

PUBLIC BICYCLE SYSTEM – ANALYSIS OF SELECTED PRACTICES ON THE EXAMPLE OF POLAND

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ABSTRACT The purpose of this article is to analyze selected urban bicycle systems in Poland. This is a solution that has been successful in Western and Southern Europe, while in Central and Eastern European countries, it is still underestimated. On in recent years, public bicycle systems have started to appear too in the cities of this part of the continent. The article defines the public bicycle system and the self-service city bike rentals, which are significant, have been characterized an element of the development of sustainable mobility. The best examples were summarized practices in the implementation of bicycle urban systems in Poland.

Introduction

Luud started the first attempt to create a city bike rental Schimmelpennink in 1965 in Amsterdam. An initiative called *White Bicycle Plan* ended in failure because bikes set in town for free use has been stolen. It was only after 42 years in 2007 in France for cycling city systems have been successful – 750 bicycle stations have been opened there with a total of 10,000 vehicles (*Rower miejski...*, 2018). In the era of constant processes of globalization and

urbanization, the bike urban as an individual means of transport satisfies the transport needs of the agglomeration urban areas and can be an effective solution to the problem of last mile. Due to the excessive number of individual vehicles in the city, street jams are created during peak transport times, known as congestion (Wyszomirski, 2008, p. 23). A city bike can be a way to eliminate this phenomenon. Due to dense buildings in city centers, the bicycle can be a means of transport enabling direct displacement between main points, i.e. banks, shops, offices, etc.

The advantage of these connections is also reducing the average travel distances. Urban transport cycling contributes to improving the quality of life in the city, reduces noise emissions and pollution, reduces the need for space for road infrastructure and reduces the risk of accidents. Cyclists reach low speeds in urban space, thanks to which the bike can be treated as a means of transport used for revitalization public space and improving security (Kłos-Adamkiewicz, Załoga, 2017, pp. 83–87). The aim of the article is to analyze selected ones cycling urban systems in Poland, as the upward trend is noticeable in the field of cities deciding to implement bicycle urban systems by drawing from the experience of European cities such as Copenhagen, Barcelona and London. These cities are an example of the best practices in the implementation of self-service rental companies city bikes.

General characteristics of self-service city bike rentals

The Public Bike System is “a fleet-based bicycle mobility scheme public bicycle with technical and ICT facilities, offering free or low-cost bicycle communication for residents of a given area (cities, agglomerations) and people visiting” (*Studium koncepcyjne...*, 2016). operators operating in the cities concerned, they locate bicycle stations in public places, such as campuses, housing estates, metro stations, business districts, stops bus, tram or integrated transfer centers (Jia, Liu, Liu, 2018).

Nowadays bike rental services are divided into two types: the model with docking station and a model that allows sharing bikes without a docking station. After first, they use various rental and return technologies. First these models have docking stations for bicycles equipped with terminals (Ricci, 2015). Residents of cities wanting to use a city bike functioning on docking stations are obliged to register in the Internet system service operator. After accepting the Regulations and usually a small payment on The Personal Lender's Account (depending on the city) can be logged in Operator's website. To rent a bike, approach the terminal at the station, run go and follow the instructions appearing on the monitor (*Jak to...*, 2018). Users must rent bikes docked from the dock near their place exit and return the bicycles to the docking station near the destination.

The model without docking stations is based on the application with which you can locate stations in the city and check the availability of bicycles on each of them. To rent a bike, download a dedicated application for an electronic device, and then top up your account with an activation fee. The application also allows you to open bicycle lock. After finishing the ride, the lock must be closed manually (*Rybnik...*, 2018). Users can rent bikes without a docking station anywhere and return them also to the selected location by blocking lock. The model without docking stations functions is, for example, in Rybnik.

Differences between docking and codeless bike sharing lead to different challenges and there are differences in their regulation. Until recently, bicycle systems urban areas without docking stations were described in the literature of the subject in a minor degree.

Ranking of city bicycle systems in Poland in 2018

A comprehensive ranking of urban bike systems carried out by specialists from *dadelo.pl* and took over 25 key, most important cities in Poland. The following parameters were considered in the study:

- the number of stations and bicycles,
- the number of people registered in the system,
- prices and number of loans.

In addition, the analysis was subjected to the length of seasons in which they operate self-service rentals in selected cities and additional amenities, i.e. type of bicycle (*Ranking systemów...*, 2018). The article presents the classification of the 10 cities that have obtained the best results in individual categories. Figure 1 shows the classification results overall.

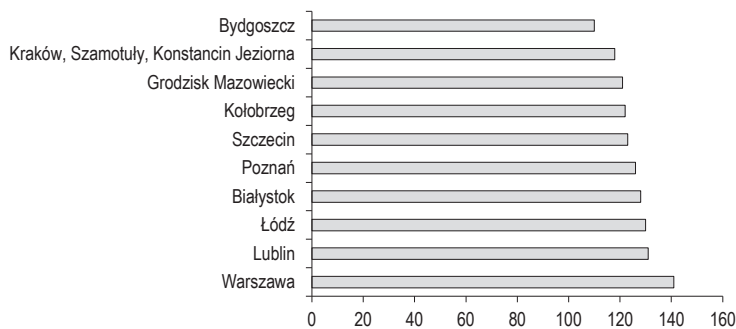


Figure 1. General classification of city bike systems in 2018

Source: own study based on: *Ranking systemów...* (2018).

The winner of the general classification is the Warsaw *Veturilo* system, whose advantages are above all: a dense network of stations, affordable prices and a relatively long season loans. In addition, there are additional facilities related to the capital of Poland with the type of rented bike: tandem, electric bicycle, family bike, bicycle children. Moreover, in Warsaw at the end of 2017, the first system in Poland appeared city bikes without parking stations – *Acro Bike (ACRO Bike...*, 2017).

The next analyzed parameter was the number of city residents falling for one bike.

The winner of this classification was Konstancin Jeziorna, where one bike falls on one bike 286 inhabitants. Krakow is placed in the 10th place, where one bike rides up 510 people. This means that the further the city is in the ranking, the number of bikes in these cities is adequately low to the number of inhabitants.

The third parameter analyzed was the number of stations per km². The ranking was placed cities from the highest to the smallest density per km². In the first place was located in Warsaw with a result of 0.71 stations/1 km² (*Ranking systemów...*, 2018).

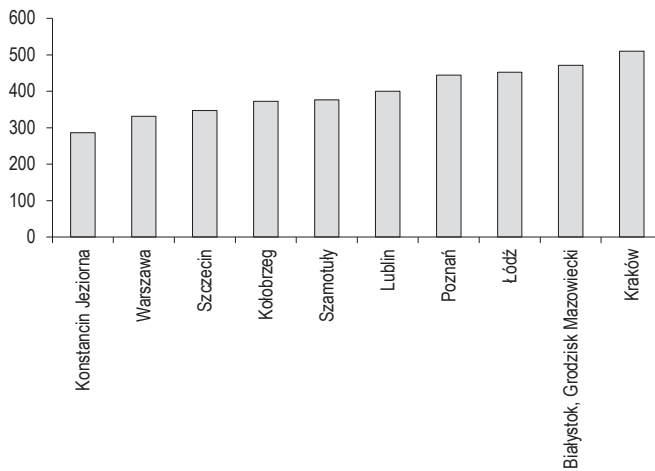


Figure 2. The number of city residents per one bicycle

Source: own study based on: *Ranking systemów...* (2018).

Another aspect is the price for the trip. Usually the first 20 minutes Bike rental is free. The worst in this ranking is Kraków, where it is the first 20 minutes you have to pay as much as PLN 3.20 (*Ranking systemów...*, 2018). The next analyzed indicator was the percentage of the city's population saved in the system to the general public. The summary is shown in Figure 3.

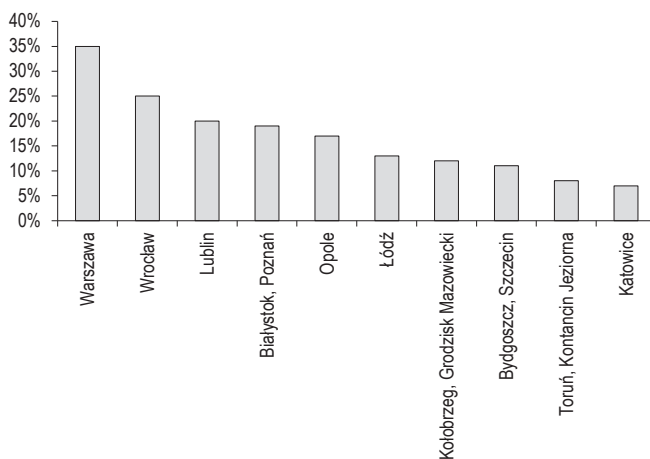


Figure 3. Percentage of population of cities registered in the system to the general population

Source: own study based on: *Ranking systemów...* (2018).

Figure 3 shows that 35% of the population of Warsaw is registered in the system. Such a result may be related to the proximity of numerous higher education institutions and the possibility of unreliable development. It can be assumed that the more the city ranked further, the bandwidth in cities, it is preserved at the appropriate level, and the phenomenon of congestion occurs extremely rare. The result is that the residents pay less attention to environmental aspects, and take advantage of resources against sustainable mobility individual motorization. An important indicator is the average number of loans per person in the system. The existing situation is presented in Figure 4.

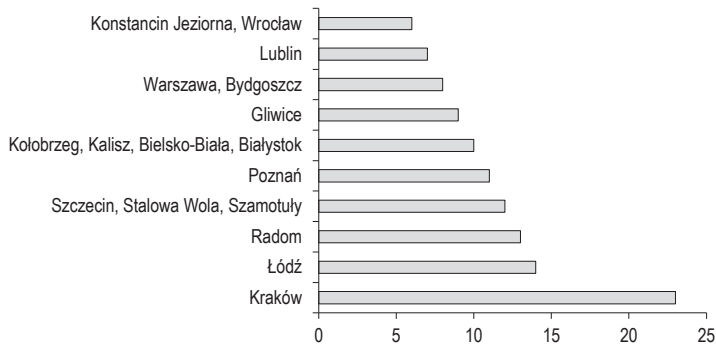


Figure 4 The average number of bike rentals per one person

Source: own study based on: *Ranking systemów...* (2018).

It is surprising that Krakow topped the list, at which prices One-time rental bikes are relatively expensive compared to other cities. The attractive subscription fee system may have a significant impact on the result in this category. People with a pass more often and more often use the city bike system than Occasional travelers.

In reference to the parameter, which is the length of the season, the clear leader is also Kraków, where you can rent bikes from January to December (*Krakowianie...*, 2018) The Ostrów is an attractive city in this ranking, in which the season lasts from October to November (*Ostrów...*, 2017).

The above analysis allows to draw the conclusion that the number of urban systems cycling in Poland is increasing. This is particularly important in terms of the implementation of the concept a new culture of mobility. Development is one of the tools for implementing this concept bicycle infrastructure in the city, with an emphasis on cycling highways. In addition, modeling on the best examples of practices in the implementation of bicycle systems urban cycling can be further promoted by bicycle trips through introducing additions/ bonuses for striving for sustainable mobility through access to bicycle work.

Conclusions

To the premises for the development of bicycle transport, and what is behind it following the implementation of bicycle urban systems can be included low terrain of bicycle transport, high capacity of existing infrastructure cycling and the positive impact of bicycles on the natural environment. Mostly the external transport costs are

offset, which directly translates into the state public health and improving the condition of transport infrastructure. The advantage of implementation cycling public systems is an attempt to encourage residents to change their behavior communication and increase in bicycle mobility.

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