Will a free of charge urban transport convince passengers to give up personal cars?

For quite a few years in Europe, and in recent years especially in Poland, a free of charge urban transport became the subject of a lively discussion. A few years ago even the F*are Free Public Transport* (https://farefreepublictransport.com/city/) website was established, devoted to a zero tariff and promoting cities which implemented this solution. On this website approx. 100 cities from the entire world are presented under the signpost of free of charge transport. However, the exclusion from paying for the public transport services, i.e. the implementation of so-called zero tariff, rarely applies to the entire urban transport system within specified area, e.g. in the city.

Text **ANNA URBANEK**, *photos* **MAGDALENA WOJTYŁA**

Much more frequently a free of charge transport applies to a selected city part, selected lines, specified social or age groups, or to distinguished periods of day or selected days within a year, e.g. European Car Free Day. Also solutions, which combine various criteria or apply to specific services, are frequently encountered, e.g. Park&Ride systems, in which a parking ticket entitles to free travels by the urban public transport in a specified area [1]. A definite majority of cities specified in the Fare Free Public Transport website apply a zero tariff only to a limited extent, e.g. for selected passenger groups. Most often children until achieving a specified age, persons of various disability degrees, as well as elderly person, having reached the age specified in the tariff, are entitled to free travels. Such a scope of free travel entitlements is a solution very frequently used in Poland, and also worldwide.

It is necessary to draw attention to the fact that the scope of entitlements to free and concession travels existing now in most Polish cities is very broad. Neglecting persons on duty (e.g. police and municipal guard officers, etc.) and also disabled persons, in the majority of cities of Poland children up to 4 years of age are relieved from paying for the urban public transport services based on municipal concessions. In a definite majority of cities also persons older than 70 years are entitled to free travels (in a part of cities already older than 65 years, e.g. in Bydgoszcz). While pursuant to relevant legislation war veterans and university students are entitled to concession travels, and in most Polish cities also children, pupils of primary and secondary schools as well as old-age and sick pensioners older than 60 years are entitled to municipal concessions.

The main arguments, justifying the introduction of fare-free urban transport, most often referred to by this solution supporters, include an increase in the urban public transport competitiveness against the individual motorisation, and also increasing accessibility of public transport for low-income persons.

Streszczenie

Od kilku lat w Europie, a w ostatnich latach szczególnie intensywnie w Polsce, przedmiotem ożywionej dyskusji stał się bezpłatny transport miejski. Dywagacje obejmują wdrożenie tzw. taryfy zerowej nie tylko całego systemu transportu miejskiego w określonym obszarze np. w mieście, ale częściej dotyczą wybranej części miasta, wybranych linii, określonych grup społecznych lub wiekowych bądź też wyodrębnionych pór dnia lub też wybranych dni w roku. W tekście autorka analizuje dostępne badania krajowe i zagraniczne, a także przygląda się wdrożeniom w miastach europejskich, by odpowiedzieć na pytania, czy rzeczywiście darmowy transport miejski jest przesłanką decydującą o zmianie preferencji komunikacyjnych użytkowników samochodów osobowych?

Słowa kluczowe: badania i analizy, bezpłatny transport, preferencje komunikacyjne

Summary

Will a free of charge urban transport convince passengers to give up personal cars?

For quite a few years in Europe, and in recent years especially intensively in Poland, a free of charge urban transport became the subject of a lively discussion. Digressions comprise the implementation of so-called free fare not only for the entire urban transport system within a defined area, e.g. a city, but more often they apply to a selected city part, selected lines, specified social or age groups, or distinguished times of day or selected days in a year. In the text the author analyses available domestic and foreign surveys, as well as looks at the implementation in European cities, to answer the question, is a free of charge urban transport an actual premise deciding about changing the car users' transport preferences?

Keywords: surveys and analyses, free of charge transport, transport preferences

In Poland there are no surveys and analyses, which could provide the basis for the zero tariff effectiveness assessment. The cities in Poland, which have introduced such a solution within the entire scope, are small and medium-size cities, with a relatively small urban transport offer – limited mainly to a few internal lines. Hence in those urban centres probably no surveys are carried out of the influence of cancelling the urban public transport fares on the transport behaviour of residents.

So perhaps it is worth to look at the available domestic and foreign surveys, and also at the implementation in European cities, to answer the question, is a free of charge urban transport an actual premise deciding about changing the car users' transport preferences?

Would you actually leave your car at home only because the urban transport in your city is fare-free?

The European Commission survey *Special Eurobarometer 406, Attitudes of Europeans Towards Urban Mobility* carried out in 2014 shows that acc. to Europeans opinion the reduction of service cost (59% of respondents) and the improvement to the service quality and offer (56%) is the opportunity to increase the urban public transport attractiveness. Among the surveyed persons in Poland 54% indicated the reduction of prices, while 45% of them – the public transport quality and offer (the survey was carried out in 28 European Union countries between May and June 2013, on a group of 27,680 respondents) [2]. So the expectation of adequate service prices is equivalent with the expectations formulated in relation to an appropriate offer and quality of public transport in cities.

Parameter	Total number of points
punctuality	8.24
safety	8.24
direct connections	8.12
reliability	7.74
accessibility of stops network	7.73
frequency of journeys	7.66
cleanness of vehicles	7.61
travel time	7.60
travel comfort	7.44
external marking of vehicles	7.21
passenger information	6.81
tickets price	6.57
stops functionality and aesthetics	6.26
validators in working order	5.87

Table 1. Hierarchy of transport postulates among KZK GOP passengers. Source: Analysis of results of questionnaire survey carried out within the KZK GOP area, Section of Research and Development, KZK GOP, January 2012.

Most surveys of transport preferences of big city residents show that the most important transport postulates formulated by them apply to the transport offer, namely direct connections, punctuality, frequency, and accessibility. The expectation of a low cost is for respondents most often a postulate of medium or low importance. The results of questionnaire surveys carried out within the KZK GOP area in 2011 for the needs of formulating the assumptions of KZK GOP Plan of Sustainable Public Transport Development (Table 1) and results of cyclically performed surveys of Gdynia residents transport preferences and behaviour (Fig. 1) could be considered an example.

The available results of transport preference surveys carried out in European cities also show that the price is not the main factor affecting the choice of means of transport. The results of questionnaire

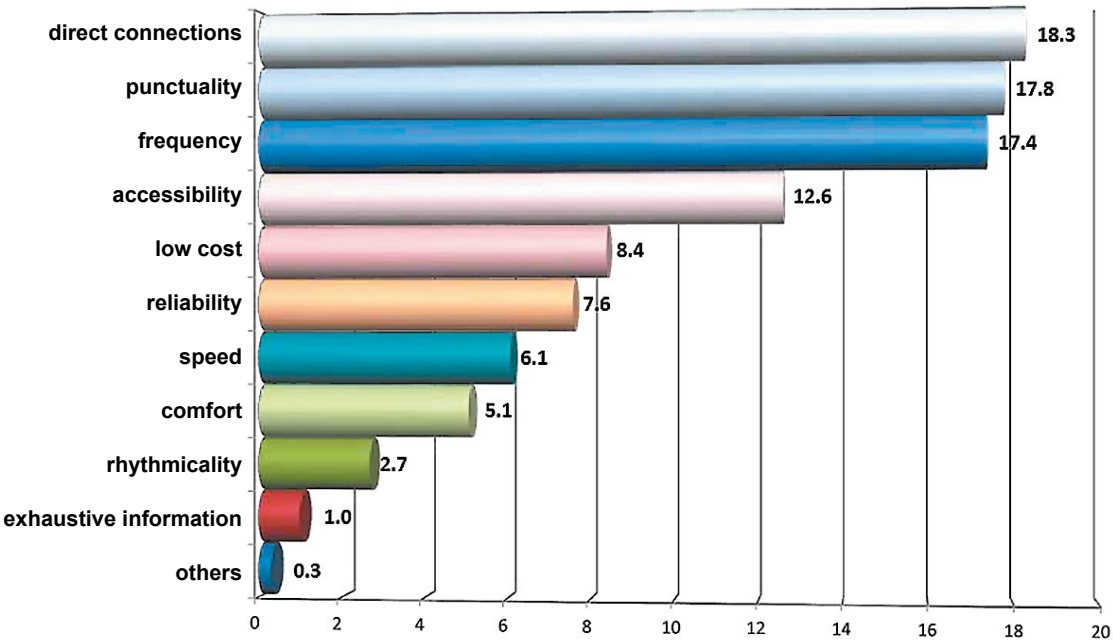

Fig. 1. Ranking of Gdynia residents transport postulates. Source: Transport preferences and behaviour of Gdynia residents. Report on marketing survey, 2015, Municipal Transport Management, May 2016, p. 22. http://www.zkmgdynia.pl/admin/__pliki__/A4_zkmgdynia-PZKMG-raport%202015.pdf

survey of commuters to Brussels, carried out in 2005 by the staff of Vrije Universiteit Brussel can be used as an example. The survey was carried out on a sample of 1276 respondents (526 car users, 740 railway passengers). The carried out survey shows that only 10% of surveyed persons commuting by an own car declared the willingness to use a free of charge public transport (Table 2). Instead, 42% were respondents, who could not clearly declare such willingness, and as many as 48% of surveyed persons were the people, who would certainly not change the means of transport.

The lack of appropriate connections and an insufficient travel speed were mentioned among the main barriers discouraging the surveyed persons to use the public transport in daily commuting (Table 3).

In the case of removing the main barriers the willingness to use public transport instead of a car was declared by 22% of surveyed persons (16% persons travelling by a company car and 25% by a private car). A negative answer was provided by 29% of all respondents (45% persons travelling by a company car and 22% by a private car).

A decline of public transport attractiveness in favour of individual motorisation is a common feature of modern societies and this trend results from the income flexibility of the demand. A car is a normal good, for which the demand grows with the increasing income of buyers (a positive income flexibility of the demand). Instead, the services of urban public transport are goods of lower usability, for which the demand decreases together with the increasing income (negative income flexibility of the demand) [3]. So at a certain level of life and income the price of urban public transport services does not play any role in the process of a means of transport choice.

Case studies – Belgian city of Hasselt and Tallinn – capital of Estonia

In 1997 a zero tariff was entirely introduced in the Belgian city of Hasselt, with a population of approx. 76,000. This is the only European city, where the zero tariff was entirely applied. Already in the first year of zero tariff operation a fourfold increase in the number of urban public transport was recorded – from 360,000 to nearly 1.5 million. In the next years the demand for the urban transport was constantly growing. The number of passengers was increasing, which stabilised only in 2005 on the level of approx. 4.6 million passengers per year. An increase in the number of passengers and the growing expectation formulated in relation to the transport offer resulted in the need of a few times growth of expenditure on the public transport – from EUR 967,000 in 1997 to EUR 3.5 million in 2007. As a result, in 2013 this forced the Hasselt authorities to give up the zero tariff and to introduce fares for travels. The entitlement to travel fare-free was maintained only for the group of youth up to 19 years of age [4].

However, the survey of so-called additional passengers in the city of Hasselt has shown that only 16% are persons, who would use a car, if the urban public transport was not free, and the others are the effect of substitution of walks and bicycle rides (20% of additional passengers) and an additional mobility (as many as 6 out of 10 additional passengers declares, that if the urban transport was not free of charge, then they would not need to travel) [5].

A similar effect was registered in the group of students in Leuven, which between 2001 and 2013 were relieved from paying for the urban public transport. It has turned out that a definite majority of new urban public transport passengers are students, who so far were riding a bicycle to the university [5].

So the results of surveys allow to conclude, that the introduction of zero tariff increased the mobility of studied cities residents and resulted in an unfavourable, from the sustainable development point of view, substitutions of travels [5].

The capital of Estonia – Tallinn is another example of a city, which has introduced a zero tariff

Willingness of change to free public transport	Total (%)	Persons using a company car (%)	Persons driving a private car (%)
Yes, certainly	9	7	10
Maybe	39	30	42
Certainly not	52	63	48

Table 2. Attractiveness of fare-free public transport in daily commuting – results of questionnaire surveys. Source: De Witte A., Machais C., Mairesse O., How persuasive is free public transport? A survey among commuters in the Brussels Capital Region. „Transport Policy" 2008, v. 15, p. 216-224.

Total	Persons using a company car	Persons driving a private car
1. Connection: 57%	1. Connection: 47%	1. Connection: 61%
2. Speed: 44%	2. Availability: 40%	2. Speed: 46%
3. Availability: 39%	3. Speed: 38%	3. Availability: 38%
4. Timetable: 31%	4. Comfort: 24%	4. Timetable: 37%
5. Frequency: 26%	5. Network of connections: 18%	5. Frequency: 30%

Table 3. Main barriers discouraging to use the public transport in daily commuting acc. to the surveyed persons assessment. Source: De Witte A., Machais C., Mairesse O., How persuasive is free public transport? A survey among commuters in the Brussels Capital Region. „Transport Policy" 2008, v. 15, p. 216-224.

The implementation of a zero tariff leads to a greater degree to giving up walking and bicycle travels in favour of the public transport travels. Photo: Sosnowiec, Bolesława i Władysława Dehnelów street

for its residents (approx. 420,000). Tallinn is the biggest city worldwide so far, which has introduced a zero tariff for all its residents. It is necessary to emphasise, that even before the zero tariff introduction Tallinn was among cities of relatively balanced split of transport tasks, because the public transport share in serving the transport needs in the city was relatively high – it was 40%, while walking made approx. 30% of carried out movements. Moreover, the urban transport prices were relatively low. The zero tariff was introduced on 1 January 2013. The main objectives of total cancelling of payments for the urban public transport services included [6]:

– reduction of cars traffic in the city and transferring a part of travels carried out by cars to the urban public transport,
– increasing the mobility of low-income and unemployed persons,
– increasing the number of residents registered in Tallinn to increase the city revenue for residents income tax.

The surveys carried out by the research staff from the Delft University, the Netherlands, and from the KTH Royal Institute of Technology, Stockholm show that the zero tariff introduction within less than a year contributed to the increase in the public transport share in the transport tasks split in the city by 8 percentage points, the car travels went down by 3 percentage points, while walking decreased from 12 to 7%, the bicycle share remained unchanged at 1% [6]. The analysis of those surveys results in terms of the economic situation of surveyed persons is interesting (Table 4).

So the results of surveys show that the cancelling of fares for the urban public transport services in most cases has slightly contributed to the increase in the number of persons using the public transport. The highest growth occurred in the group of persons with the lowest income, although attention should be drawn to the fact, that the percentage of walking persons substantially decreased and the percentage of persons using cars in this group has not changed at all. Hence it is possible to risk a statement that the increase in the number of persons using the public transport in the lowest income group results mainly from the increase in mobility of persons, who did not have a need to move beforehand or who gave up walking in favour of the public transport.

Moreover, the performed surveys show that in the group of persons with the highest income an opposite to the intended effect has been achieved, because the share of persons using the public transport went down in favour of walking. In the remaining cases the percentage of persons using a car decreased only slightly, parallel to the decline of walking.

Minute effectiveness of fare-free urban transport in affecting a change of preferences of persons us-

Finally it is worth paraphrasing words of famous economist, Milton Friedman, and state that 'there is no such thing as a fare-free urban transport'. It is necessary to pay for everything, only the payer changes. The introduction of a free of charge public transport in a city, at a minute effect for making mobility sustainable, means primarily giving up the revenue on tickets. For the city it means the necessity to supplement this shortage by funds that could be allocated to other needs of city residents (e.g. the health care, schools, welfare etc.).

ing the individual motorisation was confirmed also in one of Polish cities – Nysa. In May 2012 Nysa introduced a free of charge public transport for car owners based on the possession – when travelling – of a B category driving licence and a log book with a valid date of technical inspection [7]. However, this solution was given up in August 2015, mainly due to a too high financial burden to the municipality budget, and also due to minute effectiveness of this instrument in affecting a change of residents transport preferences [8, 9]. The scope of entitlements to free travels binding now in Nysa does not differ substantially from other cities in Poland, because – generalising a bit – the following persons are entitled to fare-free travels: disabled, blind and visually impaired persons as well as their carers, persons who finished 70 years of age, children till starting learning in primary schools, as well as municipal guard officers in uniforms [10].

Summary

In numerous discussions the introduction of free of charge public transport in cities is presented as an instrument for a quick and effective improvement to this mode of transport attractiveness and for making mobility sustainable. It is even possible to have an impression that this is a remedy for all transport problems of Polish cities. Whereas the available data and surveys show that the zero tariff is an instrument of limited effectiveness in the field of substitution and switching from the individual motorisation to the public transport. What is interesting, it applies even to the group of persons of lowest income, where – as shown by surveys – the zero tariff effectiveness in the field of changing a car in favour of public transport is rather limited. Instead, the implementation of a zero tariff leads to a greater degree to an entirely different phenomenon, i.e. giving up walking and bicycle travels in favour of the public transport travels.

Moreover, attention should be drawn to the fact that in a decisive majority of cases, both in Poland and worldwide, this solution – if implemented entirely – then it is only in small and medium size towns, of relatively small transport offer of the local public transport.

Finally it is worth paraphrasing words of famous economist, Milton Friedman, and state that 'there is no such thing as a fare-free urban transport'. It is necessary to pay for everything, only the payer changes. The introduction of a free of charge public transport in a city, at a minute effect for making mobility sustainable, means primarily giving up the revenue on tickets. For the city it means the necessity to supplement this shortage by funds that could be allocated to other needs of city residents (e.g. the health care, schools, welfare etc.). In further perspective it means also substantial limitation to the possibility of developing the network of connections and of improving the quality of transport in the future, because the financing of such projects will always be related to giving up other municipal investments.

So we can ask a question: if not a fare-free urban transport, then what would encourage residents to give up cars in favour of the public transport? As the previously quoted results of surveys show, definitely an appropriate offer would be a more effective instrument, that is the connections network and frequency as well as quality – and this in turn generates costs for the public transport organiser. ■

Net monthly income	Autumn 2012			Autumn 2013		
	Public transport	Car	Walking	Public transport	Car	Walking
Up to EUR 300	5%	12%	21%	82%	12%	5%
EUR 301-400	63%	25%	11%	72%	20%	6%
EUR 401-650	59%	34%	8%	58%	31%	8%
EUR 651-1000	39%	52%	7%	42%	50%	6%
Above EUR 1000	39%	59%	2%	31%	50%	18%
No answer	49%	36%	13%	59%	31%	9%

Table 4. The share of persons using the public transport, car and walking in individual income groups, before and after the introduction of zero tariff in Tallinn. Source: Cats O., Susilo Y.O., Remail T., The prospects of fare-free public transport: evidence from Tallinn. Transportation. 2016, p. 1-22.

Tickets inspection at KZK GOP

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[1] In the original: 'There's no such thing as a free lunch' – the saying popularised by Milton Friedman, due to the book of the same title: M. Friedman, *There's No Such Thing As a Free Lunch*, Open Court Pub Co., August 1975.

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