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## PUBLIC TRANSPORT IN A BIG POLISH CITY (AS EXEMPLIFIED BY ŁÓDŹ) IN THE OPINION OF OLDER PERSONS

### *Funkcjonowanie transportu zbiorowego w dużym mieście w Polsce (przykład Łodzi) w opinii osób starszych*

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**Abstract:** The aim of the conducted research was to assess how the elderly viewed the functioning of public transport, with Łódź, a large city in Poland, as the example. The data presented in the article originates from research of 400 inhabitants aged 60+ was conducted in the district of Bałuty in Łódź at the turn of November and December 2018. On the basis of the questionnaire survey (which contained questions concerning the use of local public transport by the over 60s for daily journeys and was accomplished by CAPI and MOBI methods) it was found that the over 60s have quite a high opinion of the offer of the municipal transport company MPK (they hardly ever use services of other carriers). As for the means of public transport, the tram is rated slightly higher compared to the bus. The results of the research enable the proposal of general recommendations for the transport policy in Łódź. This policy should be focused to a larger degree on: shortening the waiting time and, consequently, increasing the frequency of connections and punctuality, while continuing to provide high travel comfort, increasing the level of accessibility to stops and enhancing the clarity of information with regard to fare prices and exemptions.

**Key words:** older persons, interview, Łódź, public transport, sustainable mobility in cities

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## 1. Introduction

Problems of older persons as well as the last phase of human life itself are more and more often becoming a subject of interest both on the part of international organizations (the UN passed United Nations Principles for Older Persons in 1991), scientific circles as well as governments of many countries. The growing interest in the problem of this group results, for instance, from understanding the seriousness of the problem of Poland's population aging (Kowalski, 2011; Pośluszna, 2012).

In the literature of the subject "old age" is by no means an unambiguous notion as different age ranges are adopted in social sciences to describe older persons (Szymańczak, 2012). Some research define elderly people exclusively on the basis of their age, normally adopting the border of 60 or 65 years (Reams, 2015). In other research studies, however, this definition refers to retirement age (El-Telbani, 1993; Raczyńska-Buława, 2017). Gerontology, in turn, distinguishes three phases of old age: early old age (60-74 years), late old age (75-89 years) and longevity (over 80 years) (Szymańczak, 2012). In this paper it assumed that the threshold of old age is the age of 60.

Mobility involves not only large-scale movement of persons, goods, capital and information but it also concerns local phenomena connected with daily mobility and travelling in the public space. Mobility is depicted as an indication of the quality of life, particularly for groups of older persons or the disabled (Metz, 2000). This article deals with daily mobility which is treated in the literature as a set of daily movements of persons and goods which are essential for the functioning of local communities (Tarkowski, 2016).

The literature of the subject abounds in works which analyze the impact of the ageing process on transport behaviours of city inhabitants. As it is shown by research conducted e.g. by Carp (1988), Taylor (1999), Borowska-Stefańska, Wiśniewski (2019), senior citizens travel mainly to do shopping (in the case of older adults who are still active professionally). For this purpose they primarily use the car (in particular in the group of people between 60 and 70). The older they get, the larger the percentage of elderly people who travel by public transport (Borowska-Stefańska, Wiśniewski, 2019). Golob, Hensher (2007) notice that the role played by public transport is a particularly interesting feature of comparisons between age groups when it comes to the age range of elderly people. It is said that seniors rely on public transport more than younger people. There are many studies confirming this. Golob, Hensher (2007) state that: "However, with growing numbers of the elderly

in the future maintaining their health and hence availing themselves more of car driving, it is expected that the absolute and percentage of elderly using public transport might decline. How much it declines will depend on both stick and carrot policies. In 2002 however the evidence suggests that single men and women of all age groups are much more likely to use public transport, as compared to their coupled counterparts. In terms of the absolute number of home-based trip chains using public transport, for those living without spouses or partners, demand peaks in the 65-74 age group. Public transport mode split is an approximately increasing function of age for all gender and living circumstance segments" (p. 302). The research carried out so far confirms that population ageing is followed by a reduction in mobility levels (Hanson, 1977; Alsnih, Hensher, 2003; Tiitta, 2003; Borowska-Stefańska, Wiśniewski, 2019). This is mainly due to the fact that the majority of these people are already retired and it is precisely travelling to work that tends to be the most frequently realized need with regard to daily mobility (Borowska-Stefańska et al., 2019). Another reason for the reduction in mobility levels is poor health of older persons (some of them are incapable of moving at all) (Pośluszna, 2012). In general, mobility problems of elderly began to attract greater attention in the scientific discourse in the 1970s. (Carp, 1971; Hanson, 1977).

From the perspective of (also potential) public transport users, the everyday choice of means of transport is affected by: time, comfort, accessibility, frequency, cost, security, reliability (certainty of connection), speed and adjustment of timetables to the needs of users, adequate standard of stops, comprehensible information system concerning connections and timetables, security in the scope of protection from mugging on the stops and vehicles, manners of staff, suitable conditions for changing, the possibility of accomplishing different things while travelling (rest, work etc.), room for luggage, simple fare system as well as ease of getting on and off the vehicles (Wyszomirski, 1998). It is difficult to give hierarchy to the aforementioned postulates in an unequivocal way. Wyszomirski (1998) notices that the impact of individual factors is diversified and depends on detailed transport conditions available on the local carrier market at the given time. It also seems worth adding that this also depends on local social and demographic characteristics of its potential users. Nevertheless, as it is shown by research by Horowitz (1981) the most important of them include the requirements determining the waiting time (punctuality and frequency) which have the greatest value from the point of view of research into psychological time evaluation. In Poland this role is confirmed by,

for instance, the results of comprehensive research conducted in Krakow where increasing the frequency of connections is one of the most often indicated circumstances which could make the local public transport users give up their car for the benefit of public transport (Szarata, 2014). Bryniarska, Kędzior (2015) point to the importance of the quality and clarity of passenger information which seems to be of great importance for elderly people (clarity of timetables and line maps). Mitchell, Stokes (1982) argue that the main problem of elderly with regard to public transport resided in excessively high fares, too long waiting time as well poor accessibility to stops.

The aforementioned conditions do have an impact on the choice of the means of transport (which in the case of elderly people is normally between public transport and the private car). Research show that senior citizens prefer travelling by car both as passengers and drivers (Raczyńska-Buława, 2017; Borowska-Stefańska, Wiśniewski, 2019; Borowska-Stefańska et al., 2019). This is an undesirable phenomenon due to environmental and economic interests as well as those connected with security. Unfortunately, older persons often represent a threat on the road and their typical functional impairments connected with normal ageing and diseases, which are usually manifested at old age, are often a cause of accidents (Dickerson et al., 2007). This is why particularly this group should use public transport so as to maintain mobility necessary to live on a suitable level.

In Łódź the implemented transport policy gave rise to the project entitled *A Model of Sustainable Public Transport in Łódź 2020+. Material for public consultations* (2015). The city's transport problems which should be solved to create modern and sustainable transport were diagnosed on the basis of analysis of the present model and ways in which public transport functions as well as survey research conducted by Miejskie Przedsiębiorstwo Komunikacyjne (MPK) in Łódź. Regrettably, it fails to mention the necessity of adjusting it to the needs of elderly people. This is why the aim of this research is to assess the functioning of public transport on the example of Łódź, a big Polish city, in the opinion of older adults.

## 2. Research methods

The data presented in the article come from the research into mobility of people at the age of 60+ conducted in Bałuty district in Łódź. The project was aimed not only at obtaining information on the issues connected with the accessibility of Łódź public transport for elderly people. The research tool was a survey containing questions related to, for instance, the functioning of local public transport and its use

in daily travel by older persons. Besides that, the questionnaire contained a set of questions regarding selected basic features of the respondent. It was elaborated by the applicants on the basis of works by J. El-Telbani (1993), Z. Taylor (1999), O. Wyszomirski (2008), T. Komornicki (2011) and G. Sierpiński (2012) as well as *A Model of Sustainable Public Transport in Łódź 2020+. Material for public consultations* (2015). The research was accomplished with the computer assisted personal interviewing technique (the so-called CAPI) or personal interviewing technique using another mobile device (the so-called MOBI). A questionnaire composed of a list of questions grouped into thematic modules was used as a research tool structuring and standardizing interviews. The research was accomplished among 400 inhabitants of the Bałuty district at the age of 60 or more at the turn of November and December 2018 and concerned their daily mobility in the last four weeks. In order to increase data reliability and gain a full picture of mobility of senior citizens in the analyzed part of the city, the structure of the research sample accounts for all main administrative districts of Bałuty. 50 surveys were conducted in each designated area. The research used 3 channels of reaching respondents: **(1)** door-to-door research, or conducting a survey at the respondent's home after establishing the main age criterion, **(2)** surveying in the street in the vicinity of places frequented by older persons such as healthcare centres, churches, market places, **(3)** the snowball technique, i.e. recommendation by respondents of people who may be willing to participate in the research and who meet the age criteria (e.g. neighbours, friends etc.).

## 3. Characteristics of research area

Łódź was selected for research as while analyzing data of the Central Statistical Office (GUS) for 2016 it was found that although ageing societies can be found in all provincial Polish cities, Łódź definitely compares the worst in this respect. The percentage of people at the age of 60 and more has already exceeded 30% within the boundaries of the city, and the percentage of those aged 65 and more is over 21%. Łódź is populated by 211,400 elderly people aged over 60. In turn, Bałuty, one of Łódź districts was selected for further research due to the fact that it is populated by the biggest number of inhabitants aged 60+ in the whole city amounting to 65,150. It was followed successively by the districts of Łódź Górna with 49,351 older persons living there, Polesie – 42,777, Widzew – 40,025 and Śródmieście – 16,825 (Borowska-Stefańska, Wiśniewski, 2019). Located in the central part of the Łódź province, Łódź is the third biggest Polish city considering the popula-

tion and the fourth largest with regard to its surface, with 687,702 inhabitants living on the area of 293,25 km<sup>2</sup> (as of 30 June 2018) (GUS). Such a big city requires a developed network of public transport (fig. 1). The urban and suburban public transport services in Łódź are provided largely by Miejskie Przedsiębiorstwo Komunikacyjne Łódź Sp. z o.o. (bus and tram connections) as well as Łódzka Kolej Aglomeracyjna sp. z o.o. (railway transport) (Kowalski, Wiśniewski,

2013; Bartosiewicz, Wiśniewski, 2016a, 2016b). In addition, free public transport is incidentally provided by lines organized by shopping centre administrators as well as carriers providing regional car connections (minibus) who also offer the possibility of using their services within the city. MPK allows children under 4 and senior citizens over 70 to use its service free of charge.

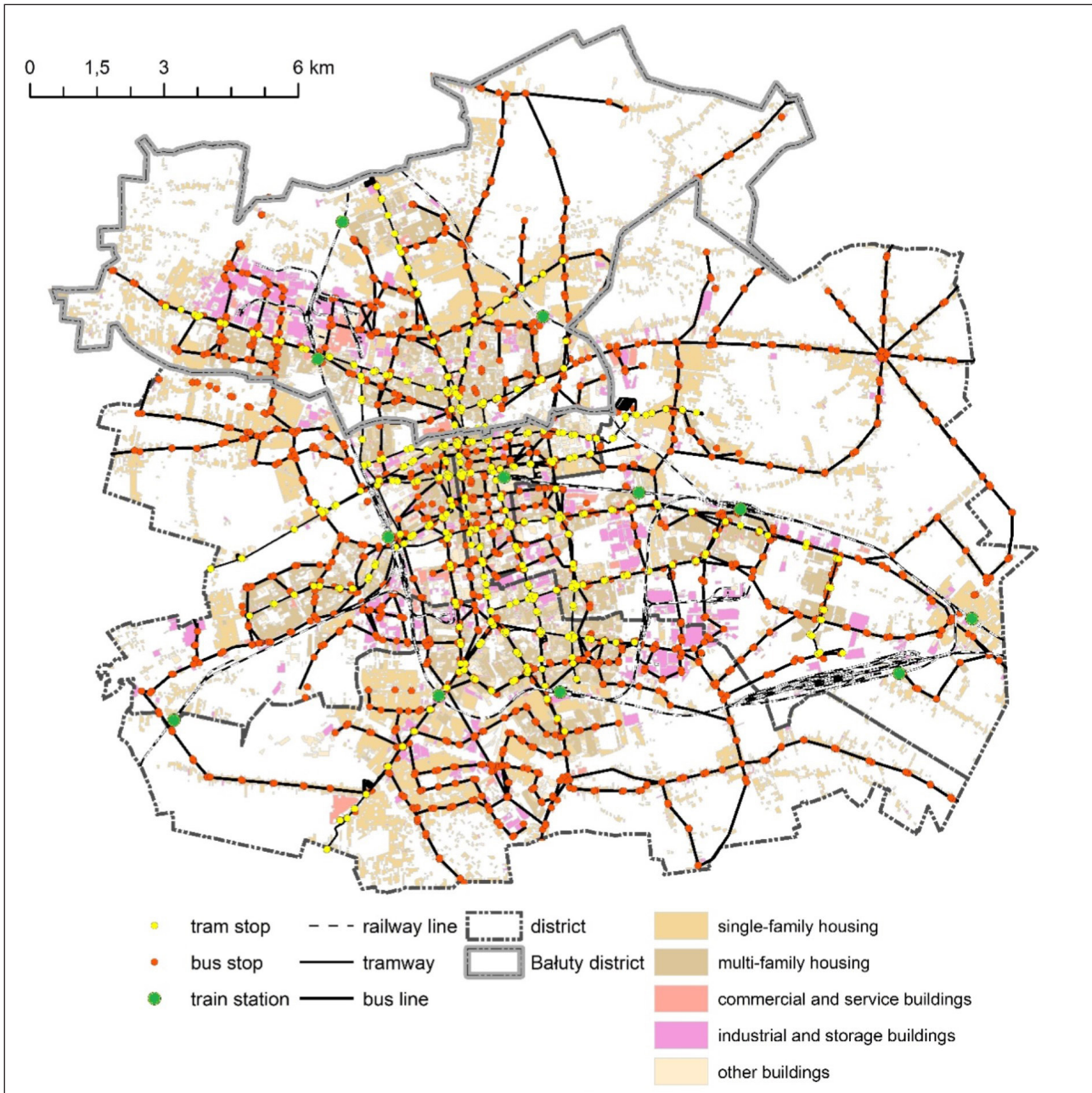


Fig. 1. The layout of public transport in Łódź.

Source: Own elaboration.

## 4. Results and discussion

### 4.1. Characteristics of respondents

The research involved 400 older persons living in the Bałuty district (which represents 0.61% of all older persons in Bałuty. The minimum total size of the

sample is 382, on the level of confidence equalling 95%). The characteristics of the respondents is in the tab. 1.

Tab. 1. Basic characteristics of the respondents (%).

	All N=400	BUS (MPK) N=104	Tram (MPK) N=131
<b>Sex</b>			
Female	69.3	76	73.3
Male	30.7	24	26.7
<b>Education</b>			
No education	1.3	1	0.8
Primary	3	3.8	4.6
Vocational	33	44.2	22.1
Secondary	33.3	26	38.9
Post-secondary	8	6.7	6.9
Higher	21.4	18.3	26.7
<b>Age</b>			
60-64	17.3	15.4	9.9
65-69	20	19.2	26.7
70-74	14.7	15.4	14.5
75-79	18.5	28.8	22.1
80-84	16.7	13.5	15.3
85-89	9.5	7.7	10.7
90 or more	3.3	0	0.8
<b>Employment</b>			
working	7.2	7.7	4.6
pensioner	8	9.6	2.3
retired person	84.8	82.7	93.1
<b>Household size</b>			
1	29.3	33.7	19.8
2	60.7	56.7	67.2
3	7	5.8	9.2
4	2.2	2.9	3.1
5	0.8	1	0.8
<b>net income per person in the household</b>			
0-500 PLN (0-120 €)	1.7	1.9	2.3
501-1000 PLN (120-240 €)	24.5	10.6	9.2
1001-1500 PLN (240-360 €)	13.5	22.1	23.7
1501-2000 PLN (360-480 €)	4.5	13.5	16
2001-2500 PLN (480-600 €)	13.3	6.7	6.1
2501 PLN or more (≥600 €)	6	8.7	8.4
refusal to answer	36.5	36.5	34.4

Source: Own elaboration.

None of the researched older persons travelled by train in the month preceding the research whereas 2 respondents used a shopping centre bus and 3 respondents a minibus.

Failure to use the rail may be attributed, in turn, to factors established by Bartosiewicz, Wiśniewski (2016a), who argue that there is insufficient interaction in the city area between public transport and Łódzka Kolej Aglomeracyjna, and the distribution of railway stations does not correspond to the city functional and spatial structure, which is why they are characterized by poor accessibility. It seems that the situation may be improved in this respect by constructing a cross-city tunnel and including the station on this section into ring connections though in the context of elderly people this is rather dubious as their daily mobility is observed on not very vast areas (Borowska-Stefańska, Wiśniewski, 2019).

#### 4.2. Public transport in the opinion of elderly people

A lot of research into the quality of public transport is conducted in many corners of the world (De Oña and de Oña, 2014). Many researchers argue that adequately managed and equipped public transport is one of sustainable transport types (Radzinski, 2011; Bieńczyk et al., 2014; Ciastoń-Ciulkin, 2014), i.e. it effectively ensures the possibility of moving from one place to another, being at the same time beneficial from both the environmental and well as social and economic perspective. The aforementioned opinion may indicate the degree to which the local public transport coincide with the definition of sustainable transport analyzed on the social plane. This is vitally important as good perception of public transport may greatly affect the change in the modal division (from cars which heavily burden the environment in the direction of more environmentally friendly public transport). Congestion on urban areas, their direct and more broadly understood consequences for the climate make both central and local governments initiate a sustainable transport policy. These principles require more personalized attention of customers so as to identify and define the most influential variables affecting their decisions to travel by public transport. This makes it necessary to define both policies and categories of users or potential users who these principles should be directed to. These factors generally refer to the improvement in the quality of the offered services in order to attract more clients (Dell’Olio, Ibeas and Cecin, 2011).

The results obtained in the research show that the local carrier is assessed rather well by senior citizens with regard to bus services. Each out of 13 selected

factors received mostly good and very good scores. Relatively the biggest number of critical opinions concerned: the frequency of connections (about 41 per cent of scores lower than good), fare prices (about 37 per cent) and punctuality of arrival (about 36 per cent). As shown in studies conducted by Świaniewicz and Rokicki (2016) in another major Polish city (Warsaw), ticket prices are the most important aspect for users of public transport. The same authors also indicate that people give weight to improvements of existing connections, putting frequency of service over the expansion of mass transit coverage. What is more, the research carried out by Magosiewicz and Rokicki (2015) in Białystok has been confirmed by our observations in Łódź, regarding the lower ratings given to the punctuality of mass transit and the opinions stated on ticket prices. In turn, buses were relatively best evaluated with regard to comfort of travelling (about 68 per cent of good and very good scores), cleanliness of stops (about 62 per cent) and an adequate number of seats (about 62 per cent). (fig. 2, 3). The analyzed senior citizens using the MPK buses refrained from assessing the ease of purchasing tickets and their prices most of the time (fig. 2).

The three variables indicated by Dell’Olio, Ibeas and Cecin (2011) which stand out irrespective of the grouping criteria and determine the quality required from efficient and safe public transport service, include: waiting time (waiting time is always one of those variables which are of greatest importance in the practical functions of transport as it represents time which the user sees as wasted and there is nothing more irritating than the feeling of wasted time), cleanliness (slightly more important for women) and comfort (particularly vital for the group of people aged 65+ and people not using public transport at all).

Accounting for only average scores and without including in the analysis answers of respondents refraining from giving their opinion (*I have no opinion*), again it is possible to see clearly the equal quality of individual aspects concerning using the bus service. Rounding the obtained mean values in the cross section, each factor was given the *good* score. The relatively lowest average scores were given to distance to stops, frequency of connections and punctuality of arrival, which points to the correlation of the results with European research (Raczyńska-Buława, 2017). In turn, the strongest points of the Łódź bus service included comfort of travelling, cleanliness of stops and an adequate number of seats (fig. 3). These results diverge from ours when evaluating the comfort offered by the public transport system in Białystok (Magosiewicz, Rokicki 2015). This is all probably an effect of endeavours of carriers (and transport

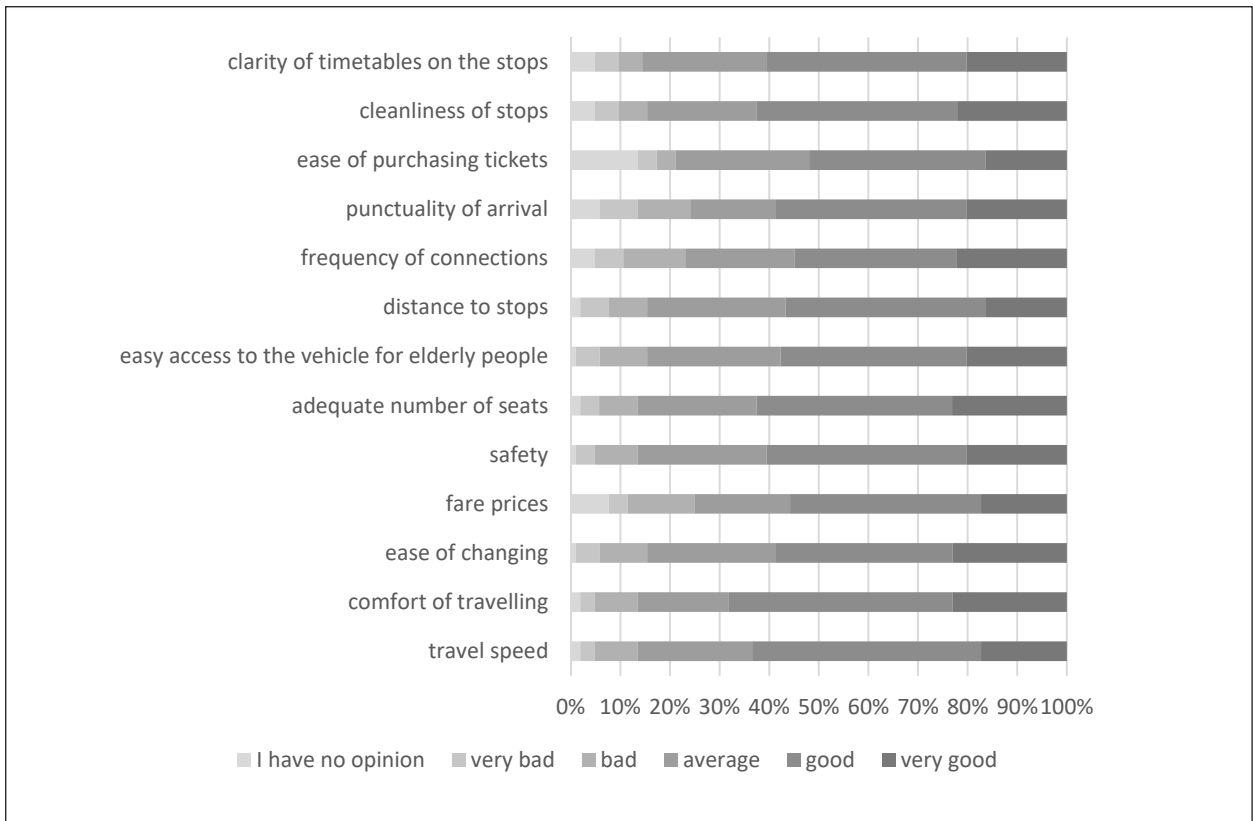


Fig. 2. Assessment of selected aspects concerning the functioning of MPK buses in Łódź in the opinion of the elderly. Source: Own elaboration.

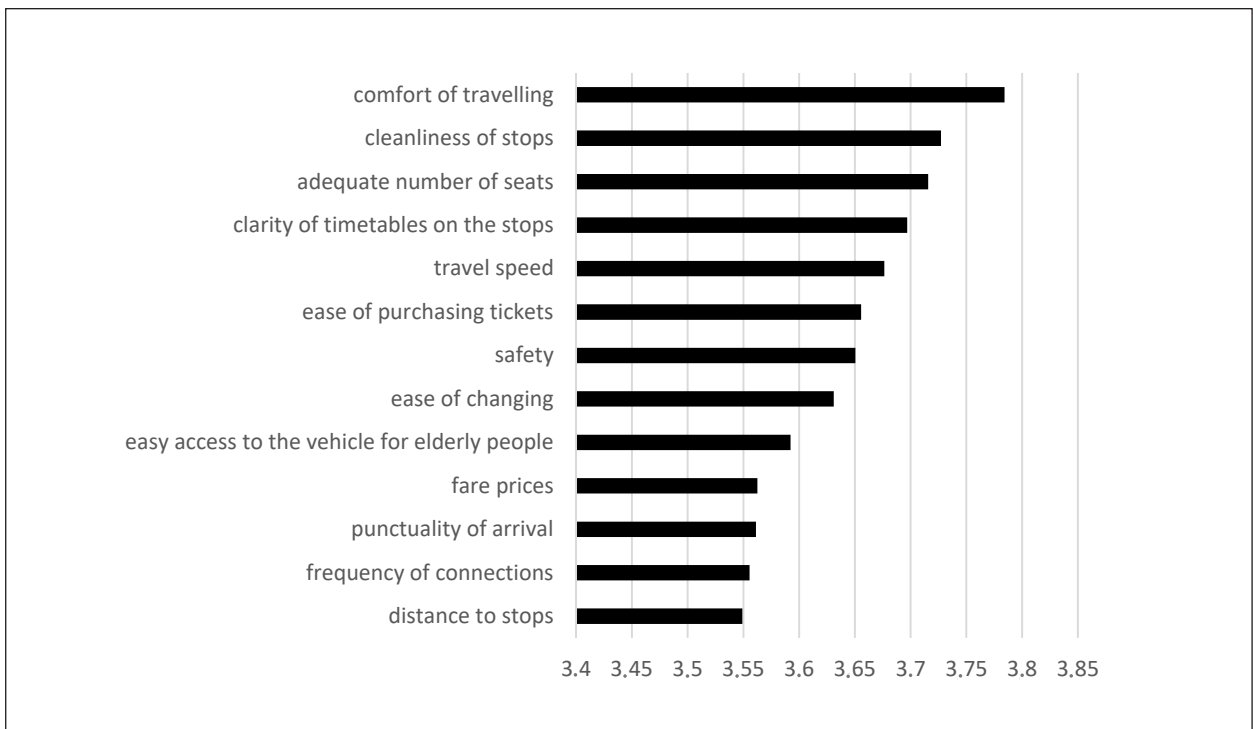


Fig. 3. The mean of scores of selected factors concerning buses in general cross section (scale 1-5, N=104). Source: Own elaboration.

organizers, i.e. city authorities) aiming at a successive exchange of the vehicle park towards a state when all vehicles will ensure a high comfort of travelling (e.g. air conditioning) and high accessibility for the disabled (e.g. no stairs in a low-floor vehicle).

The breakdown of average scores into the analyzed age groups shows that persons aged 75-79 display the most positive approach to using buses, whereas the biggest number of critical opinions is voiced by senior citizens aged 65-69, mostly with regard to possibilities of seamless changing, fare prices and distances to stops (tab. 2).

As it is in the case of buses, trams obtained good scores in every aspect, taking into consideration only

average answers without including into analysis answers of respondents refraining from giving their opinion (*I have no opinion*). The criteria of easy entrance to the vehicle, fare prices and adequate number of seats obtained the lowest scores in relative terms. Trams obtained the best scores with regard to travel speed, safety and clarity of timetables (fig. 4). These results confirm the city's current transport policy in which tram lines are to become the major transport axes whereas the role buses is supposed to be complementary. For this reason special attention is paid to giving priority to this means of transport in the case of infrastructure investments in Łódź as well as implementation of ITS facilitating travel planning.

Tab. 2. The mean of scores of selected factors concerning buses vs. respondent age (scale 1-5).

Selected factors	60-64	65-69	70-74	75-79	80-84	85 or more
travel speed	3.69	3.35	3.57	3.97	3.79	3.38
comfort of travelling	3.88	3.4	3.79	4.13	3.64	3.5
ease of changing	3.63	3.05	3.6	4.03	3.71	3.5
fare prices	3.88	3.2	3.23	3.8	3.5	3.75
safety	3.88	3.45	3.47	3.87	3.57	3.38
adequate number of seats	3.63	3.3	3.64	4.1	3.71	3.63
easy access to the vehicle for elderly people	3.88	3.3	3.4	3.73	3.5	3.75
distance to stops	3.33	3.25	3.47	3.87	3.5	3.75
frequency of connections	3.79	3.32	3.57	3.77	3.14	3.63
punctuality of arrival	3.64	3.37	3.5	3.93	3	3.57
ease of purchasing tickets	3.79	3.47	3.15	3.92	3.77	3.67
cleanliness of stops	3.87	3.68	3.33	3.9	3.79	3.5
clarity of timetables on the stops	3.87	3.65	3.57	3.8	3.5	3.67
<b>Average general for the group</b>	<b>3.75</b>	<b>3.37</b>	<b>3.48</b>	<b>3.91</b>	<b>3.55</b>	<b>3.59</b>

Source: Own elaboration.



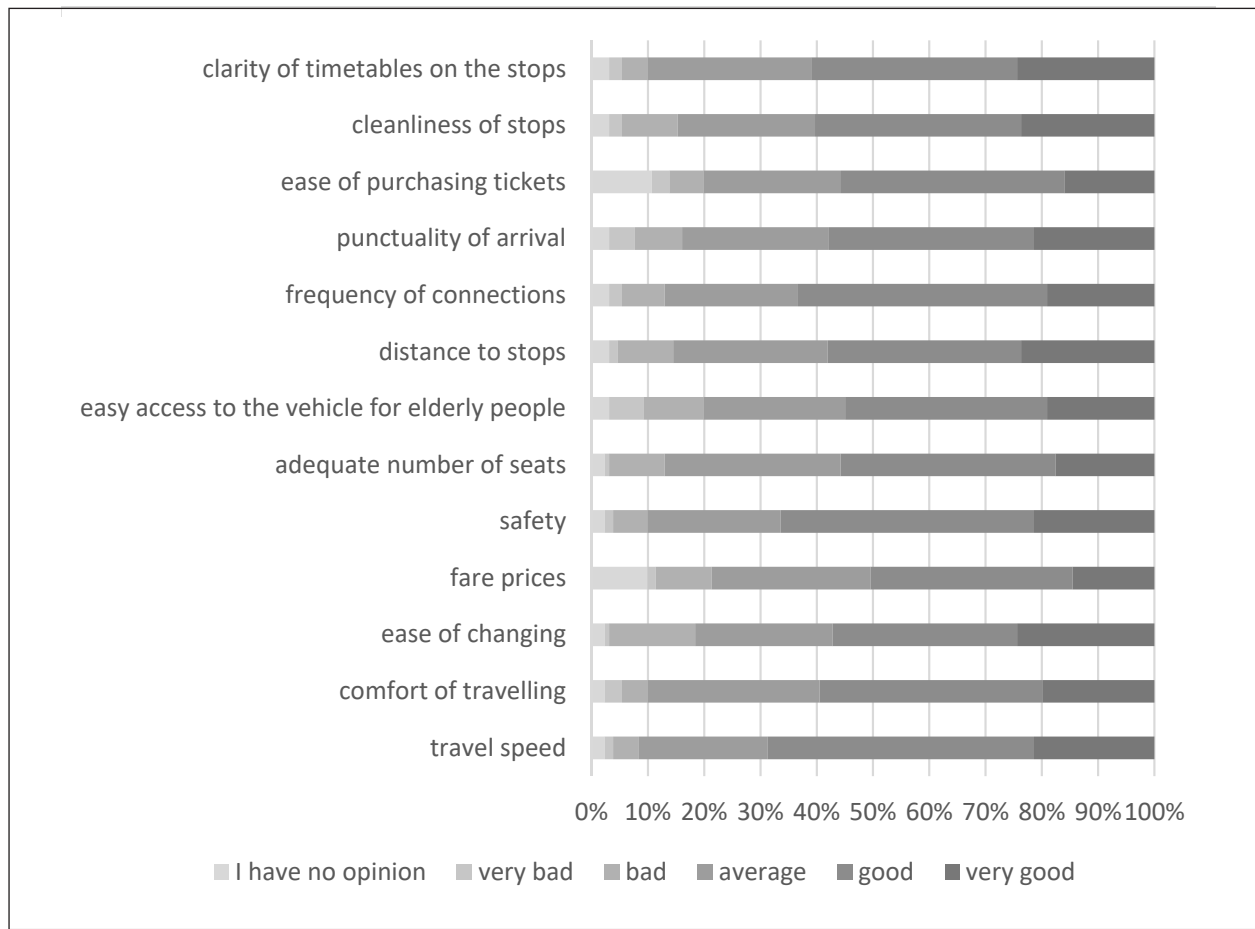


Fig. 4. The mean of scores of selected aspects concerning the functioning of MPK trams in Łódź in the opinion of the elderly.

Source: Own elaboration.

Accounting for only average scores and without including in the analysis answers of respondents refraining from giving their opinion (*I have no opinion*), it is possible to see clearly the equal quality of individual aspects concerning using the tram service as it was in the case of buses. The relatively lowest average scores were given to easy entrance to the vehicle, fare prices and adequate number of seats due to the still relatively low share of low floor tram services. Trams obtained, by contrast, the best scores with regard to

travel speed and safety thanks to constant improvements and repairs of tram lines (fig. 5).

Persons aged 70-74 and 85-89 had the biggest reservations about travelling by tram. In their opinion the biggest drawbacks of trams in Łódź include distances to the stops and fare prices. Respondents aged 60-64 and 75-79, in turn, perceive trams in a more positive way and they ranked them the highest, particularly with regard to travel speed and comfort as well as safety (tab. 3).

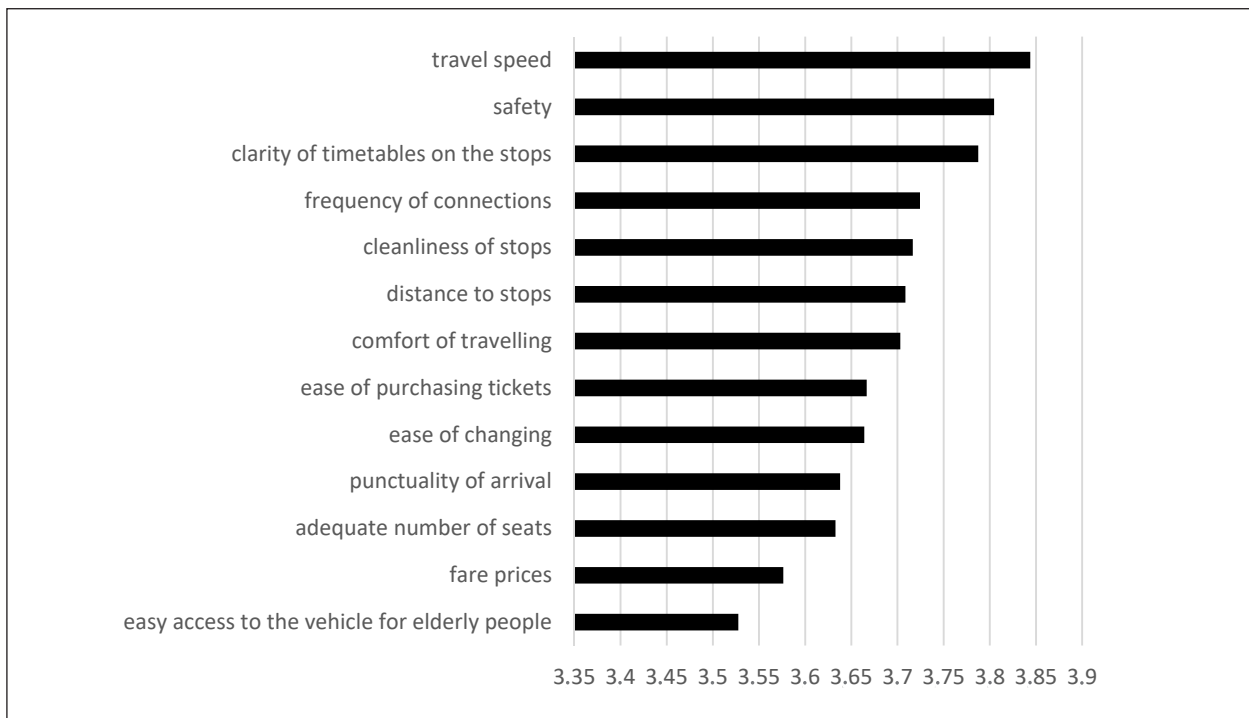


Fig. 5. The mean of scores of selected factors concerning trams in general cross section (scale 1-5, N=131).

Source: Own elaboration.

Tab. 3. The mean of scores of selected factors concerning buses vs. respondent age (scale 1-5).

Selected factors	60-64	65-69	70-74	75-79	80-84	85 or more
travel speed	4.00	3.76	3.56	4.03	4.05	3.46
comfort of travelling	4.00	3.68	3.33	3.83	3.95	3.38
ease of changing	3.85	3.68	3.33	3.90	3.75	3.38
fare prices	3.77	3.67	3.44	3.88	3.41	3.00
safety	4.00	3.82	3.56	3.79	4.05	3.54
adequate number of seats	3.77	3.68	3.33	3.69	3.75	3.62
easy access to the vehicle for elderly people	3.67	3.44	3.56	3.66	3.65	3.31
distance to stops	3.92	3.71	3.28	4.00	3.75	3.46
frequency of connections	3.92	3.56	3.33	4.03	3.90	3.62
punctuality of arrival	3.67	3.68	3.33	3.76	3.60	3.62
ease of purchasing tickets	4.00	3.58	3.65	3.84	3.47	3.42
cleanliness of stops	3.92	3.79	3.39	3.79	3.70	3.54
clarity of timetables on the stops	3.92	3.74	3.61	3.90	3.85	3.62
<b>Average general for the group</b>	<b>3.88</b>	<b>3.68</b>	<b>3.44</b>	<b>3.85</b>	<b>3.76</b>	<b>3.46</b>

Source: Own elaboration.

Both buses and trams of the MPK company in Łódź were well assessed by the interviewed elderly people (with a slight advantage for the benefit of trams: buses 3.64, trams 3.69). Rail vehicles gained the most conspicuous advantage over buses with regard to travel speed (3.84 to 3.68), safety (3.80 to 3.65), frequency of connections (3.72 to 3.55) and distance to

the stop (3.71 to 3.55). In turn buses, in the opinion of senior citizens outdo trams greatly as far as the number of seats is concerned (3.72 to 3.63) (fig. 6).

Respondents also indicated if in their opinion there was anything that should be modified in the case of public transport. Due to quite high scores of public transport in Łódź, the overwhelming majority using the MPK

service stated that they saw no room for improvement with regard to its functioning (156 people). Only 49 respondents think that changes are necessary (tab. 4).

The research also included questions concerning the evaluation of other means of public transport according to identical criteria as in the case of MPK. It turns out, however, that none of the researched elderly people used the train in the past month whereas

the two remaining means of transport were used by single individuals: 2 respondents used a shopping centre bus and 3 respondents travelled by minibuss. This is why the analysis of results obtained on this basis was ignored in the following stage of the research.

Elderly people found it quite difficult to answer the question about restricting car traffic in the city for the benefit of public transport. Over half of

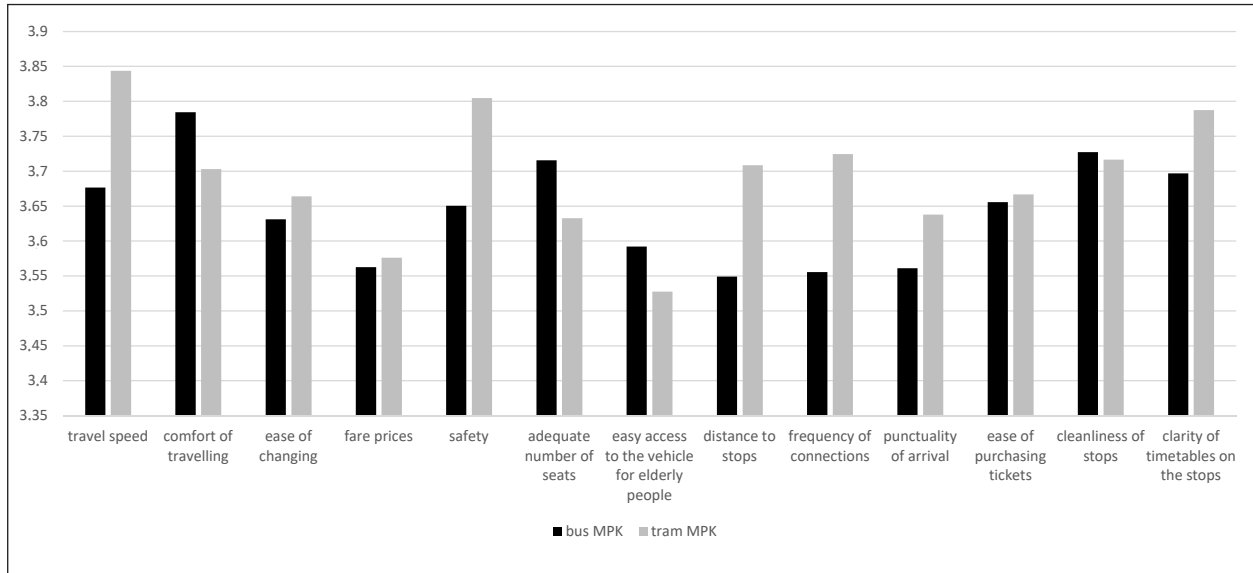


Fig. 6. Assessment of trams vs. assessment of buses: comparison of average scores of selected criteria.

Source: Own elaboration.

Tab. 4. The distribution of answers to the question if there is anything in your opinion that should be modified in the case of public transport in Łódź.

Elements which should be changed	Number of people
more lines and connections	9
improved punctuality of arrival	9
lower fare prices	7
facilitation in getting on and off the vehicle	7
higher frequency of connections	4
cleaner vehicles and stops	4
returning to old line routes (from before the last reform of MPK in Łódź)	4
clearer timetables	2
increasing the comfort of travelling	1
longer waiting time for passengers at the stops	1
increasing the number of carriages to two in line 5 at weekends	1
redevelopment of the city	1
making travelling easier for people with disabilities	1
increasing the number of stops	1
slower safer travel	1
replacing the vehicles with new ones	1
changing vehicle routes	1

Source: Own elaboration.

respondents was not able to assess if such activities are desirable or not (nearly 58 per cent). Approximately one third of senior citizens using MPK services concluded that restricting the use of cars is not necessary in Łódź. In turn, the few respondents who were in favour of such a restriction was unable to give any proposals for actions in this respect. This is fairly surprising in the light of the fact that, in general, the respondents rated poorly the punctuality of services offered by the local provider, since this parameter is greatly impacted by rivalry for space and the corresponding freedom of mobility between motorists and passengers of mass transit. The ongoing battle between private car owners and public transport rarely leads to a state of equilibrium that satisfies all road users, which is clearly visible in the Pigou–Knight–Downs Paradox (Downs 1962) that Arnott and Small (1994) describe as a ‘fundamental law of traffic congestion’. The theory is based on the assumption that the average speed of car traffic on a road network within the city is determined by the average door-to-door speed of equivalent journeys taken by public transport. In other words, a more efficient and easily accessible public transport system translates into more efficient journey by private car, since improvements in mass transit lead to a more balanced modal division of the chosen means of transport. On the other hand, the expansion of the road network will decrease the appeal of public transport, which – in consequence – will limit investment in it, or even cause its degradation (Burniewicz, 2017). Therefore, the creation of optimum conditions for the development of the city’s public transport system should have the over 60s at its heart, since they, with age – as indicated by Noble (2000), and Alsnih and Hensher (2003) – begin to drift towards mass transit at the expense of other modes of transport they used previously

Over 75% of researched older persons travelling by bus or tram use public transport timetables. Timetables at the stops are the source of information used most frequently in the case of 85.2% of respondents, the following 21.9% of respondents use booklets containing timetables while the rest obtains information from the carrier’s Internet site (7.7%) and mobile applications dedicated to public transport (5.2%).

## 5. Conclusions

The paper focuses on the assessment of functioning of public transport in Łódź in the opinion of elderly people. The conclusions drawn from this research show that the present policy concerning the rolling stock and organization of services is going in the right direction. This is indicated by quite good scores with regard to accessibility to transport services for older persons. Despite this it should be pointed out that subsequent

changes concerning public transport should be consulted with communities of senior citizens. Due to the fact that older persons represent a considerable percentage of people using MPK services it seems that it is worth accounting for opinions of the elderly in strategic documents and pay attention to this group. Elderly people assess selected factors describing the subsystem of bus and tram transport in a slightly yet discernibly different way. Both means of transport are generally assessed as good. The features which differentiate opinions include the frequency of connections (according to respondents it is insufficient with regard to buses and good in the case of trams) distance to stops (bus stops obtained low scores and trams had relatively high scores), which may seem less clear and requires further analysis. Age in the group of elderly people does not substantially affect the way of perceiving individual elements of the public transport subsystem. Elderly inhabitants of the Bałuty district do not put forward many suggestions concerning changes in the functioning of public transport. The main changes proposed by respondents refer to an increase in the number of lines and connections as well as improved punctuality. At the same time it does come as a surprise that those who are exempt from paying for public transport (people over 70) are the least satisfied with the level of transport fares (which are high in their opinion). The article focuses on the assessment of public transport in Łódź from the perspective of the over 60s. Our conclusions show that the current policy regarding tram rolling stock and the organisation of mass transit is heading in the right direction, as indicated by the particularly high rating given to accessibility to transport services by the over 60s. Despite this progress, senior citizens should still be consulted over any further modifications to public transport, as they are among the most frequent users of mass transport, and therefore it seems more than reasonable to include their opinion in any strategic proposals and to pay due attention to their needs in the matter. The over 60s demonstrate a slightly different, and yet noticeable attitude to factors determining subsystems of buses and trams. Although they express relatively positive opinions on both modes of transport, their views do diverge over: frequency of service (which the respondents believe to be too low for buses but adequate for trams), and distances to stops (low rating for bus stops and relatively high rating for tram stops) - a finding which requires further research in order to gain an understanding of the underlying reasons. Among the over 60s, their specific age has no major impact on the manner in which they perceive individual constituents of the mode of public transport. The over 60s in the Bałuty district offer few recommendations regarding changes in the functioning of public transport. The respondents mainly request a larger number of routes,

higher frequency of service, and greater punctuality. Interestingly, those who benefit from fare exemption (citizens over 70) seem to be most dissatisfied with the cost of public transport (which they find exorbitant). This generally positive standing of mass transit among the over 60s stems from both the intended and unintended actions taken by the operator of the local public transport system, and keeping this level of satisfaction is a formidable challenge for years to come since the over 60s are a substantial and continuously expanding group of residents, on whom public transport has a significant impact. Thus, the transit-related spatial mobility of the over 60s must not be considered marginal. As a broad-ranging social group – in terms of socio-economic, psychophysical and transport features – the over 60s must be given an opportunity to have their say in the matter of local public transport. The results of this study show that the over 60s are happy to express their views, and the conclusions drawn from their evaluations clearly indicate which spheres of the mass transit system are problematic and therefore require further action. By identifying the mobility-related needs of the city's senior citizens, the crucial role of public transport is also revealed. We are thus capable of preventing this social group from transport exclusion, resulting, for instance, from having to give up their own car at a certain age (e.g. due to health or economic reasons). Another positive aspect of such studies is that being consulted boosts the over 60s' self-esteem and sense of agency, which a trait which is often undermined at a more advanced age. Besides the typical postulates related to mass transit – i.e. more efficient frequency of service and greater accessibility – the study also reveals the considerable potential for activating the over 60s' use of modern technologies (e.g., digital channels of time-table information and ticket availability). This requires education on the use of such tools to counteract digital exclusion. As shown above, the significance of the over 60s' opinion on mass transit services fully justifies regular research into the matter. The returned results constitute valuable analytic material for both the operators of mass transit and decision-makers tasked with the development of local transport strategies and mobility. In the future such opinion surveys could also refer to potential changes in the current principles governing the functioning of our public transport and, at the same time, diagnose those conditions which determine the mobility-related preferences of the over 60s. However, the researcher must be aware that the applied diagnostic tool (a questionnaire) should be adapted to this particular social group.

The results of the research enable the proposal of general recommendations for the transport policy in Łódź. This policy should be focused to a larger degree on:

1. Shortening the waiting time and, consequently, increasing the frequency of connections and punctuality (particularly in the case of bus connections, which may draw attention to e.g. traffic separation). It is also worth paying attention to popularizing ITS systems which display information about the arrival time of the next vehicle;
2. Continuing to provide high travel comfort;
3. Increasing the level of accessibility to stops (reducing the distance understood in the categories of time and space as well as their better connection enabling passengers to change);
4. Enhancing the clarity of information with regard to fare prices and exemptions.

Although the presented study emphasises technical aspects of services provided by mass transit operators, it is worth indicating how beneficial satisfaction surveys can be for the users of public transport when psychological and social aspects are taken into account – after Everett and Watson (1987), and Friman et al. (2001).

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