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## REASONS FOR USING PUBLIC TRANSPORT SERVICES IN CRACOW IN THE OPINION OF ITS USERS – SURVEY RESULTS

*Powody korzystania z usług komunikacji miejskiej w Krakowie w opinii jej użytkowników – wyniki badań ankietowych*

**Iryna Manczak (1), Natalia Muniak (2), Kamil Pawłowski (3)**

(1) Department of Trade and Market Institutions, Cracow University of Economics, Rakowicka 27, 31-510 Krakow, Poland  
e-mail: manczaki@uek.krakow.pl

 <https://orcid.org/0000-0002-9661-9945>

(2) Cracow University of Economics, Rakowicka 27, 31-510 Krakow, Poland  
e-mail: n.muniak@onet.pl

 <https://orcid.org/0000-0001-8775-534X>

(3) Cracow University of Economics, Rakowicka 27, 31-510 Krakow, Poland  
e-mail: camil1999@gmail.com

 <https://orcid.org/0000-0003-0483-921X>

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**Abstract:** Public transport services are an example of important category for the implementation of key activities by the local community. These services enable the movement of residents and guests visiting destinations and provide access to city elements of the settlement. The aim of the article is to identify the reasons for using public transport services in Cracow in the group of respondents. Selected characteristics of public transport are outlined on the basis of an analysis of the published literature. Particular attention was paid to the offer of Cracow’s public transport. The study presents the results of surveys conducted by an online diagnostic survey among users of the surveyed services. The aim of the research was to identify the reasons why the respondents use Cracow’s public transport services are: the lack of a car, a travel allowance and an attractive connection network turned out to be a group of key reasons for using the analyzed services. The results indicate the need to continuously improve the level of functioning of Cracow’s public transport by: information about vehicle delays, improving the operation of ticket vending machines, and by providing a regular number of conn.

**Keywords:** public transport services, public transport, Cracow, survey research

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## Introduction

Cracow is one of the important cities in Central and Eastern Europe and is considered one of the most recognisable settlement centers. The capital of the Lesser Poland region has an extensive urban infrastructure and tourist attractions that favor various forms of tourism (Walas, Kruczek, 2020). The group of attractions mentioned includes, among others, historical sites, museums, green areas or cultural events (Kruczek, Mazanek, 2019). It is worth noting that their exploration for tourism purposes is possible as a result of being adapted and made accessible to the needs and expectations of tourism participants (Seweryn, 2020).

Public transport plays a key role in the movement of residents and visitors to settlement centers, enabling access to elements of the local tourist offer (Hącia, 2019).

The aim of this article is to identify the reasons for the use of Cracow's public transport services by its users. For the purposes of the research, two specific objectives were adopted: to identify the reasons for the use of the surveyed services by the respondents and to identify areas for improvement in the functioning of public transport in Cracow.

The following research hypothesis was formulated: respondents rated the level of selected services provided by public transport in Cracow well.

sprawl is associated with an increase in the level of individual motorisation use, which undoubtedly has a destructive effect on the environment. For a certain period, the increase in the number of cars was seen as a symbol of prestige. This kind of phenomenon had a decisive impact on consumer behaviour (Kłos-Adamowicz, 2016).

Quality increases the value of a service by adding utility to it (Drob-Żaba, Żaba, 2008). It is also a declaration of compliance with a certain level of standard (Starowicz, 2004). The needs of customers should correspond to the presented quality of the service, based on resources (Kłos, 2012). Its level will also be correlated with the price for a given service (Jackiewicz et al., 2010).

Public transport services are universal and characterised by features such as equality, universality and continuity. Moreover, they are also an integral part of urban transport (Kłos-Adamowicz, 2016; Nowotyńska, 2017). It should be noted that the market for transport services is characterised by diversity. However, according to researchers, the characteristics of public transport are similar (Tab. 1).

Public transport focuses on issues such as regularity, frequency of connections, and specific rules. Price is also an important determinant of the popularity of public transport. What is more, higher charges could be

Tab. 1. Selected characteristics of public transport.

Features highlighted by Załoga, Kwarciański (2019)	Features highlighted by Starowicz (2004)
<ul style="list-style-type: none"> <li>– availability to all persons according to certain rules (e.g. payment),</li> <li>– regularity,</li> <li>– defined number of connections,</li> <li>– defined route.</li> </ul>	<ul style="list-style-type: none"> <li>– openness to individual and group travelers,</li> <li>– appropriate pricing of services,</li> <li>– regularity,</li> <li>– established route and stops,</li> <li>– defined service frequency,</li> <li>– use of advertising.</li> </ul>

Source: own elaboration based on Starowicz (2004); Załoga, Kwarciański (2019).

## 1. Public transport services – literature review

Public transport services are changing with the socio-economic development of the geographical space (Stjernborg, Matisson, 2016). These transformations are determined, among other things, by the enrichment of societies, increased expectations of users, and increased leisure time (Berežný, Konečný, 2017; Mężyk, Zamkowska, 2019). The literature points out that an important aspect of the changes that have occurred is the phenomenon of urban sprawl (Kłos, 2012), which is related to the processes of suburbanisation and exurbanisation (Jopek (ed.), 2019). The need for urban

a cause of exclusion of passengers with lower incomes (Kwarciański, 2016). Public transport contributes to value added in various areas of the economy (Pawłowska, 2013), including increasing the country's GDP (GUS, 2019). The literature highlights a number of factors that influence the perception of transport services (Dera, 2007). The most popular ones cited by researchers are travel time, safety and travel costs (Rydzkowski, Wojewódzka-Król, 2009; Dyr, 2009). The cited factors are also complemented by reliability, available information, comfort and punctuality (Pietrzak, 2015).

The functioning of public transport has a key impact on its surroundings. It is worth mentioning that

the local transport infrastructure determines the functioning of public transport (Bul, 2015), which is why it should be regularly upgraded and improved. Appropriate organization of public transport increases accessibility in terms of its usage and helps reduce travel costs. Thanks to the occurrence of the mentioned phenomena, passengers can save time.

The public transport offer should respond to changes in transport needs and demands. These include changes listed below (Mężyk, 2019):

- demographic, involving changes in the number and structure of the population,
- spatial, caused by suburbanisation and depopulation processes,
- quality expectations in the context of a comparison with the independence of travel offered by one's own vehicle,
- increasing environmental pressures.

It is worth adding that broader discussions on public transport are the subject of consideration mainly in centers such as Poznań, Cracow, Sopot and Łódź (Rosik et al., 2018). Public transport is also counted among the key elements that make up the tourist base (Napierała, Muszkieta, 2011). Its unsatisfactory level of performance is a barrier to tourism development. However, tourism is rarely the main factor that has a decisive impact on the functioning of public transport (Mehring, 2017). In addition, the Leipzig Charter for Sustainable European Cities was introduced in 2007, in which sustainable development of transport infrastructure, including public transport, was an important point (Pawłowska et al., 2011).

## 2. Cracow's public transport offer

Public transport is an integral element in determining the mobility of residents of and visitors to Cracow. Adapting transport solutions to the needs of the traveling public is an example of an important task facing the local government. Priority roles in urban agglomerations are played by a well-organized and planned transport system, especially the urban transport system enabling the mobility of passengers and cargo (Bździuch, Bogacki, 2017). Public transport allow users to move to different service points, which can be related to the fulfillment of various needs (educational, professional, recreational, entertainment, among others).

Public transport in Cracow exists for over 100 years. In 1917, the first tram service took place on the route over the bridge on the Vistula, connecting Podgórze with the center of Cracow. In 1927 the first regular bus lines were launched (Dudek, Kucharski, 2007). The progressive changes resulted from processes such as the expansion of selected districts, the undertaking of

investments or population growth. As a result of these phenomena, the basic way of getting around in Cracow was to use public transport services. The public transport system is operated by Miejskie Przedsiębiorstwo Komunikacyjne S.A. (MPK) and Mobilis Sp. z o.o. Figures for 2022 show that MPK operates 497 vehicles, while Mobilis operates 79 (MPK, 2022).

Nowadays, Cracow's public transport plays an important role in shaping a resident-friendly city (Luptak et al., 2019; Komsta et al., 2019). Sustainability policy is a crucial aspect in investment plans, especially the problem of air pollution, which the Cracow's government authorities have been fighting for a long time. Unfortunately, the capital of Małopolska was also on the list of the most polluted cities nationwide (Wojtal, 2018). It should be added that since the end of 2015, free public transport services have been offered during smog (Mikulski, 2020). Between 2006 and 2016, the city was classified as one of the dominant centers in terms of the number of commuters, where public transport has a significant share (Stowarzyszenie Metropolia Krakowska, 2021).

One of the objectives of the adopted plan for sustainable development of public collective transport for the Municipality of Cracow and neighbouring municipalities is "to plan until 2024 public transport services provided in the area of the City of Cracow and neighbouring municipalities in accordance with the principles of sustainable transport development, which result from the need to ensure an appropriate level of mobility of society and the negative consequences of uncontrolled development of individual motorisation" (UMK, 2013).

The local public transport stock consists of 634 buses, 382 trams (MPK, 2022) and historic trams and buses that run during special events (MPK, 2021). Recently, public transport provided services on 28 tram lines, 110 city bus lines and 76 agglomeration bus lines (ZTP, 2022). In addition to the number and availability of bus and tram fleets, the ticket offer is important from the point of view of public transport participants. This includes season tickets. There is the Krakowska Karta (KK) aimed at residents. As an example, the price of a monthly normal registered ticket for one line, in the city, is PLN 80.00, while analogously with KK it is PLN 54.00 (MPK, 2021), which is a kind of incentive to use Cracow public transport services.

## 3. Researched material and methods

In order to achieve the aim of this article, quantitative research was carried out via an online diagnostic survey among Cracow public transport users. The respondents are people living both in Cracow and the neighboring agglomerations, as well as tourists who used Cracow's

public transport during their stay. The questionnaire was posted on the Communication Platform of the City of Cracow website and on the groups on Facebook related to travel and communication. The method of selecting typical individuals was used, which made it possible to select such characters considered as average to the surveyed population (Babbie, 2008). "The snowball method" was exploited in order to collect primary material, taking into account non-random selection (Jabłońska, Sobieraj, 2013). Respondents were asked to share the survey in their closest environment. Participants in the study were allowed to complete only one questionnaire. Internet access and age 18 were required to submit a response. The questionnaire consisted of thirteen questions: closed, single and multiple choice and was split into two parts: the metrics and other questions. In the first part, the questions were aimed at examining the community

responses were obtained (203 – women, 97 – men). The study was conducted among adult users. The research was carried out in December 2021. The article focuses on the functioning of vehicles whose services are provided by the Municipal Transport Company. This company operates all tram lines and the vast majority of bus routes.

#### 4. Results

The analyzed population was dominated by women – 67.7% (Tab. 2). The largest number of respondents, 80%, were young people aged 18 to 25. Among them, the smallest number was between 56 and 65 years of age (0.3%). One in three survey participants was a resident of a rural area. It was also found that respondents living in a city of 250 000 to 500 000 inhabitants represented the smallest group.

Tab. 2. Demographic and social characteristics of the study population (N=300).

Feature	Criteria	Sex (%)	
		Female	Male
Age	18-25	55,3	24,3
	26-35	8,7	6,4
	36-45	1	0,3
	46-55	2	0,7
	56-65	0	0,3
	>65	0,7	0,3
Place of residence	village	25,3	9
	city with up to 100,000 inhabitants	9	7
	city with 100 000 to 250 000 inhabitants	4	3,7
	city with 250,000 to 500,000 inhabitants	3,7	2
	city with more than 500,000 inhabitants	15,3	21

Source: own elaboration based on tests carried out.

in terms of the following criteria: demographic (age, gender), geographical (place of residence) and educational (what education the respondent has). In the second part, eight questions were related to the frequency of using public transport by respondents, factors that influenced the quality of travel and the reasons why respondents chose or did not choose public transport as their means of transport. 300

Almost half of the respondents declared that they use public transport services 1-2 times a day (48%). The second large group were those who indicated that they ride public transport more than 2 times a day (38%). On this basis, it was assumed that the respondents regularly use the analyzed services. It is worth mentioning that the tram was the most frequently indicated by respondents as their preferred means of

transport (80%). More than half of the respondents had a secondary education (59%), while 38% had a university degree.

Based on the analysis of the collected primary material, key reasons for using the analyzed services includes the following: no car (56%), discounted fares (54%), attractive network of connections (49%), high fares by taxi (37%), fast travel by public transport (30%) and ecological reasons (30%) (Fig. 1). Moreover, the fare discount has a significant impact on making decisions related to the use of urban public transport services. Almost half of the respondents also considered that the attractive network of connections encourages them to use public transport services. Every fifth survey participant considered that the prices for the service were satisfactory. Therefore, it can be concluded that the price is not the key reason for using MPK services. Taking into consideration earlier comments, it can be added that the offer of MPK tickets is diverse and adapted to various transport variants. The available types of tickets may also be of interest to guests visiting Cracow for tourist purposes, including those staying in the city for a few days. Tickets for residents with the Krakowska Karta (Cracow Card) are an important element of the offer.

The results regarding the reasons for using public transport services were also analyzed through the prism of gender. It was found that among women the most common reason for using public transport was the lack of a car (20.7%). The respondents also pointed to having a discounted fare (18.7%) and the attractiveness of the connection network (17.7%). On the other hand, the men's answers were dominated by reasons such as having a discounted fare (21.1%), no car (19.1%) and the attractiveness of connections (17.5%). Table 3 shows the factors influencing the assessment of Cracow's public transport services by the respondents. It is worth noting that almost half of the participants in the conducted survey positively assessed punctuality. The vast majority of respondents said they were satisfied with access to timetable information (86%). Opinions of respondents regarding driving comfort were also examined. Based on the analysis of the research material obtained, it can be concluded that driving comfort was positively assessed by 60% of the respondents. The last factor influencing the assessment of the analyzed services was the cleanliness of the vehicles, which almost 64% of the respondents gave a positive note.

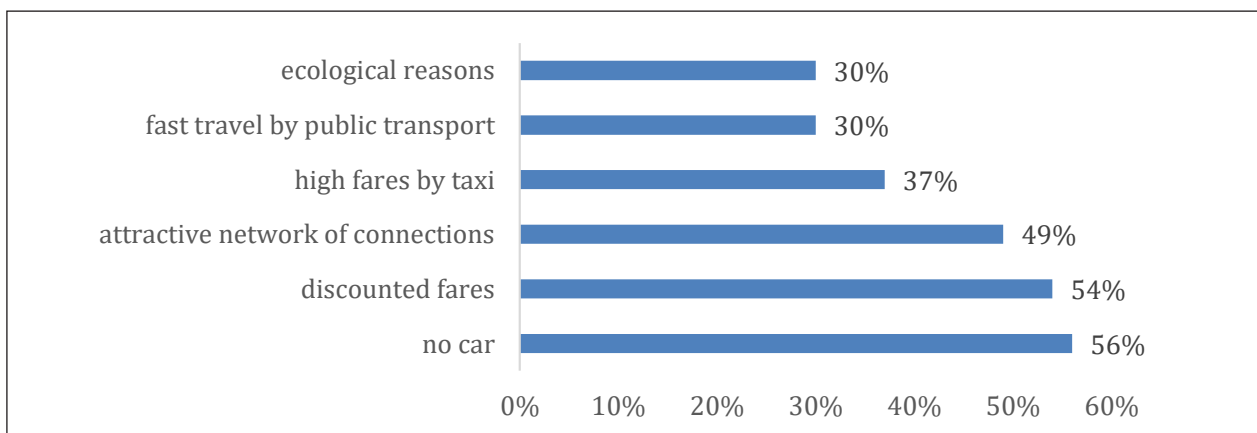


Fig. 1. Reasons for using public transport indicated by respondents.

Source: own elaboration based on tests carried out.

Tab. 3. Respondents' assessment of the quality of public transport services in Cracow (%).

Criteria	Very bad	Bad	Medium	Good	Very good
Punctuality	6,4	9,9	35,2	37,1	11,4
Accessibility of timetable information	0	1,9	12,4	44	41,7
Quality of ride comfort	1,9	4,5	33,2	46,6	13,8
Cleanliness of the vehicle	2,4	5,2	28,4	49	15

Source: own elaboration based on tests carried out.



It can be concluded that the hypothesis adopted for the purposes of the research was positively verified. Before starting the research, it was assumed that the respondents assessed the quality of public transport services in Cracow as good.

The last area analyzed were aspects related to the functioning of public transport in Cracow, which, in the opinion of the respondents, need improvement (Fig. 2).

possible to outline the behavior of people moving via public transport and determine the areas related to its functioning that require improvement. From the point of view of entities managing urban public transport, it is an important task to undertake research that assumes the recognition of its users' opinions on the offered transport solutions. The cited premises were an inspiration to carry out a survey among people using the offer of Cracow's public transport.

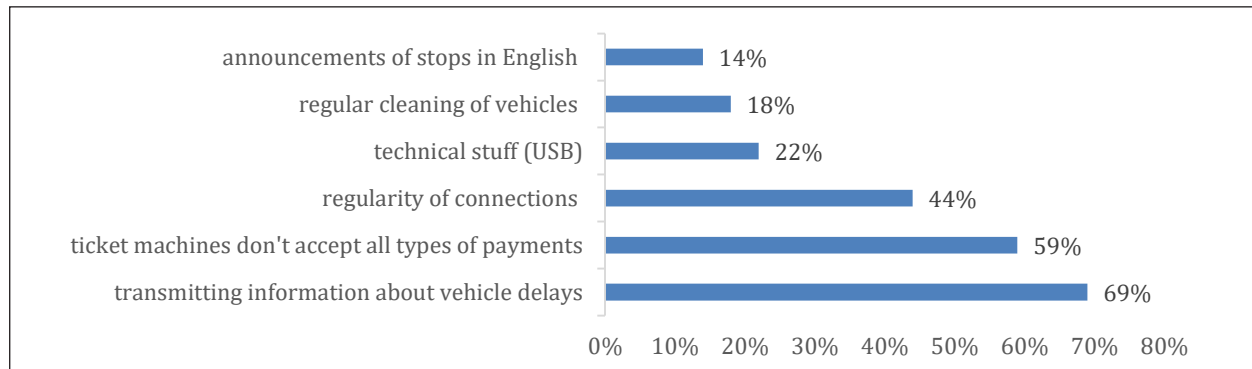


Fig. 2. Aspects of public transport that need improvement according to respondents.

Source: own elaboration based on tests carried out.

According to the respondents, the methods of transmitting information about vehicle delays should be refined (69%). Communication difficulties are mainly caused by the implementation of, among others, renovation works, road collisions and the phenomenon of transport congestion. The respondents also drew attention to the functionalities of ticket machines available in MPK vehicles. In their opinion, these types of devices should accept all types of payments (59%). The availability of payment solutions as part of this service will enable users of public transport to purchase tickets. Another important aspect requiring improvement was the regularity of connections (44%). Participants of the survey declared that sockets and USB ports should be available in vehicles. In their opinion, this aspect should also be refined, allowing passengers to use the distinguished solutions. It was found that the respondents expect regular cleaning of vehicles (18%). Attention was drawn to the fact that trams and buses should have announcements of stops in English (14%).

## 5. Conclusion

Public transport services allow people to take advantage of the offer of settlement units and engage in tourist and recreational activities. Identifying the reasons for using the services in question by users is a crucial issue. As a result of its recognition, it is

Based on the results of the survey, it was concluded that the respondents regularly use the analyzed services. The hypothesis adopted for the research was positively verified. In addition, it was established that the respondents decide to use public transport due to the lack of a car. An important determinant is the price for a given service. The vast majority of respondents use public transport thanks to the transport discount, which means that the ticket price is lower. It is worth mentioning that the majority of the respondents represented the 18-25 age group. This group mainly uses public transport not only because of the lack of a car, but also because they have discounts, such as a pupil or student discount.

The areas subjected to analysis were also related to the functioning of Cracow's public transport, which, in the opinion of the survey participants, require improvement. Respondents paid particular attention to providing information about tram and bus delays. Another important aspect requiring refinement, in their opinion, was related to selected functionalities of ticket machines in vehicles. The respondents felt that such devices should enable the purchase of tickets through all available payment methods. Undoubtedly, the regularity of connections may have an impact on the increased interest in Cracow's public transport services. This aspect is a prime issue that, according to the respondents, should include increasing the number of connections offered as part of the public transport

offer. Respondents prefer to travel by tram than by bus, therefore it is valued for the same route to run a tram line than a bus line. The ongoing investments are also fundamental, such as the commissioning of the Łagiewnicka route, the construction of a tram to Górka Narodowa, planning a shorter route for a tram to Mistrzejowice, and the extension of the tram from the Piastów estate.

In order to promote public transport in Cracow, reliable information and facilitating the use of transport by foreign tourists should be taken into account. Information, announcements of stops in English are a key facilitation for guests from abroad, encouraging them to use this form of transport. The cleanliness of vehicles is a factor which motivates people to use public transport. On the basis of the collected results, it can be concluded that this factor was not highly rated in the surveyed environment.

To sum up, results of the survey made it possible to comment on the adopted assumptions. They can also contribute to the initiation of new research directions dedicated to deepening the issues of the functioning of public transport and the perception of its services by users.

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