow of both people and capital. The greater the availability, the better the potential conditions for demographic and economic development. Among transport planning, it is one of the main factors. Directly refers to the ease of reaching a given destination. This means that a place characterized by high availability is a place to and from which it is easy to leave and also to move around it with various modes of transport at an affordable price. In turn, a place with low transport accessibility means that by specific factors time, cost, effort, i.e. discomfort level, inappropriate information, etc. from a given place, it is difficult to leave, travel on it or come to it (Sierpiński, 2010).

Transportation social exclusion is the second most important mobility problem in addition to transport accessibility. Mobility is one of the main dimensions of social exclusion (Kenyon, Lyons & Rafferty, 2002). Research indicates that insufficient access to transport makes the society impossible to fully meet their social needs) (Hine, 2008; Kenyon, Lyons & Rafferty, 2002; Mackett & Thoreau, 2015; Preston & Rajé, 2007).

Transport exclusion can be divided into two main aspects: social and transport part. The social aspect is directly related to the exclusion in celebration in everyday life and causing problems in commuting to work, school, services, culture, etc. (Kenyon, Lyons & Rafferty, 2002). The second aspect is the purely transport aspect, which consists of mobility and transport accessibility – and thus all the barriers of technical non-existence of a given form of transport, hindering the proper functioning of society in a given area (Jaroš, 2017).



**Fig. 1** Relations between different types of exclusion and accessibility; own research based on (Jaroš, 2017; Stewart & Zergas, 2016)

Both factors play a very important role in the free, casual and unlimited mobility of society. That is why various solutions are sought that can improve the mobility of society while doing so responsibly. One of these types of activities is the implementation of a policy of sharing in the field of transport services.

### **3. SHARED ECONOMY SERVICES**

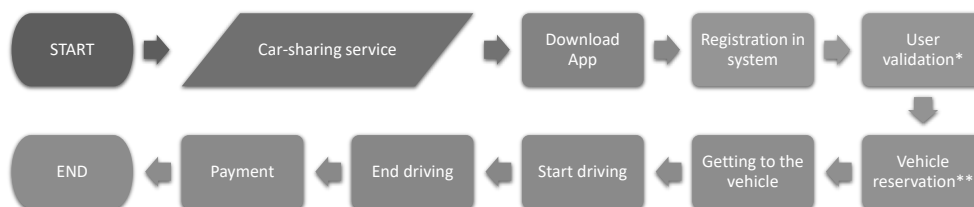
‘Shared economy’ is a term referring to activities related to lending or making available to a given person or organization goods or services (COM 356, 2016). It gives the opportunity to provide goods or services for a fee or other form of benefits to third parties (COM 356, 2016). Sharing is usually based on the use of so-called new technologies – mobile applications or internet platforms (Mrugalska & Wyrwicka, 2017). Usually, services / goods are made available as part of a rental service that gives the opportunity to use the service for a short period of time. Mostly, the short-term rentals offering the possibility of a few-minute rental.

Although the concept of sharing economics has been presented in literature since 1978, it gained its greatest popularity in 2008 due to the economic crisis (Felson & Spaeth, 1978; Ziobrowska, 2017). At present, due to the need to balance the economic fields of business, the concept of sharing economics is widely used in many different areas (Frenken & Schor, 2017). The most common forms of sharing economy include, for example, renting vehicles or flat, as well as mutual exchange with electronic equipment, games or skills (Hamari, Sjöklint & Ukkonen, 2016). The concept of sharing economy includes: service providers who transfer certain goods or services for use; service recipients and entities acting as intermediaries ensuring communication between service providers and potential users, i.e. by providing a website or a mobile application.

### **4. SHARED ECONOMY IN TRANSPORTATION SECTOR**

Shared mobility services in urban transport have begun to appear in urban transport systems since 1948 – the first car-sharing system (Doherty, Sparrow & Sinha, 1987) and 1965 – the first bike-sharing system (DeMaio, 2009). However, these were the first such activities (Mindur, Sierpiński & Turoń, 2018). In the case of car-sharing, a major development of services started in 2000 (Mindur, Sierpiński & Turoń, 2018) and in the case of bike-sharing from 2005 (Midgley, 2011).

The principle of operation of services consists in the possibility of renting a vehicle for a short period after registering in the system of a given operator via a mobile application or an internet platform. The vehicle rental scheme is presented in Fig. 2.



**Fig. 2** Shared mobility scheme in the example of car-sharing; own research based on (Turón, 2018)

\* User validation can take many forms (documents/driving licence validation, account validation, cellphone number validation etc.)

\*\* Vehicle reservation option depends on specific service.

As part of the services currently available forms of shared mobility are car-, bike- and increasingly popular scooter-sharing. The fleet of bikes and scooters sharing is called as a micromobility sharing systems initiatives (Nacto, 2018).

Despite the fact that on the Polish market, shared mobility services have begun to develop in recent years, abroad, the use of them is much more popular.

In the case of car-sharing services, in the world exists 3 main models of systems related to the customer relations (Münzel, Boon, Frenken & Vaskelainen, 2017). We can indicate business-to-consumer services dedicated to individual users, business-to-business models devoted to companies employees and peer-to-peer models that gives opportunity to share the car individually with other private person (Perboli, Ferrero, Musso & Vesco, 2018).

According to statistics, in the world at the end of 2017, there were 23.8 million users of car-sharing systems registered (Berg Insight, 2018). The car-sharing market in 2017 was worth USD 570 Million (Graphical Research, 2018). It is estimated that globally by 2025 there will be 36 million users using car-sharing services (Statista, 2019).

In the case of bike-sharing services, systems exists in more than 1000 cities around the world in 2016 (Midgley, 2011). At the end of 2018 functioned 1608 bike-sharing systems and 18 200 000 bicycles were available for the society worldwide (Statista, 2018). Riding bike-sharing bicycles is very popular in society. For example in United States 35 million trips were taken in 2017 what is 25% more than in 2016 (Nacto, 2018). In turn, in 2018, people took 36.5 million trips on bikes from bike-sharing systems, and what is very interesting and important – 38.5 million trips on shared e-scooters (Nacto, 2018). The above statistics indicate a significant development of services, which means that they are valued by society.

## 5. SOCIAL BENEFITS OF SHARED MOBILITY SOLUTIONS

Despite the spectacular presence of shared mobility services on the markets, a large part of the society is still not fully aware of what these services are and how they can be used. There are, however, many pro-social premises dedicating the services of shared mobility to society.

Firstly, shared mobility services contribute to improving transport exclusion. Not everyone in society has the opportunity to live in a well-connected place that has access to public transport services in sufficient time intervals. Or even if access to the transport offer is full, there are delays, changes in timetables or work that sometimes prevent from using the chosen means of transport. Then, sharing services in transport become an alternative that facilitates communication within the city. For example in United Kingdom (Mattioli, 2014; Clark & Curl, 2016).

Another advantage of the shared mobility services is the elimination of social disparities associated with the need to own a vehicle, i.e. the car (Shaheen & Cohen 2007). In addition, shared mobility services lead to the overthrow of the perception of the vehicle as a luxury good. The presence of shared mobility services allows the user to use the vehicle only when he / she really needs to be moved. Therefore, he does not have to incur additional costs related to maintaining the car – fuel charges, repairs, insurance, tire replacement, etc. This feature of sharing services is very important, for example in Bremen 92% of respondents were indicated it as the biggest advantage (Schreier et al., 2017).

The next advantage of shared mobility for the society is the possibility of contact with electromobility, which is often not possible due to the high costs of vehicles. Electric vehicles are starting to appear in the services of shared mobility, which is an excellent educational and popularizing opportunity for society.

Other from the pro-social activities is striving to improve the quality of life of the society through the use of environmentally friendly vehicles equipped with electric motors.

Or encouraging the public to use bike sharing, which has a positive effect on public health.

The advantages of car-sharing also include the unpredictability of renting your own car in a peer-to-peer car-sharing system. Then it is an opportunity for the vehicle owner to reduce the costs associated with maintaining the vehicle, which may not be used at the moment. This type of activity is also an opportunity for additional work and filling the market niche, for example among young people who are looking for an occasional job (Blumenberg, Moga & Ong, 1998).

The next possibility is an option to using sharing services in the case of emergencies or other random situations (Johansson, 1987; Szmelter, 2018). This kind of solution is called “option value” (Johansson, 1987; Žak, 2004). Then, in the case of emergency, sharing services have a chance to become an additional value added, for example to the existing public transport.

Vehicle sharing services also give the opportunity to rent a special vehicle, i.e. a bus or a van, for a short period of time. This means that it is no longer necessary to use expensive supplies of goods from the store to the customer after purchasing furniture, for example.

In addition, sharing services also give the opportunity to test different types of vehicles, which is often not possible for a longer period of time, for example before buying a vehicle. They also give you the benefit of renting premium vehicles.

It is also worth mentioning that shared mobility systems may have their own parking spaces often in strategic places such as airports or bus or train stations, or give access to areas of places that are not accessible to individual drivers. They also provide access to zones completely excluded for car traffic thanks to the possibility of entering with rented bike or scooter. What is more, shared mobility services offer a chance to perform a journey more private than public transport.

Another benefit for society is also the facilitation of i.e. when traveling or visiting a given city. Areas where it is possible to rent vehicles for a short period of time give the chance to give up own car in favor of public transport and then combine travel with shared mobility. They give the possibility of multimodality of travel.

Of course, just like any other transport solution, shared mobility services can also carry negative sides. The main one is the possibility of congestion of the roads with subsequent vehicles or the prevailing organizational chaos associated, for example, with leaving scooters in various unpredictable places such as the center of the pavement (Turoń, 2018). However, these are organizational aspects that can be solved by appropriate management of mobility on the territory of a given city.

## 6. CONCLUSION

In summary, the work showed that shared mobility services have a chance to support society. The article indicates many examples of the benefits of using shared mobility services in today's cities. This support takes place both in terms of transport exclusion, transport accessibility, reduction of expenses related to the car maintenance etc. The article indicates, therefore, that there is a lot of connections between shared mobility services and the implementation of corporate social responsibility policy. Due to this, shared mobility services should not be treated as a threat to currently existing transport possibilities, but as an additional value to them in accordance with the principles of sustainable development.

The authors plan to dedicate further research to the analysis of detailed activities of the area of new mobility in the implementation of issues of corporate social responsibility.

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