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Assessment of communication behavior of high school and university students of Piła and Chodzież counties

Ocena zachowań komunikacyjnych uczniów i studentów powiatu pilskiego i chodzieskiego

Abstract

The article concerns the study of communication behavior of high school and university students in Piła and Chodzież counties. The main problem is the mobility preferences of pupils and students. The article characterizes the concept of city, urban transport and mobility, and then proposes a mobility model that takes into account the preferences of residents when choosing the means of transport. The article ends with a presentation of survey results and drawing appropriate conclusions. They will help in presenting the proposed directions of development of transport infrastructure in the Piła and Chodzież counties. The aim of the article is to assess the communication behavior of high school and university students and the ways of their movement.

Keywords:

communication behavior, public transport, transport system, city logistics

Streszczenie

Artykuł dotyczy badania zachowań komunikacyjnych uczniów szkół średnich i studentów w powiecie pilskim i chodzieskim. Głównym problemem są preferencje uczniów i studentów w zakresie mobilności. W artykule scharakteryzowano pojęcie miasta, transportu miejskiego oraz mobilności, a następnie zaproponowano model mobilności uwzględniający preferencje mieszkańców przy wyborze środka transportu. Artykuł kończy się prezentacją wyników badań ankietowych i wyciągnięciem stosownych wniosków. Pomogą one w przedstawieniu propozycji kierunków rozwoju infrastruktury transportowej na terenie powiatu pilskiego i chodzieskiego. Celem artykułu jest ocena zachowań komunikacyjnych uczniów szkół średnich i studentów oraz sposobów ich poruszania się.

Słowa kluczowe:

zachowania komunikacyjne, transport publiczny, system transportowy, logistyka miejska

JEL: R4

Introduction

The dynamic development of cities and the phenomenon of populating suburban areas mean that transport organized by cities and the travelers themselves faces a significant challenge of safe and quick reaching the destination. The services provided should be of high quality, meeting the expectations of passengers belonging to various

segments. Bicycle routes, streets, technical infrastructure prepared for this purpose are the showcase of a large city.

The concept of urban collective transport means public transport, the organizer of which is the municipal government pursuant to the Act of December 16, 2010 on public collective transport. This transport is based on the provision of massively available transport services, and its task is to meet

the social demand for moving around the city. Due to its functions, it is the most important factor determining not only the economic development of an urbanized area, but most of all the improvement of the quality of life of its inhabitants. The concept of the value of services for the customer of public transport should be understood as the assessed and perceived level of satisfaction with the usability, which mainly results from the costs incurred, which should be competitive with other relocation alternatives (Kłos-Adamkiewicz & Crew 2017; Dydkowski, 2009).

This article assesses the communication behavior of secondary school students and students from seven secondary schools in Piła and Chodzież, as well as the University of Piła. The choice of this group of users results from the obligatory travel between home and study place and the importance of transport for this group of travelers.

The research sample included 850 high school students and 200 university students. A structured in-house questionnaire was used as a measurement instrument. The survey method was used, examining the students in their schools and universities.

Transport characteristics

It's very hard to define a city. This is mainly due to the size of the reasons for the emergence of cities and the size of the types and forms of settlement of urban units. The definition of a city can be found in the encyclopedia, according to which a city is a formed type of a city district, which determines the existence of a community concentrated in a given area of a separate organization, recognized and defined by organizing a set of permanent and material devices with a specific physiognomy, which can be taken as a landscape that stands out from the surrounding landscape (PWN, 1999). Another definition of the city can be found in publications (Rzeczyński, 1999; Weron & Rek, 1997, p. 127; Bartol, 2001; Bartol, Maj & Strahl, 1990; Kielczewska-Zalewska, 1969).

An urban area is usually a relatively small area where all the concentration is focused on trade, industry, services and people. It is often associated with problems related to the functioning of these areas. Problems arise from the fact that too many natural persons and entities apply for urban infrastructure services at the same time and place, hindering the processes of movement and storage.

By distinguishing and analyzing the definition of urban logistics, you can specify its purpose and scope. Delving into the definitions allows you to grasp the size and importance of its issues as well as understand the interdisciplinarity of city logistics.

The first definition of urban logistics is the one developed by the Council of Logistics Management: urban logistics is also referred to as the process of controlling flows, planning and controlling (Ballou, 2004). In the following definitions, we discover urban logistics and its optimization potential: urban logistics provides assumptions for the optimization of the city system regarding the planning, control and supervision of various processes that are significantly related to movement, taking place in this system in the economic, ecological, economic, technological and social dimensions (Rzeczyński, 1999).

We can also define that urban logistics is a tool for optimizing all activities related to storage and transport undertaken by transport companies in the city, taking into account the environment of these processes, congestion in the transport network and energy consumption, under market economy conditions (Taniguchi, Thompson & Yamada, 1999).

Transport is nowadays the basis of social and economic life. In summary, it is the movement of people, loads and messages with the use of appropriate means and activities related to this process.

Regional transport is a relatively ambiguous concept. According to the EU regulation, regional transport is defined, *inter alia*, as transport services, which mainly serve to meet the transport needs in a given region, also taking into account the cross-border regions (Directive 2012/34/EU, 2012).

The concept of public transport should be understood as a means of transport that is accessible to all. According to the EU regulation, these are: transport services for persons of general economic importance available to the public in a continuous and non-discriminatory manner (Regulation (EC) No 1370/2007, 2007).

On the other hand, public collective transport, according to the Polish Act on Public Transport of March 1, 2011, defines it as "generally accessible, regular transport of people performed at specified intervals and along a specific fixed communication line or communication networks" (Act on public collective transport, 2016).

Mobility is defined in various ways by the authors of the publication. Szoltysek treats (Szoltysek, 2011) mobility as everyday, routine movement and activities resulting from the reorganization of personal life, which may include changing the place of residence or the place of work. We can identify it with the movement and all activity of people carried out by means of transport outside their place of residence (Załoga & Dudek, 2009; Flejterski, Panasiuk, Perenc & Rosa, 2008). On the other hand, Menes (Menes, 2001) presents mobility as mobility related to the daily movements of residents, mainly to work or school. The

publications also dealt with the issue of mobility (Kamiński, 2021; Kornas, 2021).

According to the treaty on the functioning of the European Union (Official EN Journal of the European Union, 2012) and the resulting EU transport policy, mobility, understood as an element of human activity, depends on the person making the journey, the person managing the infrastructure and other users of the transport system related to this mobility (Kruszyna, 2010, 2012). The concept of sustainable development is closely related to the issue of mobility, covering the following issues: economic, environmental and social (Borys, 2009; Litman, 2007; Chamier-Gliszczyński, 2015; Banister, 2008).

Model of mobility of high school students and students of the Piła and Chodzież counties

Taking into account the objectives of transport activities as well as the preferences of high school students and students in the Piła and Chodzież counties, it should be assumed that the model of student mobility can be defined using the following elements (Chamier-Gliszczyński, 2016):

- user databases — UD,
- choice of means of transport — MT,
- mobility structures — SM,
- bases for determining the elements of the mobility structure — MS,
- pupils 'and students' ambitions — APS.

Analyzing the above elements, the mobility model (MM) can be presented in the form of:

$$MM = \langle UD, MT, SM, MS, APS \rangle.$$

In the model presented above, the set of users takes the form:

$$U = \{1, \dots, U\}$$

where:

U — determines the number of pupils and students of the tested mobility.

However, pupils and students are described by the following vector:

$$\vec{F(u)} = g(u), ag(u), pr(u)$$

where:

g(u) — gender of the surveyed pupils and students,
ag(u) — age group of the surveyed pupils and students,

pr(u) — place of residence of the surveyed pupils and students.

Gender of pupils and students: the value was assumed (g(u)=1) for a woman and (g(u)=2) for a man, and the set of age group numbers:

$$ag = \{1, \dots, AG\}$$

determines the age of pupils and students. Therefore, in this case it was assumed: ag(u)= 1 — age range up to 18 years of age, ag(u)= 2 — 18÷20 years, ag(u)= 3 — 21÷26 years, ag(u)= 4 — 27÷30 years, ag(u)= 5 — over 30 years where AG determines the number of all examined age groups, in this case equal to 5.

Next, high school students and students were divided according to the place of residence pr(u). For example (pr(u)= 1) — Chodzież, (pr(u)= 2) — Budzyń, (pr(u)= 3) — Margonin, (pr(u)= 4) — Szamocin, etc. So in this case the formula takes the form:

$$Mz = \{1, \dots, PR\}$$

where PR shows the number of all places of residence of the studied pupils and students, 5 for secondary school students in the Chodzież county, 10 for secondary school students in the Piła county, 6 for university students in Piła county.

The mobility structure of secondary school and university students is presented as follows:

$$SM = \{PM, PT\}$$

where:

PM — the point of mobility,

PT — a set of transport links.

The next element under consideration is the mobility point, the places of activity of high school and university students were adopted, such as e.g. school, place of residence, workplace or place of shopping, and thus the starting and ending point of his mobility. It would also include intermediate points, such as stops, stations and parking lots. Each of the above-mentioned places contains features characteristic of transport behavior, such as waiting time at a given stop or the cost of the car park we use, etc.

Another component of mobility considered is the choice of the means of transport, which is presented in the following form:

$$ST = \{tt, tc, tk, ts, amt, pmt, si, fr\}$$

where the variable specifies:

tt — travel time,

tc — travel cost,
 tk — travel comfort,
 ts — travel safety,
 amt — availability of the means of transport,
 pmt — punctuality of the means of transport,
 si — a source of information about the timetable,
 fr — frequency of running.

The specificity of the functioning of the transport system in the analyzed counties

The Chodzież county located in the northern part of the wielkopolskie voivodeship and is one of the most picturesque regions of Wielkopolska. It is situated in a place rich in beautiful lakes and forests in the Noteć valley. Thanks to the picturesque landscapes and friendly environment, it attracts many tourists who can use many hiking and biking trails, as well as access to equestrian and water sports. The Chodzież county comprises four communes, which include:

- cities: Chodzież, Margonin, Szamocin,
- municipalities: Chodzież,
- rural communes: Chodzież, Budzyń,
- urban and rural communes: Szamocin, Margonin.

The population of the Chodzież county usually travels to the central part of the city, where the above-mentioned industrial, service, cultural, etc. facilities are located. In the Chodzież district, traveling by public transport, buses and intercity buses, by train or by bike is very easily accessible to residents. The inhabitants of the county who want to use a private passenger vehicle are in a worse situation. The city has a very poorly developed parking infrastructure, and a parking fee is charged for each space already available. The prices for parking your car are quite exorbitant, not to mention the penalties for parking your vehicle illegally. The most absurd, however, is that every second parking meter is not operational, which makes it difficult for travelers to travel by private car.

The Piła county is located in the north-western part of Poland, in the Wielkopolskie Province. Located on the border of the Krajeńskie and Wałcz Lakelands on the Gwda and Noteć Rivers, it is rich in beautiful landscapes, forests, lakes and parks. The Piła county consists of:

- cities: Piła, Łobzenica, Ujście, Wyrzysk, Wysoka,
- municipalities: Piła,
- rural communes: Białośliwa, Kaczory, Miasteczko Krajeńskie, Szydłowo,
- urban-rural communes: Łobzenica, Ujście, Wyrzysk, Wysoka.

The inhabitants of the Piła county mainly move to the city of Piła, most often to the downtown zone in

order to use the goods offered by the city, i.e. shopping malls, cinemas, Aquapark or restaurants, but most of all they move to schools and workplaces.

In summary, for each resident, there will be a means of transport that can meet their transport needs. The above chapter allowed to illustrate the entirety of the transport system available in the counties. On this basis, we will be able to analyze the results of the surveys and learn about the assessment of this system by high school and university students, who are one of the largest social groups that most often use the transport system in counties.

Research

The main purpose of transport is to meet the need for human movement by appropriate means. It is mainly caused by the spatial distribution of workplaces and educational institutions. Assessing the communication behavior of high school and college students is a way to learn about alternative forms of movement for each of these groups.

Research methodology

The research was conducted in the form of questionnaires. At the outset, a pilot study was performed, on the basis of which the question sheet was corrected. Then the survey was conducted in secondary schools in Piła and Chodzież counties, as well as at the university in Piła. The survey consisted of 18 closed questions in which about sex, age. The questions also concerned meeting transport needs and the assessment of public transport. At the end of the survey, each of the respondents had the opportunity to propose directions for changes.

Research on communication behavior of high school students and students in Piła and Chodzież counties of services was carried out in the period from October to December 2019. The study included 850 high school students and 200 students of Piła university. Willing people participated in the study.

Research object

For the purposes of the study, the analysis covered students from 7 secondary schools from Piła and Chodzież, as well as students from the state-owned university also located in Piła.

Among secondary schools, students of the following institutions were examined: School Complex at Teatralna in Piła, Complex of Technical Schools in Piła, Complex of Economic Schools in Piła, Complex of Construction Schools in Piła, as

well as Hipolit Cegielski School Complex in Chodzież, St. Barbara Secondary School in Chodzież and Józef Wybicki School Complex in Rataje.

The School Complex at Teatralna in Piła has its seat, as the name suggests, at Teatralna1. The facility is a school of multi-professional juvenile workers who carry out additional education in a trade school.

Complex of Technical Schools in Piła is a school consisting of: IT and Mechatronics Technical School, Motor Vehicle Technical School, and Mechanical Technical School. The school is located at Ceglana 4.

Complex of Economic Schools in Piła is a school with an almost 70-year tradition of training in the professions of the economic sector. The school is located at Gen. Sikorskiego 18a. The professions in which this place educates its students are: economist technician, sales technician, advertising organization technician and IT technician.

Complex of Construction Schools in Piła is located at Kilińskiego 16. It includes: Basic Construction School for Working, Technical School of Construction for Working, Secondary Vocational Study for Working, Masters School for Working.

Schools that are part of Hipolit Cegielski School Complex in Chodzież are: Technical School, First Degree Industry School and Secondary School for Adults. They educate youth and adults in a full-time and part-time system. The School Complex is a vocational school and is located at Ks. Prymasa Wyszyńskiego 2.

St. Barbara Secondary School in Chodzież is an educational school with an emphasis on such subjects as biology and chemistry, mathematics, physics and computer science, for this purpose there are polytechnic classes that prepare students for

studies at the technical university. The facility is located at Żeromskiego 11.

Józef Wybicki School Complex in Rataje is an institution that educates young people in the following faculties: high school medical and veterinary class, high school language class, IT technician, advertising technical school, photography and multimedia technician, graphic and digital printing technician. The facility is located at Chodzieska 9.

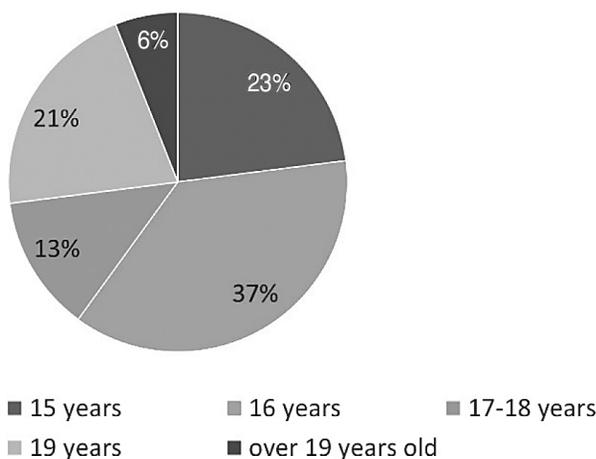
The university students examined were the students of Stanisław Staszic State University in Piła. It is the largest public university in northern Wielkopolska. Since 2000, it has been educating specialists in practical fields of medical, economic, technical and humanities studies. It runs undergraduate, engineering and graduate studies.

Taking into account the gender of pupils and students answering the questions in the survey, 51% of the respondents are men, while 49% are women. A more detailed analysis shows that among secondary school students women constitute 52% and men 48%. However among university students, men constitute the majority (62%), and the fraction of women is 38% of the respondents.

The age of 850 high school students surveyed is as follows: 37% of students are children aged 16, 23% aged 15, 21% aged 19, 13% of the students are boys and girls between 17 and 18 years of age; 6% are people over 19 years of age (Figure 1).

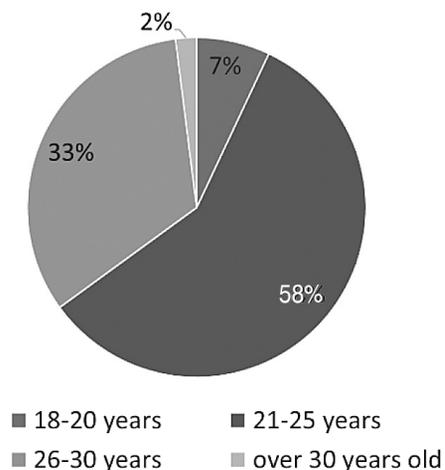
In the case of university students, the age of the respondents is as follows: half of the surveyed students (58%) are people aged 21 to 25; 33% of the respondents are young people aged between 26 and 30. Moreover 2% are students aged over 30 and 7% are students between the ages of 18 and 20 (Figure 2).

Figure 1
Age of the high school students surveyed



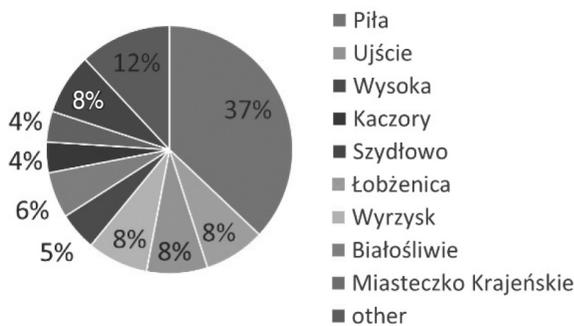
Source: own study.

Figure 2
Age of the university students surveyed



Source: own study.

Figure 3
Place of residence of secondary school students attending schools in Piła



Source: own study.

When surveying the respondents in terms of the area of residence, it can be concluded that most of them live in an urban area (62%). High school and university students living in a rural area constitute 38% of the population examined (Figure 3); 58% of high school students are city residents and 42% are rural residents. However among university students 74% of the respondents are students from the city and 26% are rural residents.

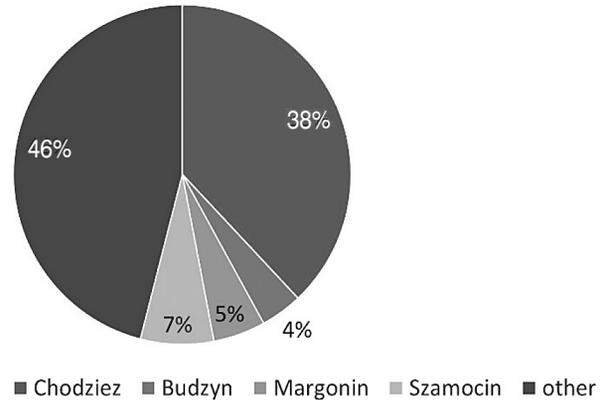
Students attending high schools in Piła, apart from those who live in the city (37%), commute from various towns in the vicinity of Piła; these are the surrounded by small villages. As shown in Figure 6, 8% of commuters come from Ujście, Wyrzysk and Szydłów, 6% of learners are from Białośliwie, 5% from Wysoka, and 4% from Kaczory and Miasteczko Krajeńskie.

As for schools located in Chodzież, the greatest number of students commute to the designated destination from small villages near Chodzież (46%). Furthermore 38% of the respondents are residents of Chodzież; 7% of students live in Szamocin, 5% in Margonin, and 4% in Budzynie (Figure 4).

Students of the Stanisław Staszic State University in Piła are largely people living in the Piła (pilski) county (31%); 25% of the respondents live in Złotów (złotowski) county, 24% in the Chodzież (chodzieski) county, 16% in Czarnków-Trzcianka (czarnkowsko-trzcianecki) county, and 2% in Wałecz (wałecki) county (Figure 5).

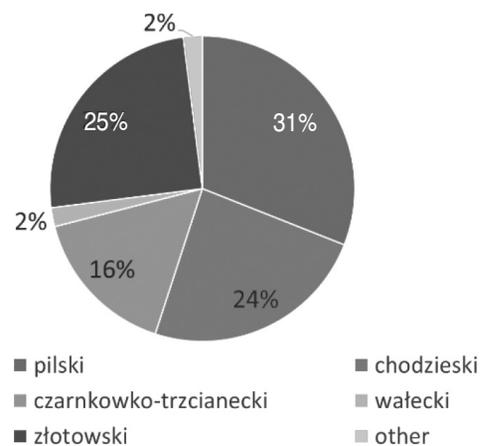
The results of the research show that a vast number of inhabitants of other counties choose Stanisław Staszic State University in Piła as a place to expand their knowledge and continue their education. Therefore, an appropriate public transport offer should be prepared, enabling students to move to and from the university, especially for people who are not able to reach their destination by car.

Figure 4
Place of residence of secondary school students attending schools in Chodzież



Source: own study.

Figure 5
Place of residence of students of university in Piła



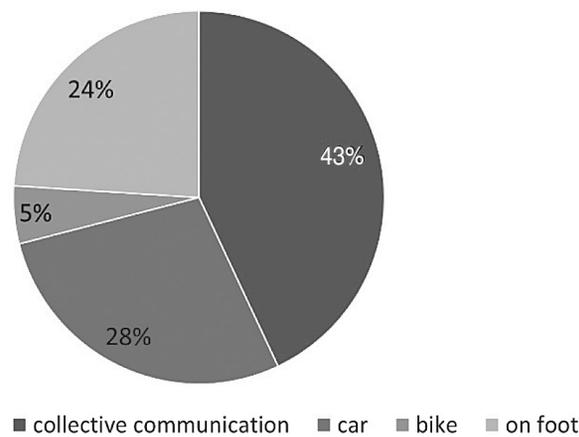
Source: own study.

Findings

Less than half of the pupils and university students surveyed (43%) declared that they traveled mainly by collective transport (i.e. bus, train). Nearly 1/4 of the respondents (28%) prefer traveling by car while 5% of pupils and students stated that they travel only by bicycle, and as many as 24% that they mostly travel on foot (Figure 6).

It can be noticed that high school students both in Piła and Chodzież, who obviously have such a possibility, because they live in the town where the school is located, travel to school on foot. It is by far the cheapest option for travel, and at the same time

Figure 6
Way of realizing the trip preferred by the respondents



Source: own study.

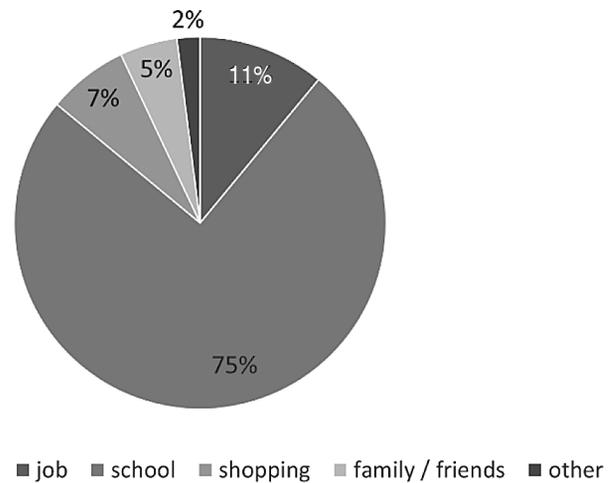
allows for trouble-free communication between students during the trip to school. For university students, on the other hand, traveling by car is more popular than among high school students. Most likely, this is due to the fact that the university students are older and most of them have a driving license, and that during their studies they take up jobs that allow them to buy their own car. In each case, the bicycle turned out to be the least popular means of transport. Public transport, however, is the most preferred means of transport both by high school students and university students in the Piła and Chodzież counties.

Students made the most trips to school (75%) and work (11%). Travel for other purposes had a smaller share: for shopping (7%), for social matters (to meet with friends) or family visits (5%). Figure 7 shows the number of trips for each destination.

As the results of the survey show, school and work are the most common reasons for traveling by young people. School and work oblige people to be systematic, and therefore we feel a sense of the obligation to attend it regularly to achieve something. The other destinations are less important for working and learning people.

When we move every day from home to work, school or other important place, the means of communication is crucial for us and we use it to get to these places. However, it depends on several factors. The most important, according to the respondents, is the time to reach the destination (57%) — everyone wants to be on time and not to be late. 16% believe that traveling comfort is important in this matter. 10% of the respondents make everything dependent on weather conditions and the price they will have to pay for a ride. 6% of the

Figure 7
Travel goals of the surveyed pupils and students from Chodzież and Piła

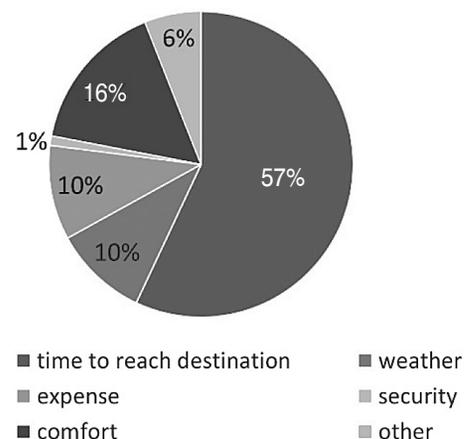


Source: own study.

respondents are guided by the lack of another means of transport, i.e. not having a car or a bicycle, which would enable them to reach their destination in a different way. For 1%, it is safety that impacts their choice (Figure 8).

During the week, 41% of pupils and students traveled daily by public transport or intercity bus. 14% of respondents did it only once a week, and 11% twice a week. 10% of the respondents did not do it at all, while 9% did it several times a week, and occasionally. Among the respondents, only 6% did it more than twice a week (Figure 9).

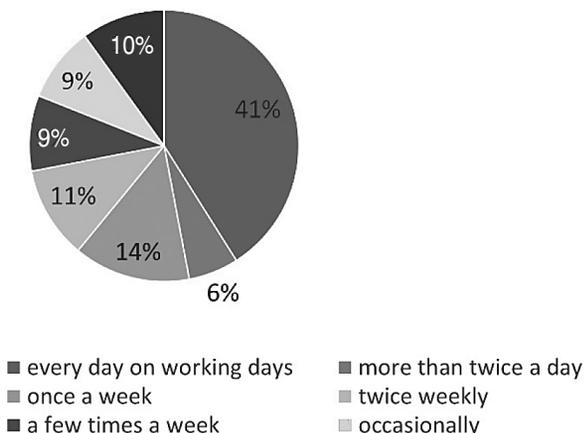
Figure 8
Factors determining the choice of the means of transport



Source: own study.

Figure 9

The frequency of travel by public transport/intercity bus



Source: own study.

Thus, it is noticeable that almost half of the respondents regularly, every day on working days, travel by public transport or intercity bus. This is probably due to the fact that it is the only available means of transport or the cheapest with the exception of walking or cycling. Only 10% of pupils and students do not travel by public transport at all. However, it is very little, because the remaining 90% of respondents use public transport less or more often depending on the need. We can therefore conclude that urban or intercity communication is very much needed in the entire city transport system.

Among the surveyed pupils and students, 30% of people feel safe enough in public and intercity transport. 23% of respondents feel completely safe in public transport. 14% feel safe in such places depending on the time of day. On the other hand, 13% of respondents do not feel safe in such means of communication and 20% of respondents do not have an opinion on this matter (Figure 10).

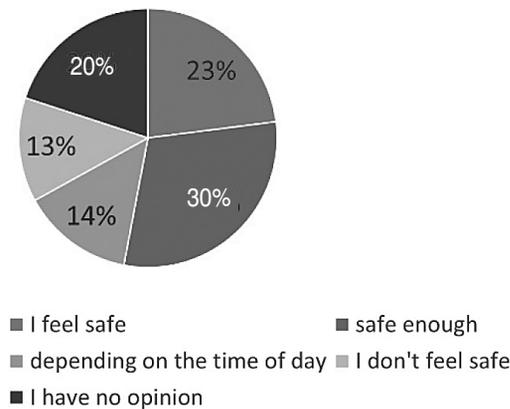
Taking into account the above results, it turns out that the majority of respondents using the city or intercity bus feel safe while traveling. In order to change the approach of the rest of students who do not feel safe, several solutions can be proposed that will increase safety in public transport, such as installing monitoring at stops or on buses.

To the next question 51% of respondents stated that the price offer is good, 2% — very good, and 16% — satisfactory; 23% of respondents say that they do not use the communication services offered by the city. However, 7% believe that the proposed offer is bad, 1% — very bad (Figure 11).

It can be concluded that the price offer offered by the enterprises providing transport services by public or intercity transport is good and falls within

Figure 10

The sense of safety of pupils and students in public and intercity means of transport



Source: own study.

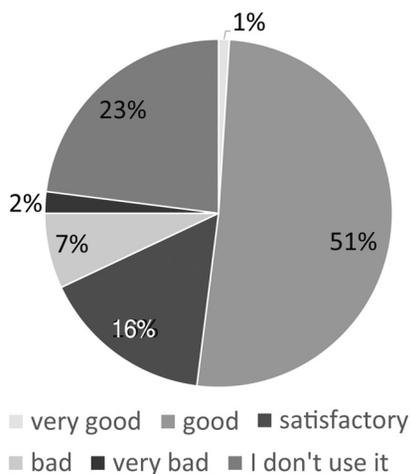
the budget of secondary school students and students allocated to travel to school or university.

Accessibility to public transport stops is in the opinion of 33% of the surveyed pupils and students good, 9% — very good, and 20% — satisfactory. According to 23% of people, it is bad, and 15% — very bad (Figure 12).

According to the respondents' opinions about the availability of public transport stops are divided. This is most likely due to where you live. Pupils and students living in a rural area have worse access to public transport stops and have to travel quite a long distance to reach the nearest stop. On the other hand, respondents living in urban areas have better accessibility to stops, because there are many more of them than in the countryside.

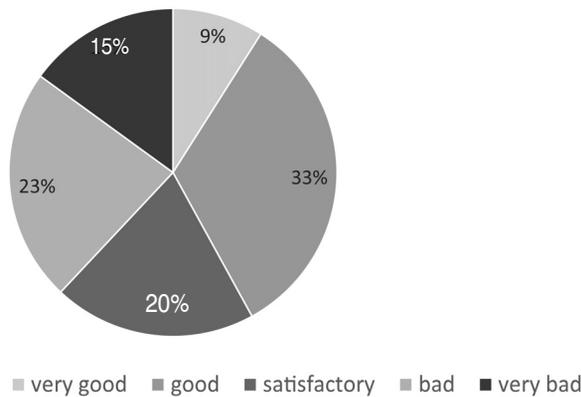
Figure 11

Price offer for public transport



Source: own study.

Figure 12
Accessibility to public transport stops

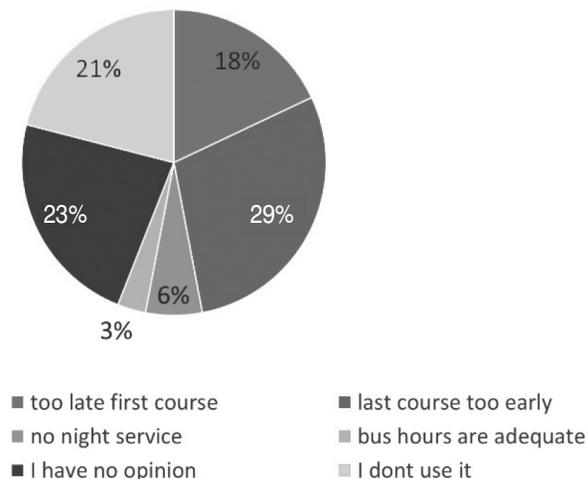


Source: own study.

In the opinion of the respondents, the punctuality of journeys by public transport is very important, it allows you to reach the place in time. 3% agree that the bus hours are adequate. 29% of respondents believe that the last bus leaves too early. 18% say morning buses are too late, which can cause them to be late for work or school. 23% of people do not have an opinion on this matter and 21% say they do not use this mode of transport. 6% are dissatisfied with the lack of public transport services at night (Figure 13).

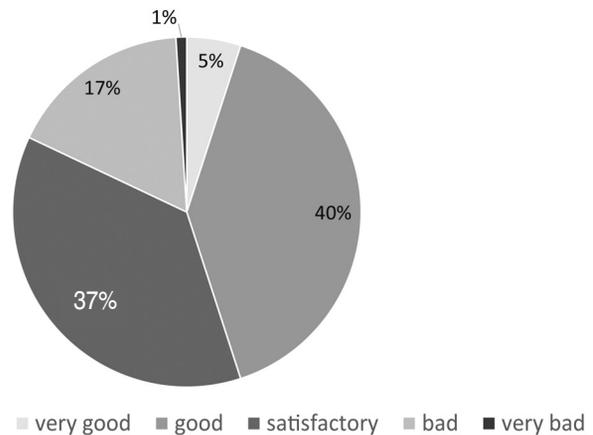
In order to improve the situation regarding the discrepancy in the arrival and departure times of city and intercity buses, entrepreneurs providing transport services in this area should regularly examine and analyze the needs of travelers and update the bus hours. For example, during the

Figure 13
Time period of using public transport means



Source: own study.

Figure 14
Legibility of public transport timetables



Source: own study.

school year, they should organize the work of buses in such a way that pupil or student can safely reach their classes, while during the summer season, adapt the bus operation according to other guidelines.

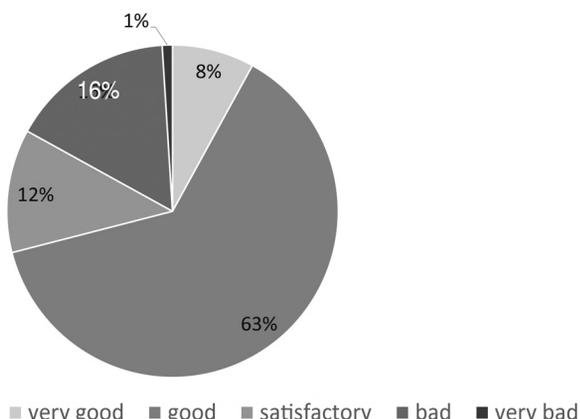
An equally important factor in moving by public transport is the legibility of timetables, which allows you to reach your destination safely and without any problems. In the opinion of 40% of the surveyed pupils and students, the legibility of public transport timetables is good. 37% believe it is sufficient and 5% that it is very good. On the other hand, 17% say that it is bad, and 1% that it is very bad (Figure 14).

In the Piła and Chodzież counties, at present travelers can use ordinary printed timetables located at stops and on the websites of individual carriers. In the near future, MZK in Piła plans to introduce electronic bus timetables, which will be updated on an ongoing basis according to the travel time of a given bus, and will know when traveling how late a given bus is. This amendment will probably improve the legibility of timetables and improve the functioning of public transport.

The analysis of Figure 6 shows that pupils and students (43%) travel by public transport. 28% prefer traveling by car. A small number of people travel by bicycle, and 24% do so on foot, as their destination is a short distance from home. This is also due to the appropriate infrastructure intended for travel by means of transport other than just public transport.

According to the respondents, the technical condition of the infrastructure used for walking is good (63%) and very good (8%). According to 12% of respondents, it is sufficient, but 16% of the surveyed pupils and students believe it is bad, and 1% even very bad (Figure 15).

Figure 15
Technical condition of the infrastructure used for walking

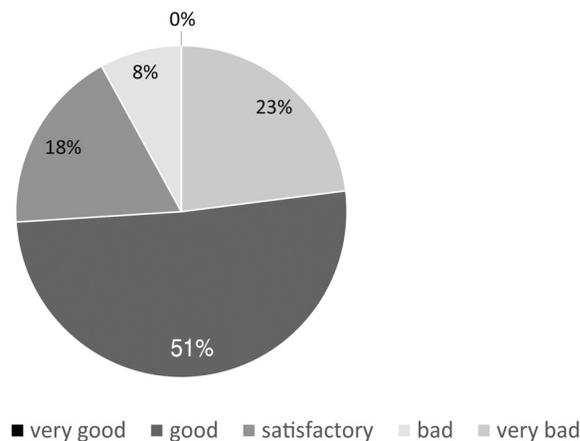


Source: own study.

According to school children and students, the infrastructure for cyclists is also good (51%) and even very good (23%), which makes it easier to use this mode of transport for traveling. 18% of respondents believe that it is sufficient, only 8% of the respondents claim that it is bad (Figure 16).

From the obtained survey results, it can be noticed that pupils and students in Piła and Chodzież counties believe that the infrastructure for traveling by bike is good. In the last few years, both counties have been investing a lot in new bicycle paths, also because of the ecology. So the question arises why so few respondents use this means of transport to travel to and from school or university. Perhaps not all respondents have their own bike, or

Figure 16
Infrastructure dedicated to cyclists



Source: own study.

are afraid to travel with it, or it is not prestigious enough.

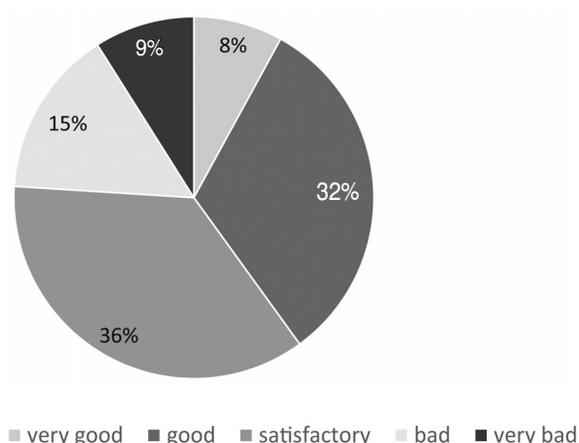
Traveling by car is the fastest mode of transport available to more people in the world. And the good condition of the streets makes traveling even more frequent. 36% of the respondents believe that the condition of the streets they travel on is sufficient, and 32% — good, and 8% — very good. On the other hand, 15% state that the condition of roads is bad, and 9% that the condition is very bad (Figure 17).

Despite the divided opinion, the majority of pupils and students believe that the condition of roads in the counties is sufficient. This means that driving vehicles on the road is pleasant and does not cause major problems.

The possibility of easy car parking is a great luxury, especially in the city. The availability of free parking spaces in such a place is very difficult to implement. According to pupils and students, the situation in their place of residence is good (51%), 2% — very good, and 31% — satisfactory. However, 14% believe that it is not easy with parking spaces and the situation is bad (14%), and for 2% of respondents even very bad (Figure 18).

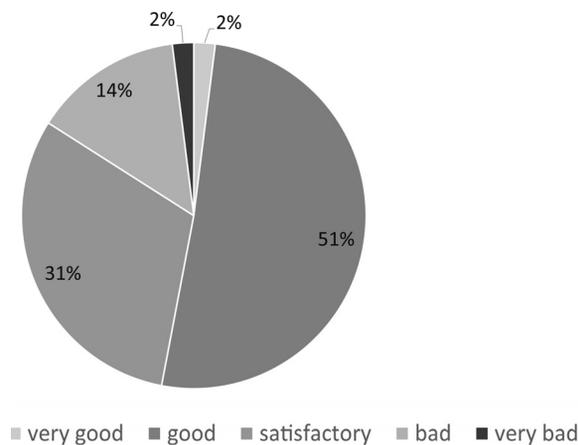
From the results obtained, it can be observed that, according to high school and university students, the availability of parking lots at travel destinations is average. The purpose of the trip in this case, as it was shown in the above figures, are usually: university and schools, which always provide parking spaces for their employees and students. Therefore, the answers were the way they were. Nevertheless, parking lots are a problem in places other than school or university. There are no parking places in city centers and people traveling by car have problems to park it.

Figure 17
The condition of streets in Chodzież and Piła counties



Source: own study.

Figure 18
Availability of car parks at the destination of students and pupils' travel

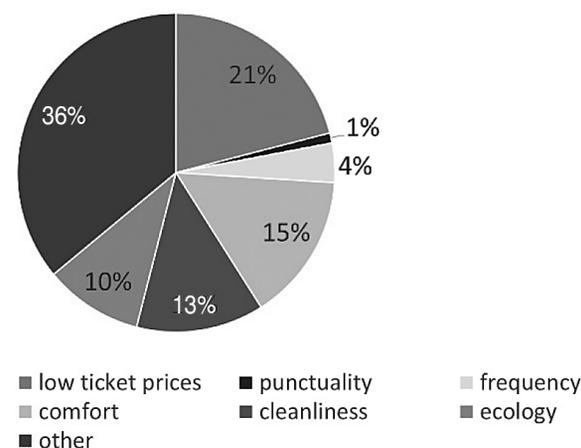


Source: own study.

The assessment of the collective transport system in the Piła and Chodzież counties was made specific by the respondents in the form of indicating the advantages of public and intercity transport.

A detailed analysis allows to state that the advantage of the transport system in the opinion of pupils and students are low ticket prices (21%). Another positive factor is the low congestion when traveling by public transport (15%). In the opinion of travelers, ecology is also important, i.e. care for the environment in such places (10%). The cleanliness of public transport places is a more frequent reason for traveling by such means of transport (13%). The appropriate frequency of

Figure 19
Advantages of urban and intercity transport



Source: own study.

journeys (4%) and the punctuality of the means of travel (1%) were less important, and 36% of the respondents traveled by another means of transport (Figure 19).

Research results

The assessment of communication behavior of high school and university students, which included 850 high school students from Piła and Chodzież and 200 students of the university in Piła, allowed for the formulation of the following conclusions:

1. The surveyed pupils and students move in order to reach the school or university.
2. Over 60% of the respondents live in the city, which may indicate that they prefer using such and not other means of transport.
3. Public transport is the most common means of transport preferred by the respondents, it is used by 43% of the respondents.
4. According to pupils and students, the three most important features of communication were: travel cost, frequency and duration of the use of means of transport. The three least important transport postulates were considered to be the following: legibility of timetables, safety of transport and accessibility of the stops.
5. The decisive factor in choosing the means of movement was to a large extent (57% of respondents) the time to reach the destination.
6. In the structure of students' travels, public transport was the most popular means of transport, while travel by individual transport was dominated by a passenger car.
7. Only 5% of pupils and students use a bicycle when moving to a designated place.
8. The technical condition of the infrastructure used for walking is good in the opinion of pupils and students, therefore 24% of respondents often use it.
9. The condition of streets in the Piła and Chodzież counties is at a sufficient level, and the availability of parking spaces is also good, therefore 28% of respondents use a car.

Conclusion

Research on the communication behavior of pupils and students of the Piła and Chodzież counties allowed for the identification of the most frequent directions of displacement. According to the research, home-work, school-home travel dominated. Pupils and students often used the means of public transport, assessing its

characteristics (price, comfort, speed, availability) as key. The choice of a specific measure depended primarily on the time they had at their disposal and on the wealth of the portfolio.

Due to the speed of reaching the destination, the least used means of transport was a bicycle, and most often — a car and public transport. In addition, it should be noted that a large percentage of travel is made on foot, because you should not pay for it, and the distance from your place of residence to the specific destination was not large. A large number of cars on the streets of the city is not only a problem of the Piła and Chodzież counties, practically all major cities in the country struggle with the phenomenon of congestion. The most noticeable negative effect of this is the increased travel time. An additional negative effect of increasing congestion is an increase in noise and fuel consumption as well as a greater emission of harmful substances to the environment. A panacea for such a state of affairs could be a modal division of traffic towards environmentally friendly transport, a change of the means of transport from a passenger car to a bus, or — under favorable weather conditions — to a bicycle.

The development of the city, in its every aspect, should be subordinated to clearly defined goals. In the case of transport and spatial development, this goal should be the division of transport tasks between different means of transport so that the city is friendly to all participants of the city's transport system.

Improving the infrastructure (roads and streets) and changing the development of urban space is not enough to deal with congestion in agglomerations, it is also important to properly manage the demand and to restructure transport chains. When shaping

such a system, external and internal conditions should be taken into account, the most important of which are implementation of the strategy of sustainable transport development, as well as the need to co-shape the development of transport and spatial development of the city. The expectations and preferences of those directly interested in the operation of such transport systems should also be an important element of such a policy.

Changing the mode of transport from passenger car to bus reduces the number of vehicles on the road. Despite the similar transport needs of pupils and students, the owners of passenger cars who have the option of choosing the means of transport, i.e. driving their own vehicle or public transport vehicle, turned out to be less tolerant of the quality factors of public transport than those who do not have their own vehicle. Less flexibility of pupils and students driving passenger vehicles to the transport offer of public transport organizers results in resignation from using the integrated system of public transport.

For people who chose public transport as a means of transport to school, university or work, specific factors related to the journey turned out to be important, such as: frequency of driving, punctuality, travel time, as opposed to the spectacular gadgets placed in vehicles, but not mentioned by travelers, such as: electronic city maps, large, colorful displays in ticket machines, screens and TV commercials or Wi-Fi. These factors will not replace a reliable and fast means of public transport expected by drivers of passenger vehicles using public transport. However, they make vehicles more attractive and aesthetically pleasing, encouraging especially young people to travel, for whom public transport is often the only means they can use when traveling to schools and universities.

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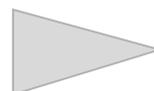
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