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# Analysis of Accessibility of Public Transport in Warsaw in the Opinion of Users

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**Abstract**: Public transport in Warsaw is currently showing a dynamic development. The capital of Poland, as the largest city in the country, is constantly increasing spending on transport and implementing large investment projects, such as the expansion of the subway, which gives residents more opportunities for efficient movement within the agglomeration. Despite the implementation of these investments, there are still some sensitive places in Warsaw where access to public transport may be difficult. Given these conditions, a study of public transportation accessibility is warranted and socially needed. This article presents the results of a questionnaire survey conducted among Warsaw residents. The study included a group of 986 respondents, most people between the ages of 18 and 44. The analysis conducted looked at perceived accessibility of public transportation and satisfaction with public transportation services. As a result of the study, we could identify the main factors that influence passenger satisfaction, as well as examine transport accessibility in the social city of Warsaw. Conclusions from the study may be helpful for the city government to improve the functioning of public transport.

**Keywords:** *Warsaw, city transport, transport accessibility, public transport.*

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## 1. Introduction

Urban transport is one of the basic public services offered in cities. The changes that are taking place in the world and the development of postmodernism have initiated a whole new perspective on the demands that are placed on the city by its residents. The concept of postmodern society is also related to the development of transportation (Roman & Czapski, 2020). In a postmodern society, the criterion of rationality becomes increasingly important, where knowledge and other factors facilitate the understanding of social phenomena (Costin, & Roman, 2020). Postmodern elements are present in many areas of socio-economic human activity. Significantly, the individualization of consumption can be considered as one of the main trends, where many things are now becoming individual goods (Maciejewski, 2014). These changes also affect the process of perceiving public transport, which has to meet the ever-new demands and needs of its users. The postmodern approach has brought to society a new perspective on public administration and management. It has also influenced the need for new operating models for urban services such as public transport. This was aimed at increasing the efficiency of management and improving the effectiveness of these services while increasing public participation. Post-modern society is characterized by people who want freedom, who want to enjoy the benefits of modern technology, and who are mobile and flexible. Mobility and related social openness are some of the characteristics of postmodern societies (Mamzer, 2020). As a result of these conditions, this research aims to analyze the accessibility of rail transportation in the city of Warsaw and to assess passenger satisfaction with public transportation services.

### Research area

Warsaw is a city located in central Poland, which is also the capital of the country. It is also the largest city with nearly 1.8 million residents (Statistical Office in Warsaw, 2014). Due to its size, Warsaw also has the most developed transportation network in the country. Warsaw has a streetcar network consisting of 26 fixed lines with a total length of about 356 km. There are also two subway lines in Warsaw, of which the M1 line has twenty-one stations with a total length of 23.1 km, and the M2 line is currently under expansion and as of today, has thirteen stations with a length of 12.6 km.

According to data posted by the Public Transport Authority for 2019, public transport in Warsaw is a popular form of travel. In 2019, more than 1.201 billion public transport trips were made, and the dominant role was played by bus transport responsible for 49.84% of trips and 598.9 million passengers (Public Transport, 2019). The capital of Poland is the seat of many institutions, therefore it is important that it is possible to travel within its borders by public transport in an efficient and effective way (Bocheński, 2018). Hence, this paper aims to examine the accessibility of rail transport in the capital city of Warsaw, by its different districts.

For the purposes of this article, it is important to define the basic concept of accessibility in the context of public transport. Accessibility to public transport can be defined as the degree of difficulty in getting to public transport such as metro, tram and bus.(Bok, Kwon 2016). Accessibility significantly influences the perception of public transport by its users. Accessibility can also be understood as the ability of the public transport network to move people from A to B within a reasonable time(Murray, Davis,Stimson et all, 1998). It is also the ability of the transport system to adapt to the needs of different groups of passengers requiring special solutions(Zając, 2014).

Increasing access to public services is one of the main areas of city policy in the field of transport, and a key element of an integrated transport system( Wu & Hine, 2003). To be attractive to the passenger, public transport must have stops located in convenient places for the passenger. Providing efficient and easily accessible public transport is one of the main policy objectives municipal authorities (Saghapour & Moridpour & Thompson, 2016) This article presents the measures taken by the city of Warsaw to improve the accessibility of public transport.

## Research methodology

From the perspective of the functioning of the urban transport system, its creators, and managers, it is extremely important to follow the opinions of its users. It concerns especially inhabitants of the city and Warsaw agglomeration as a whole.

To verify the degree of variation accessibility of public transportation, a survey was prepared and conducted in which respondents were asked about their level of satisfaction with public transportation in Warsaw, the scope of they use it, and were asked to identify the most important problems and deficiencies in transportation infrastructure to further determine how overall transportation accessibility can be improved in individual neighborhoods of the Polish capital and the city as a whole.

The survey ran from May 15, 2020, to July 14, 2020, during which time 986 respondents were recruited for the study. The study was conducted online due to legal constraints related to the current state of the Covid-19 pandemic.

Due to the quantitative nature of most of the data, in a large number of cases the relationships found were tested for statistical significance (chi-square test, ANOVA). Thus, only those relationships for which statistical significance of the relationship was found were included in the description.

Various forms of communication were used to recruit respondents for the study, with online media playing a key role (Facebook portal, mailing lists, websites, etc.). Surveying nearly 1,000 people helped determine the level of satisfaction of Warsaw residents with the availability of rail transportation. The SPSS program was used to analyze the surveys, showing the use of public transportation and satisfaction with accessibility to it. Both the mean and median of the responses and the interrelationships between responses (using ANOVA, chi-square, correlation) were considered in the study.

## Characteristics of respondents

Over 986 people participated in the survey. Almost ⅔ of the people surveyed were women (640 people).

The majority of the respondents were young people. The most numerous age group where people under 26 years old (almost 2/3 of the respondents) (Fig. 1). In total, people up to 44 years old are more than 90% of all respondents. A large share of young people can be associated with the online form of the survey.

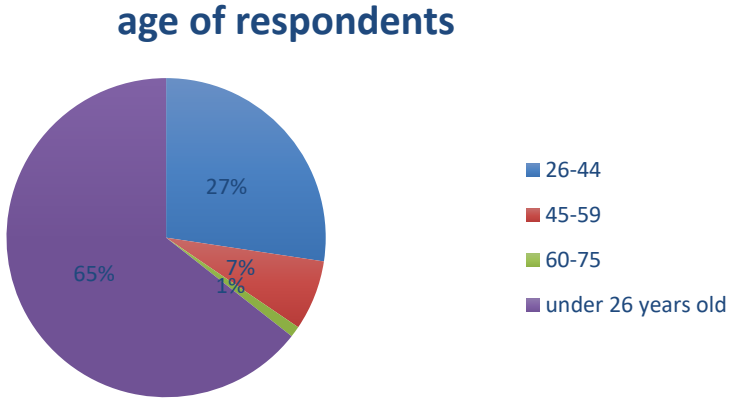



**Fig. 1.** The age structure of respondents (in years) (N=984)
Source: own elaboration based on survey results.

An important demographic characteristic that can differentiate public transport use is education. Respondents were most likely to have a university degree, although they were not an absolute majority (49%). More than one-third (36%) had a high school education, and only one in seven had a junior high school diploma or less.

Warsaw as the biggest city in Poland is a place where thousands of people travel every day. According to the answers of the respondents, most of them live in Warsaw permanently (70%) and every tenth respondent lives in the capital temporarily. Almost 18% of the respondents (about 150 people) live outside of Warsaw, within the metropolitan area. Respondents were residents of all Warsaw districts. The largest group were residents of Mokotów, Białołęka, and Ursynów. Relatively least represented in this group are smaller districts, such as Rembertów, Włochy, and Wilanów (only a dozen or so respondents each). More than 40% of respondents live in the seven districts of the central part of the city. About the population of the districts, people living in peripheral districts predominate. Residents of Warsaw's right-bank districts are also much less represented, altogether accounting for about 1/4 of the respondents. There is a correlation between age and place of residence. As the age increases, the number of people living in Warsaw decreases.

Respondents most often lived in their place of residence since birth or for more than 15 years (total of almost half of the respondents). At the same time, the structure of respondents indicates a high degree of mobility, as more than 1/3 of the sample (35%) changed their place of residence this year or in the last 5 years.

A relationship between place and period of residence was also discovered. Residents of the Warsaw metropolitan area were mostly respondents living there since birth. Residents of Warsaw are increasingly likely to be those living there for less than 1 year.

As a result of the conducted research, a relationship between working in the metropolis and social status was detected. A much higher percentage of students live temporarily in Warsaw than those who work and study here. There was also a correlation between social status and place of residence. Additionally, more working people own a car than students and learners, which is not surprising. People who work in the Warsaw metropolitan area are more likely to own a car than those who do not work.

Half of the respondents were students. The analysis proved that there is a relationship between the place of residence and studying. Students usually live in Warsaw temporarily. Non-students, on the other hand, live in

Warsaw permanently. Similarly, the period of living in the district/commune and working in the Warsaw metropolitan area are statistically related. Persons who have been living in Warsaw since birth and less than one year are much more likely to be unemployed than others. Moreover, those who have lived in Warsaw longer have longer work experience than those who have lived for a shorter time.

Over 50% of those surveyed were engaging in gainful employment, including half of those with student status. The majority of students did not engage in gainful employment.

A correlation was also found between working in the Warsaw metropolitan area and the frequency of the subway use. People who work use the subway less often than those who do not work. People with higher education are much more likely to be gainfully employed than those with secondary and primary education.

## The frequency of using public transport

Another issue covered by this study was the frequency of using public transportation. Most of the respondents 97% are users of public transport in Warsaw. All non-users have a car. More than 1/3 (36%) of all respondents have their car. As age and education increase, the percentage of people who own a car increases. Most people under 26 do not own a car and most people over 26 do. Significantly, car owners use the subway or bus less often. Car owners, on the other hand, declare much greater access to rail and bus transportation near their residence. However, they have less access to the subway and streetcars.

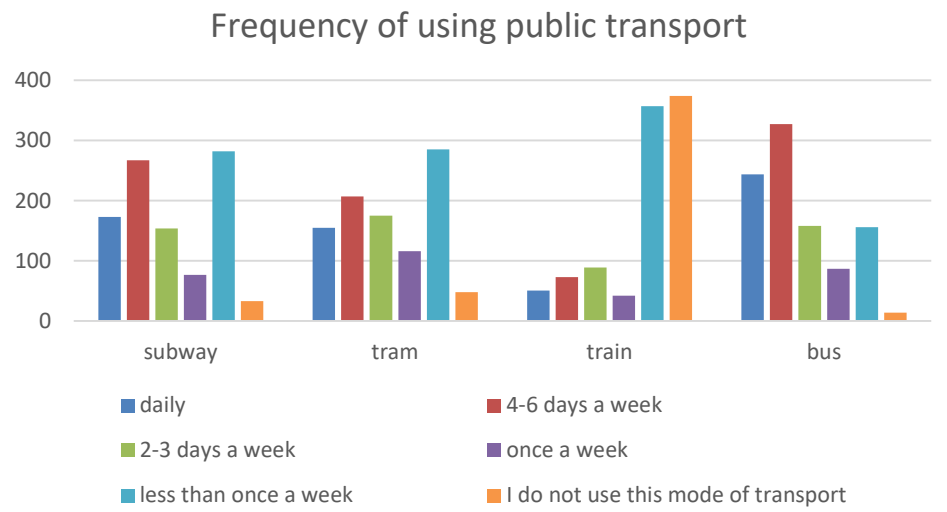



**Fig. 2.** Frequency of using public transport (by number of people and mode of transport)
Source: own elaboration based on survey results.

The largest group of people admit to using a bus every day, followed by the subway and streetcar (Fig. 2). The most frequently used (or not used at all in the previous year) means of transport were trains (Koleje Mazowieckie, SKM, or WKD). There is a statistical relationship between the place of residence and the frequency of use of trains (KM, SKM, WKD). Inhabitants of the Warsaw metropolitan area more often use rail transport than residents of Warsaw. People who do not work most often choose public transport and walk to school or university. Working people, on the other hand, are much more likely to choose a bicycle, car, or motorcycle than non-working people. Students are more likely to use public transit than employed users.

To investigate the frequency of public transport use, it is also important to identify the main reasons why respondents choose to travel by public transport. This is because the demand for public transport services is shaped by the intensity and habits of passengers to travel to work, school, or places of entertainment from their place of residence (Chaberko & Kretowicz, 2014). For this reason, the goal of city managers should be to shape public transport accessibility in such a way as to allow passengers to travel between these points as conveniently as possible. As can be seen from the data in the chart above, the vast majority of respondents (80%) use public transport on their way to work or school. Only 10% of respondents

say that the biggest part of their journey to school/university/workplace is by car. The group arriving by foot or bike is the least numerous (5 and 3%). Hence, it can be concluded that public transport is a more frequently chosen means of transport in Warsaw than individual transport.

As indicated by the responses of respondents it usually takes 30-60 minutes to get from home to work/school/university (43% of respondents). 42% of people spend up to half an hour commuting. Only every tenth person spends a quarter of an hour on their way home. Commuting time to the city center (Rondo Dmowskiego) is similar, which is not surprising given that most respondents work in Śródmieście (or Mokotów). People who commute shorter distances to work have a greater diversity of public transport modes near their homes than those who commute longer. As the length of the commute increases, the diversification of means of transport chosen as the most frequent means of departure around the place of residence decreases. As the diversification of public transport modes increases, however, people use trains (KM, SKM, WKD) less frequently. The group where the commuting time is less than 15 minutes is highly diversified in terms of the means of transportation chosen. As the commuting time increases, the share of subways decreases, followed by streetcars and trains. In the last group, where the commuting time is over 60 minutes, the vast majority of respondents select bus transport.

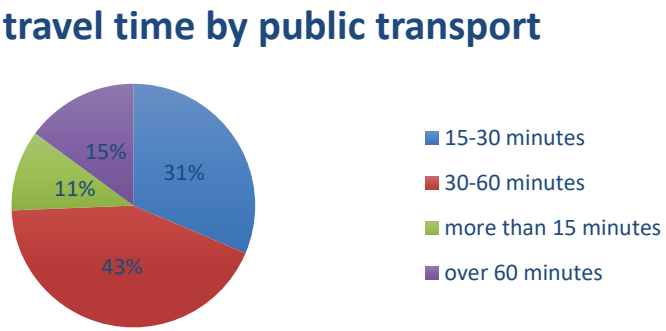



**Fig. 3.** Travel time to work/school/university (N=985)
Source: own elaboration based on survey results.

Most people who drive less than 60 minutes believe that driving time is not a perceivable impediment on public transport. People who drive over 60 minutes mostly indicate driving time as a perceivable difficulty in moving around by public transport.

All passengers traveling less than 30 minutes have access to any of the 6 public transportation modes near their residence (up to 10 minutes). Among passengers traveling more than 30 minutes, some respondents indicated that there is currently no public transport available around their residence. This group of commuters also indicated that there is no subway around their residence. As the length of the commute increased, so did the frequency with which other modes of transportation were marked as missing.

Those driving less than 15 minutes have at least one mode of transportation near their residence. Some people driving more than 15 minutes do not have any means of public transportation near their residence.

A significant correlation was found between the place of residence and time of commuting to school/university/workplace. People living in Warsaw have shorter commuting times than residents of the Warsaw metropolitan area. It is interesting that people who live shorter in Warsaw, get to the center faster during rush hours than those who live longer.

Increasingly, the choice of place of residence considers the availability of transport. It was found that people who live shorter in Warsaw have more means of public transport in their area than those who live longer. An analogous relationship exists between a shorter time of living in Warsaw and better access to streetcar transportation (up to 10 minutes).

A correlation was also found between living in a particular part of the city and accessibility to the subway. Districts of Targówek, Śródmieście, Praga Północ, Wola, Bielany, Żoliborz, Ursynów and Mokotów show good accessibility. The remaining districts are far from the subway.

Analysis of the relationship between getting to school/workplace and university and the main mode of transportation (traveling the greatest distance to school/university/workplace) revealed that those traveling the shortest distances travel on foot. Those traveling medium distances use a car/motorcycle and bicycle. In contrast, distances over 60 minutes are covered mainly by public transport.

Those whose commute time to university/work/school is shorter are more likely to use the subway than other users of this transportation. Conversely, those whose commute time is longer are more likely to use rail or bus.

The study found a relationship between the time it takes to get from one's place of residence to the center of Warsaw during rush hour and the means of public transportation departing most frequently from the vicinity of one's place of residence (up to 500 m) during rush hour. Below 30 minutes the means of transport are strongly diversified with a slight

advantage of the subway. After that, the share of railroads gradually increases, and of the subway decreases. However, the number of buses which are marked as the means of transport departing most often in the group above 15 minutes increases significantly.

Most passengers traveling less than 15 minutes have access to a subway, bus, or streetcar near the place where they live. In subsequent groups, the proportions are reversed. Passengers who travel more than 60 minutes usually do not have access to a streetcar stop in the vicinity of their residence.

The analysis also detected a relationship between the place of residence and the most frequently departing means of transport. As one moves farther from the center, the choice of bus transport increases, while the share of the subway decreases.

**Assessment of the satisfaction with public transportation accessibility.**

Another focus of this study was to assess satisfaction with the accessibility of public transport in Warsaw. The perceived overall quality of public transport is the result of the combined effect of objective (actual travel time, actual travel costs, possible accidents, etc.) and subjective factors in individual travel experiences accumulated over an extended time (Vanhanen & Kurri, 2005). For this study, factors such as accessibility, frequency, speed, punctuality, cost of tickets, the opportunity for rest during travel, and travel confidence were selected. Service quality is also important in terms of perceived accessibility of public transport (Lättman, Friman, & Olsson, 2016). Indeed, a poor level of transport services provided can lead to reduced accessibility.

Different methods have been adopted in the literature to measure the quality of public transport services. In some approaches, the study of service quality is based on the use of data related to customer satisfaction, highlighting its importance as a major factor affecting passenger satisfaction (Eboli & Mazzulla, 2011). Other ways focus on the use of objective indicators and standards (Eboli & Mazzulla, 2010). This paper adopts the first approach as the leading one, based on data obtained through a survey questionnaire.

The service satisfaction part of the questionnaire examined overall satisfaction with public transport services, which can be understood as the subjective difference regarding the perceived discrepancy between expectations and the perceived level of service (Lättman, Friman, & Olsson, 2020). Thus, it can be considered as the degree of satisfaction of passengers' needs. Hence, respondents were asked about their overall level of

satisfaction with Warsaw's transportation accessibility on a scale of 1 to 5, where 1 meant low satisfaction and 5 meant high satisfaction. As the results of the survey indicate, overall satisfaction with the availability of public transportation is good, as 37.1% of respondents rated their level of satisfaction as good and 28.8% rated their level of satisfaction as very high.

Most people rate transportation a 4 on a 5-point scale.

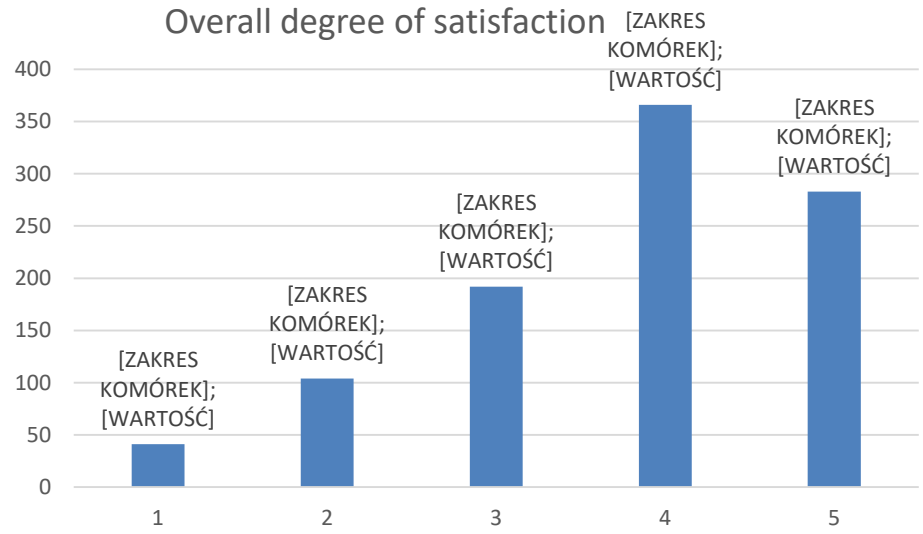



**Fig. 4.** The degree of satisfaction with the availability of communication near their place of residence (N = 984)

Source: own elaboration based on survey results.

Those who were most satisfied with public transportation in their place of residence (rating 5) most often also indicated that there was no lack of any means of transportation around their residence. Those who were less satisfied (ratings 1-4), on the other hand, most often indicated that there was no subway system near their place of residence. Car owners are less satisfied with the accessibility of their place of residence than those who do not have a car.

Those who have lived in the capital for a shorter time are more likely to lack elements of transportation infrastructure (stops, stations) than those who have lived longer. In all age groups, the most lacking element of infrastructure was the subway.

Respondents, when asked about the decisive factors in choosing public transport (they could indicate up to three options), most often chose the availability of these means of transport and their frequency (Figure 74). Other important motives included travel speed and punctuality. The cost of

tickets was indicated much less frequently (about 1/5 of people). As can be seen from the presented data, respondents place the most importance on the availability of public transport. Residents of Warsaw want public transportation that provides them with high frequency, high speed, and good punctuality. Issues such as ticket cost are also important to Warsaw citizens, but they are a secondary consideration. It follows, therefore, that the goal of the city authorities should be to continuously increase the availability and frequency of public transport, even if it means a moderate increase in ticket prices.

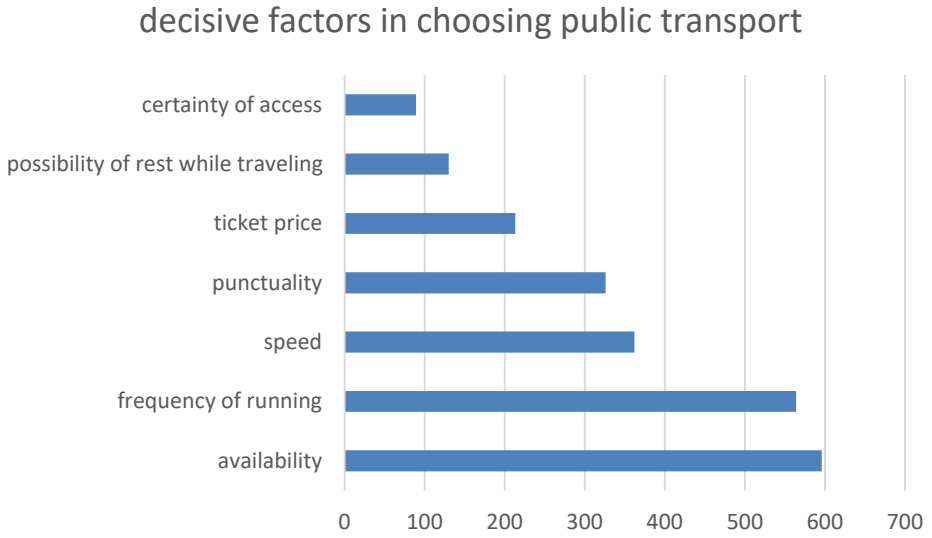



**Fig. 8.** Decisive factors in choosing public transportation (N=984)
Source: own elaboration based on survey results.

As indicated by the survey data, the current availability of public transportation is at a good level in many parts of Poland's capital. Nearly half of those surveyed (41%) believe that there is no shortage of public transportation near their place of residence. This is most often the opinion of those who have access to the subway, streetcar, or bus (in descending order of the percentage indicating no access). Interestingly, not all (only 87%) who experience a lack of public transportation near their residence (up to 10 minutes) believe they need it. If there are at least three types of public transportation in the area, most respondents indicate that they do not lack any means of transportation. If the number of public transportation modes is less than three, most respondents indicate the subway as the missing mode.

Of those who think that one of the means of transportation is missing, the most frequently selected answer is the subway (35%), followed by the streetcar (10%). Similarly, when asked about elements of transportation infrastructure, respondents indicated the lack of a subway station or streetcar stop. People living in an area from which the subway is the most frequent means of transportation during rush hour think (76% of respondents) that there is no lack of any means of transportation in the area where they live. Analogical indicators for streetcars are only 54%, for buses only 48%. The subway as the missing means of public transport is indicated by those who perceive problems with driving time. On the other hand, for those living in an area where the departure frequency of the most accessible means of transport is more than 60 minutes, they believe that they miss bus transport the most. People traveling under 60 minutes most often indicated that there is no missing infrastructure element around their place of residence.Those traveling more than 30 minutes were most likely to indicate that they lacked a subway around their residence. As the commute time increased, respondents showed a greater diversification of the means of transportation missing near their residence.

The most accessible mode of public transportation is the bus; over 90% of respondents have access to it. The bus is also the most frequently indicated means of transport showing the highest frequency. Most people who do not have access to bus transportation also indicate that they do not have access to any means of transportation. Peripheral districts and Warsaw's suburban boroughs have fewer means of public transportation within 10 minutes of their place of residence than Warsaw's central districts.

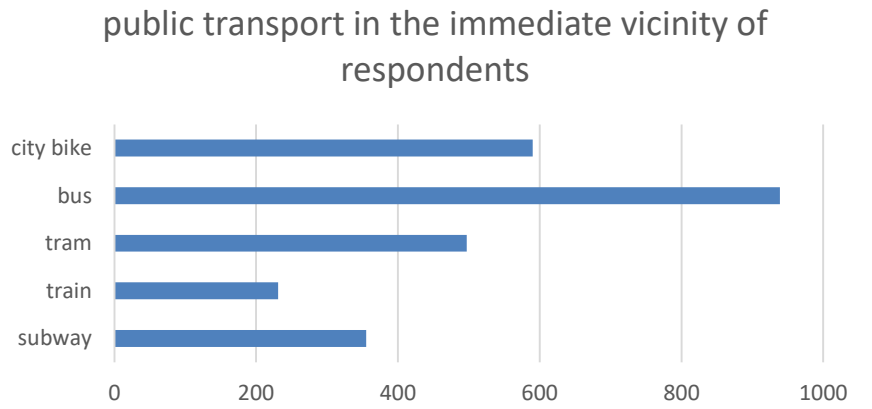



**Fig. 9.** Public transport in the immediate vicinity of respondents (N=984)
Source: own elaboration based on survey results.

The bus, as a common means of transport, is also indicated as the most frequent departures from the area inhabited by the respondents. During rush hours (7-9 a.m. and 2-6 p.m.), it can be counted on by half of the respondents (49%), while the streetcar and subway are most often available during these hours for about 20% of respondents.

Accessibility of public transport during rush hours is at a good level. Almost 40% of respondents do not have to wait more than 5 minutes and 8 out of 10 people have a chance to use public transport within 15 minutes. What is puzzling 45 respondents constituting 4.6% of the surveyed people indicated a lack of access to public transport during rush hours. This situation requires further diagnosis and identification of areas where public transport does not reach or reaches a small extent to increase its availability.

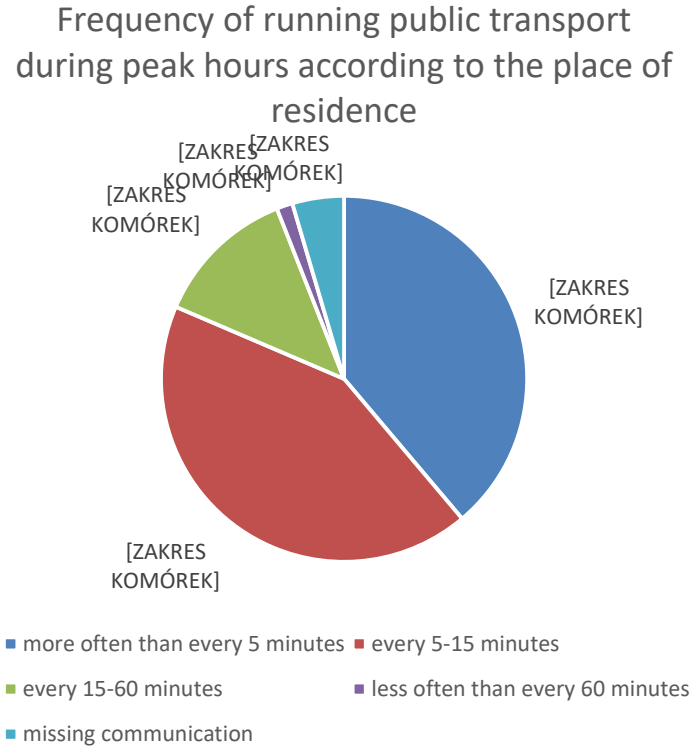



**Fig. 10.** Frequency of running public transport during peak hours according to the place of residence (N=984)
Source: own elaboration based on survey results.

Respondents, despite general satisfaction with public transport, indicated perceived problems and difficulties connected with it. The most frequently mentioned problems in public transport are congestion, lack of punctuality and lack of air conditioning. About 1/3 of respondents indicated also dirt or unpleasant smell, driving time, or lack of a personal culture of fellow passengers.

Respondents indicating that one of the problems in public transport is crowding usually also indicate the lack of punctuality (over 58% of people indicated those two options). Only slightly less frequently (59%) people indicate both crowding and lack of ventilation/too hot/too cold. People studying in Warsaw who are transport users perceive a greater problem with the punctuality of public transport than other transport users.

Interestingly, there is no correlation between indications of the problem of not being on time and driving time or transportation coverage. Similarly, people indicating lack of ventilation/too hot/too cold as a problem usually do not indicate lack of security or thefts. At the same time, indicating a noise problem is usually not associated with a problem of outdated rolling stock. Likewise, when someone is bothered by high ticket prices, they usually do not point to travel time or too frequent/frequent stop spacing as a hindrance. Nor do high ticket prices go together with the problem of coverage (inability to get to) certain places.

**Table 1.** Difficulties/problems perceived in public transportation

| Impediment/problem | Number of indications |
|---|---|
| crowd | 786 |
| unpunctuality | 559 |
| no ventilation / too hot / too cold | 552 |
| dirt, unpleasant smell | 382 |
| driving time | 351 |
| lack of good manners of the fellow passengers | 317 |
| reach (many places cannot be reached) | 196 |
| noise | 148 |

| | |
|---|---|
| high prices/tickets | 143 |
| station stops are spaced too rarely | 93 |
| outdated rolling stock | 74 |
| other | 71 |
| lack of security/thefts | 65 |
| lack of good manners of the driver/tram drivers | 54 |
| lack of adaptation to the needs of people with a disability | 53 |
| too few low-floor buses | 30 |

Note: respondents could indicate up to three options.
Source: own elaboration based on survey results.

Passengers who travel longer with more problems and difficulties with public transport.

Good accessibility to public transportation is also evidenced by the fact that only one in seven (14%) of those surveyed are forced to give up preferred leisure-time activities due to transportation inaccessibility. Understandably, those who report higher levels of satisfaction are less likely to give up their preferred leisure time interests due to the unavailability of transportation in the area. The same is true for those with access to a subway, city bike, or, in general, access to more public transportation in their place of residence. In general, as the number of means of transport near one's place of residence increases (up to 10 minutes), the number of people giving up preferred leisure time interests due to the inaccessibility of transport in the area decreases.

People who give up their preferred activities because of inaccessible transportation during their free time are also more likely to indicate perceived transportation problems: high ticket prices, reach (many places cannot be reached). This is a group that in half of the cases has to wait more than 15 minutes for a means of transportation.

There is also a correlation between giving up preferred leisure interests due to the inaccessibility of transportation in the area and the age of the respondents, as younger people are less likely to have to give up preferred leisure interests due to the inaccessibility of transportation in the area than older people. Similarly, people who live in Warsaw for a shorter time are less likely to give up their preferred leisure time activities due to inaccessible transportation. People who take the bus longer to get to university/work/school are more likely to have to give up their preferred leisure time interests due to the inaccessibility of transport in the area than people who take the bus shorter.

## Conclusion

The survey allowed us to determine the level of satisfaction of the residents with the availability of public transportation. Additionally, it allowed for the identification of the most important problems related to the use of public transport.

In the survey, 986 respondents were surveyed. The majority of respondents were public transportation users. The largest group was under the age of 26. Survey participants were highly diversified in where they lived. Although respondents rate public transportation in Warsaw very highly, their assessments of public transportation accessibility vary widely.

We could find any statistically significant relationships. There is a difference between respondents who live in the central districts of Warsaw and those who live in the outskirts. There is also a difference between respondents who have public transportation in the closest vicinity of their residence and those who do not. People who live in peripheral districts and those who are far from rail transport have a worse opinion of public transport in Warsaw. The maps confirm the diversification of rail transportation availability. Huge areas of peripheral districts are excluded from transportation.

Inhabitants of central parts of Warsaw believe, for the most part, that transportation in the city is very good, they do not have to give up their preferred leisure activities, and they get to work, school or university quickly. Residents of peripheral parts of Warsaw, especially those who live in areas that do not have access to rail transportation, point to communication exclusion. Respondents living far from the city center often have to give up their preferred free-time activities, they find it most beneficial to bring the subway network to the vicinity of their place of residence.

The main problems perceived by users are crowd, lack of punctuality, and lack of ventilation/too cold or too hot in rail transport

vehicles. The subway was found to be the most frequently mentioned mode of transport that is missing in the area where they live. The subway is also one of the determinants of the attractiveness of the place of residence, as it allows easy and fast transportation within the city as well as increases the value of the property itself (Forouhar, 2016). In other words, properties that are located within the subway in Warsaw are desired by both buyers and renters of apartments in the capital.

Increasing accessibility to public transport is also important to reduce the environmental impact of transport. Public transport such as buses, trains, streetcars, and subways can carry many people at the same time and emit less carbon dioxide per person than cars. Investments in urban transport also help to reduce traffic crowd and its consequences such as noise and pollution. In the future, public transport may become emission-free as more and more cities in Poland are investing in electric buses.

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